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MEETING ABSTRACTS

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IA1

Virtual patient: new and optimized decision tree in virtual simulation process

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**IA1

Introduction: Clinical case simulators have high data processing, which results in extremely heavy, slow and expensive computational programs, but which can be solved with the implementation of a decision tree with sufficient branches to demonstrate the consequences of a clinical case action. for medical skill and competency training.
Objectives: Demonstrate the development of a web tool, based on SaaS (software as a service) and decision tree, for simulating highly complex clinical cases, editable for medical and academic users, capable of implementing multiple scenarios.
Methods: It was developed a simulators of clinical cases that was lighter and faster to process. Based on retrospective bibliographical reviews, the decision tree was chosen as an efficient technology for simulating medical cases, since it is a graphic way of representing decisions and their possible consequences, enabling change of course without concrete repercussions.
Results: The simulator managed to be developed according to questions and answers that faithfully simulate a medical care and implementation of a decision tree in a web platform and available as SaaS. In this way, the generated simulator is capable of executing clinical cases with correct and optimized processing capacity, with a degree of uncertainty and customized for use. The developed prototype can be adapted, edited and updated at any time, according to the protocol of each country or according to the clinical case desired by the users, being a great differential for medical simulation. The software has graphic resources for adding nodes to the decision tree, with the capacity for multiple outcomes, including multiple reactions in cases of infection, such as COVID-19 and Hepatitis C (HCV).
Conclusion: Simulation in the medical scenario is a teaching strategy that is increasingly valued in undergraduate and graduate medical courses, and the use of fast processing simulators that can be edited and updated will have a great impact on medical education, allowing training clinical reasoning and decision-making based on the latest updates.

Disclosure of Interest
None declared.

IA2

Gamification approach for hospital infection prevention and control training: a randomized controlled trial using treasure hunt game on Whatsapp

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**IA2

Introduction: Innovative teaching learning techniques are crucial in the training of infection prevention and control (IPC). Gamification is one such strategy incorporating game elements into non-game contexts, creating engaging, immersive, and interactive learning experiences.
Objectives: The study aimed to evaluate the effectiveness of an innovative interprofessional gamification approach in improving knowledge and understanding of IPC amongst healthcare workers.
Methods: We conducted a randomized controlled trial in which the intervention group received training through the WhatsApp treasure hunt game while the control group received traditional classroom-based training on validated topics. The effectiveness of the training was evaluated through pre- and post-training assessments of knowledge and understanding of infection control practices.
Results: The study involved 160 participants, with 80 participants in the intervention group who received training through the WhatsApp treasure hunt game, and 80 participants in the control group who received traditional classroom-based training. 100% of the participants in the intervention group agreed that they learnt something and found it useful compared to 95% in the control group. Significantly,

participants in appreciated interprofessional teamwork, understood each other's role and realized their importance in IPC and felt better equipped to practice IPC compared to the control group ($p < 0.001$). Knowledge component showed improvement from 56 to 89% in the intervention group compared to 53% to 67% in the control group.
Conclusion: The game of an onsite treasure hunt with online coordination in interprofessional groups was designed to promote active participation and engagement. This has significant implication for the development of innovative and cost-effective training methods in healthcare settings, particularly in low- and middle-income countries where resources for training can be limited. The gamification component thus brought more active participation piquing interest, in simpler terms it brought entertainment with education.

Disclosure of Interest
None declared.

IA3

Hand hygiene with AI-powered interactive training and testing tool (HAND3T)

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Introduction: Hand hygiene (HH) prevents many healthcare-associated infections (HAI). Periodic HH practical training helps healthcare personnel to focus on 5 moments of HH and prevent HAI. This study explores the use of HAND3T, an interactive artificial intelligence (AI) powered virtual tool to enhance HH practices. HAND3T aims to improve the efficacy of HH training and assessment by leveraging AI technology and investigates the potential benefits of such a system and its impact on HH practices.
Objectives: To develop & deploy a single, interactive, AI-powered HAND3T virtual trainer to combine HH practical training, assessment in HH technique, surface coverage detection to identify gaps after the practice, and theory training through questions about scenarios of 5 moments of HH
To provide real-time feedback, address common misconceptions, and reinforce the rationale behind 5 moments of HH to improve healthcare workers' adherence to HH practices.
To offer reporting and analytics to identify areas for improvement, measure progress, and provide insights to stakeholders.
Methods: HAND3T was developed using software programmes such as Javascript, React, Firebase, Github, Keras, Tensorflow, and Python. To assess the efficiency of the tool, the methodology was assessed by 12 IPC Nurses (IPCN) at a public hospital in Dublin, Ireland, who are experienced in conducting HH training and practical assessment. Each IPCN was asked to perform HH twice in front of HAND3T—once correctly and once missing one or more steps in the HH technique. An independent IPCN analyst assessed technique and compliance simultaneously and the results were correlated with the finding of HAND3T. Further testing of HAND3T was carried out with new employees to the hospital.
Results: HAND3T enhanced HH training compliance and increased participants' interest. Improved knowledge of 5 moments of HH was observed in 100% of participants. Knowledge retention will be assessed in six months' time. All participants liked real-time feedback and novelty of HH training and assessment. The study produced monthly compliance rates for HH training and highlighted the most often missed step in HH practical assessment.
Conclusion: AI can be effectively deployed to improve knowledge retention, reduce resource requirements to deliver the training, and increase HH compliance and thereby reducing healthcare-associated infections.

Disclosure of Interest
None declared.

IA4

Investigating the impact of personalized feedback intervention on hand hygiene compliance among healthcare workers

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**IA4

Introduction: Achieving high hand hygiene compliance (HHC) among healthcare professionals remains challenging and effective interventions are needed.
Objectives: This study investigated the impact of individualized feedback provided by an electronic hand hygiene monitoring system (EHHMS) on staff HHC.
Methods: This quasi-experimental study was conducted in an inpatient orthopedic ward over six months (Oct 2022–Mar 2023). An EHHMS (Sani Nudge™) collected HHC data via anonymous sensors on dispensers, staff badges, and patient beds. The study included a 3-month baseline and a 3-month intervention period, with the staff receiving weekly feedback reports by email showing their HHC levels in the different rooms relative to their colleagues. We used paired t-tests to assess the differences in HHC in patient rooms, clean rooms (medication rooms, clean utility rooms), and unclean rooms (restrooms, unclean utility rooms). *P*-values < 0.05 were considered statistically significant.
Results: Nineteen staff members (nurses, $n = 17$; doctors, $n = 2$) were included in the final analysis. Baseline HHC across all rooms was 48%, significantly increasing to 63% during the intervention period ($p < 0.0001$). The greatest improvement was observed in patient rooms, where the baseline was the lowest at 44%, with an average increase of 17% [95% CI, 13–21] ($p < 0.0001$). Staff also significantly improved in the clean rooms, reaching 63%, with an average increase of 10% [95% CI, 3–16] ($p = 0.0068$). In unclean rooms, where the baseline HHC was the highest at 76%, the average increase was 5% [95% CI, 1–10] ($p = 0.0232$). All staff improved in HHC during the intervention period in the patient and clean rooms.
Conclusion: Individualized feedback via weekly email reports led to a significant improvement in healthcare workers' HHC and was received with curiosity and engagement. The self-directed approach empowers healthcare workers to take ownership of their compliance, providing a cost-effective method for improving hand hygiene levels while maintaining anonymity. The improvement over the 3-month period suggests that regular exposure to such interventions could lead to even greater effects.

Disclosure of Interest
None declared.

IA5

Platform for gamification of medical education: expanding teaching strategies with data management and gamified interaction

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Introduction: After the COVID-19 outbreak, it was necessary to teach and disseminate medical knowledge and treatment strategies. Gamification has shown great potential for medical education, given its contemporaneity user adherence. Therefore, a game named MEDTEST was created with the purpose of generating gamified clinical cases in a digital software to allow users to solve and exercise

clinical thinking and problem solving. The initial results were published in the 2021 ID Week.
Objectives: This work demonstrates the MEDTEST game expansion process, with a presentation of its capabilities in the field of medical learning.
Methods: Continuing the development of the platform, three upgrades were made since its first publication in the 2021 ID Week: the modeling of a web structure, to support the game, expand scenarios and playable clinical cases; the development of an environment for educators, with graphic demonstrations of students' mistakes and successes, with analysis of concepts with more successes and mistakes; the standardization of data for the future implementation of an artificial intelligence structure for predicting errors and successes for subject recommendations and levels of difficulty for users.
Results: First, a game graphic optimization was performed. Then the platform where the first game was hosted, focused on COVID-19, with the case of a family infected with SARS-Cov 2, with cases of pediatric and adult infections (female and male). Thus, two expansions were developed: a structure to encompass other "universes", such as cases of infections in surgical sites, pediatric and cardiac cases (in addition to supporting other medical games); the second is a web structure with user control and data analytics capability with student gameplay results.
Conclusion: The evolution of the platform managed to expand the possibility of medical teaching, both in terms of new game proposals being connected to the current platform, and the capacity for strategic data management.

Disclosure of Interest
None declared.

IA6

Crabplay—gamification and engagement in pediatric treatment: a tool for epidemiological surveillance of surgical site infection in pediatric oncology surgery

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Introduction: Pediatric oncology care is a major challenge in terms of patient engagement and strategic data management. In Brazil, the mortality rate is 8% of the total number of children diagnosed with any type of cancer. Because surgical treatment may be mandatory in some cases, surgical site infections also pose a threat to these patients, demanding new solutions.
Objectives: To demonstrate CRABPLAY: A tool for engagement in pediatric cancer treatment, which allows strategic data management and machine learning for patient care and safety.
Methods: Through analysis of pediatric oncological treatments, associated with the study of frameworks focused on the strategic management of data and medical informatics, a software was developed with three operating functions: data input from healthcare professionals during treatment; a playful game to engage the patient during treatment; a web structure for collecting, managing and processing data, which enables statistical, prescriptive and predictive studies.
Results: A software was developed with three functionalities: a children's game, with level progression and rewards to promote patient's adherence to the treatment; a mobile application, for data collection related to cancer treatment (*i.e.*, treatment plan, diet, medication, risk group), Surgical Site Infection (SSI), use of prophylactic antibiotics, type of surgery, SEPSE (in addition to customization possibilities); moreover, the data is consolidated in a third web structure capable of strategic data management, with data analytics and machine learning capabilities.
Conclusion: We speculate the software may increase patient adherence to treatment through gamification while stimulating biopsychosocial abilities. It may also serve as a tool for epidemiological surveillance and risk prediction.

Disclosure of Interest
None declared.

IA7

Measuring clinical best practices for infection prevention and control: the development and testing of a time-motion guide

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**IA7

Introduction: Healthcare associated infections are serious adverse events in hospitals and long-term care facilities that are mostly avoidable. To ensure patient safety, healthcare professionals use clinical best practices (CBPs) of hand hygiene, hygiene and sanitation, basic and additional precautions and screening carriers and infected patients. To assess costs and help inform the cost-benefit of investing in these infection prevention and control (IPC) practices, costing must be done using a reliable instrument.
Objectives: To develop, validate, and test a time-motion guide to cost CBPs of IPC used in patient care.
Methods: A time-motion guide was developed using time-driven activity-based micro costing methods to capture the costs of human and material resources used when applying CBPs. Phases of development included an extensive review of the literature, consultation with an advisory expert team, validation by Delphi review with 18 experts, and pilot testing in two hospitals.
Results: An initial guide was developed that included eight dimensions: two for the institution and personnel; six for clinical best practice categories. Validity and reliability were obtained through two rounds of Delphi review. Once adapted to a mobile platform, the guide was pilot tested in medical and surgical units of two tertiary care hospitals in Québec, Canada. A built-in chronometer measured the time staff spent on IPC practices; cleaning products used were simultaneously itemized via external observation. A total of 1831 actions were recorded across 48 healthcare professionals. Costs median costs varied from 19.6 cents per action for hand hygiene to $4.13 per action for additional precautions. The median cost across all clinical best practices was 27.2 cents per action. Pilot testing showed the guide was feasible and acceptable to staff and patients.
Conclusion: The developed time motion guide provides evidence-based information on the costs of using IPC clinical best practices and revealed these costs are remarkably low (around 27 cents per action) which should be of great interest to policy makers and stakeholders in healthcare. The guide is currently in a full-scale testing across five hospitals and will be adapted for use in long-term care facilities.

Disclosure of Interest
None declared.

IA8

Fibrous nanocomposite dressings for surgical site infection prevention

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Introduction: Surgical site infection (SSI) is one of the most common complications in a surgical ward. While SSI incidence ranges between 1 and 3% when one takes into account the number of surgical operations performed daily, the number of affected patients is huge. A

common postoperative complication, SSI can increase the duration of hospitalisation, cause pain and discomfort but even increase the risk for reoperation. This of course depends on the patients themselves, as SSIs have been associated for example with old age, obesity, smoking, increased operation duration etc. While research on wound hygiene and wound dressings has been gaining attention in the past few years, we still have problems to solve, for example the early detection of SSIs. In this regard, by utilising nanotechnology we could design dressings that could not only detect, but also combat SSIs before causing more serious complications.
Objectives: The objective of this project was to fabricate and characterise a biodegradable polymer nanocomposite system with antibiotic properties and a pH indication feature to detect infection early and concurrently start treatment. By being a biodegradable, the system could also enhance healing and tissue regeneration.
Methods: Nanofibrous meshes were produced utilizing a nanotechnological technique namely electrospinning. Polysuccinimide and Polylactic acid were the main components. Amoxicillin and curcumin were also incorporated to functionalise the dressings. Chemical (ATR-FTIR Spectroscopy), physical (Scanning Electron Microscopy) as well as mechanical investigations (Uniaxial Mechanical Tests) were performed on the dressings. Subsequently colorimetric and microbiological studies (on Gram positive and negative bacteria) were also performed on the functionalised dressings.
Results: The dressings are composed of nanofibres measuring under 1 micron in diameter ($d = 550 \pm 50$). The chemical characterisation confirmed the presence of both polymers. Meshes exhibited excellent mechanical properties. Colorimetric measurements confirm the pH changing features of the dressings. Amoxicliin incorporation successful provided the meshes with antimicrobial properties.
Conclusion: The fibrous nanocomposites show a great potential as surgical dressings to combat surgical site infections.

Disclosure of Interest
None declared.

IA9

Innovative insights: two chemical passivation methods for surgical instruments differently modify the surface properties of stainless steel

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**IA9

.**Introduction:** Corrosion is a frequent problem that shortens the life cycle of reusable surgical instruments leading to immense costs in the healthcare sector. As it is routinely counteracted with chemical passivation, this study addresses whether commonly used chemical passivation processes modify the passive oxide layer of stainless steel differently, thereby potentially altering factors important for reprocessing and longevity of instruments.
Objectives: (1) Investigate thickness and surface composition of the chromium steel passive layer after citric-based or phosphoric-/nitric acid-based passivation. (2) Address whether differences in the chemical nature of passive layers change protein adsorption
Methods: For this study, steel disks were passivated with either citric acid or a mixture of phosphoric and nitric acid. To gain insights on the chemical nature, thickness and surface composition of the surface oxide layer, X-ray photoelectron spectroscopy (XPS) and hard-XPS (HAXPES) were performed. Utilizing both techniques allowed investigation of top surface layers as well as depth layers. To test whether potential changes in surface composition alter surface properties with regard to clinical use conditions, passivated steel disks were incubated in a solution containing Bovine Serum albumin (BSA) and protein adsorption was measured via bicinchoninic acid assay (BCA) assay.
Results: HAXPES/XPS analysis demonstrated that passivation with phosphoric and nitric acid generates a five-fold thicker passive layer compared to the standard citric acid-based process. It also resulted in a distinguished surface composition consisting of a mix of chromium oxide and chromiumphosphates. Preliminary experiments indicate that these changes in surface composition also altered surface properties. The protein adsorption assay indicated a stronger protein adsorption on steel disks passivated with citric acid compared to phosphoric-/nitric-acid treated samples.
Conclusion: The results reveal that the choice of the passivation method profoundly impacts the material properties of the stainless steel surface and should therefore be made with care. Future studies need to address whether these alterations may impact cleaning and reprocessing efficacy of instruments in the clinical context.

Disclosure of Interest
H. Demuth Employee of: Borer Chemistry AG, M. Buhmann Employee of: former Borer Chemistry AG, P. Schmutz Grant/Research support from: Borer Chemistry AG, Q. Ren Grant/Research support from: Borer Chemistry AG.

IA10

An innovative infection control training approach using immersive 360 video for special pathogens patient care in a biocontainment unit (BCU) setting at an Academic Medical Center in Los Angeles

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**IA10

Introduction: Safe patient care for an individual infected with a special pathogen, such as Ebola Zaire, requires care in a biocontainment unit (BCU) setting with a multidisciplinary team of experts trained in infection control practices. Maintaining engagement of the special pathogens response team (SPRT) during the COVID-19 pandemic proved to be a challenge at an academic medical center in Los Angeles.
Objectives: In an effort to maintain simulation training for the SPRT, a 360 degree video training platform was adopted to provide remote infection control training in an engaging and immersive manner.
Methods: Protocols for a patient infected with Ebola Zaire, such as donning and doffing of personal protective equipment (PPE) were selected for filming due to their likelihood of being implemented during BCU activation. Protocols were then storyboarded and filmed in a high-fidelity simulation center using a 360 degree camera and a spatial audio recorder by a videographer. Interactive questions were embedded into each video module to enhance engagement. Virtual reality headsets and bluetooth earphones were distributed to all SPRT members.
Results: Eighteen peer-vetted, regulatory-compliant video modules were filmed and uploaded into the 360 training platform and sorted into 6 courses. Courses were based upon clinical relevance, multi-institutional best practices, and roles of team members. Analytics for each protocol allowed administrators to measure time spent within each module and time spent on content comprehension. SPRT members were able to complete quarterly training requirements using the 360 platform during the COVID-19 pandemic when in-person trainings were either suspended or unfeasible.
Conclusion: The 360 platform provided immersive virtual infection control training to SPRT members during a time when in-person biocontainment unit training was challenging. A future application of the platform may be SPRT just-in-time training prior to reporting for duty in the event of BCU activation.

Disclosure of Interest
None declared.

IA11

Usability of the light powered air purifying respirator (L-PAPR) compared to traditional respirators

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**IA11

Introduction: The lightweight powered air purifying respirator (L-PAPR) is an alternative to conventional disposable respirators, less bulky than traditional lightweight powered air purifying respirator (T-PAPR), and offers higher protection than N95 respirators plus faceshield (N95 + FS).
Objectives: To present usability evidence in a clinical setting. We aim to identify the advantages and disadvantages of L-PAPR compared to N95 + FS or T-PAPR use.
Methods: Qualitative research using semi-structured interviews was carried out in two study sites: São Paulo, Brazil (45 participants) and Bologna, Italy (42 participants). Health workers (HWs) performed tasks in high-fidelity simulation (pre-defined tasks) and intensive care units (routine care). HWs were randomized to use three different facial protection sequentially: L-PAPR compared to N95 + FS or T-PAPR.
Results: L-PAPR conferred advantages for protection during aerosol generation procedures; good fog-free visibility; pleasant breathing experience; easy disinfection process, people felt protected and safe. L-PAPR disadvantages were: face pressure in the forehead and chin; its heaviness; the blower is noisy impairing communication; complex assembly; battery capacity and recharging process; health facility infrastructure change for adequate storage, and complexity for donning and doffing in contrast to the N95. Participants stated L-PAPR inconveniences would not prevent usage and that with manufacturer improvements the L-PAPR would be a choice.
Conclusion: To enhance its usability L-PAPR design needs improvement. As traditional facial protection bring a satisfactory level of protection, HWs' adherence to it depends on their preferences. They might choose L-PAPR in certain procedures; however, its implementation requires manufacturer changes and institutional investment.

Disclosure of Interest
None declared.

IA12

Innovation can verify reproducible high-level disinfection outcomes from manual processes introduction

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Introduction: Decontamination of medical devices is vital for infection prevention. High-level disinfection (HLD) stage of decontamination process can be achieved with machines or wipes. Wiping products are often assumed to be prone to human error, despite the lack of empirical data to support this.
Objectives: This study aims to reveal human error present when wiping medical devices and address the question, does human error regularly compromise outcomes of manual medical device HLD?
Methods: This study examined the effects of wiping to obtain HLD of transvaginal endocavity ultrasound probes using two main parameters: the complete coverage of the medical device (Coverage), and the presence of the chosen ClO2 solution (Chemistry). To observe coverage & chemistry, this study used an innovative formulation-blue dye molecule impregnated onto a non-lint wipe in a single wipe sachet. The formula is designed to adhere evenly to the surface of a medical device and dry quickly, temporarily colouring the device blue. Upon contact, the ClO2 oxidises the colour, visually confirming contact between the surface of the device and ClO2.
This study evaluated 76 healthcare professionals following a colour-on, colour-off method, by applying colour on a chosen device using clean-to-dirty methodology at a public hospital in Dublin, Ireland. The participants were each asked to judge Yes or No to complete coverage achieved, which was verified by the independent analyst. Any visible gaps in coverage would result in a No against complete coverage. The process was repeated with ClO2 foam. After ClO2 wiping, if all visible blue colourant was removed from the medical device, Coverage and Chemistry were considered to be successful.
Results: Data was gathered from 76 healthcare professionals. All 76 participants were successful in the application and removal of the dye solution with no visible evidence of human error when wiping, indicating a 100% rate of successful HLD among the population assessed.
Conclusion: Does human error regularly compromise the outcome of manual HLD? This study concludes that human error was not present in the wiping events monitored. Indicating that successful HLD of medical devices via wiping is achievable by healthcare professionals, and that the use of a coloured formula can visually demonstrate the absence of human error.

Disclosure of Interest
None declared.

IA13

In silico modeling of a liquid biopsy for sepsis by using causal inference to identify its biomarkers

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**IA13

Introduction: Every 3 s, someone in the world dies of sepsis. Globally, sepsis claims 11 million lives a year.
Objectives: The aim of our study is to develop a clinically relevant liquid biopsy for sepsis diagnosis by leveraging mRNA expression profiles.
Methods: We utilized transcription profile data consisted of 34 sepsis and 36 non-sepsis samples (http://www.ncbi.nlm.nih.gov/geo/query/acc.cgi?acc=GSE12624). The dataset encompassed 8,519 attributes, representing 7,672 genes after preprocessing of the mRNA expression profile data. To analyze the dataset, we employed a modified version of the causal inference HEISA algorithm, a two-stage local learner. Features with a causal effect greater than 0.2 were selected at the end of the second stage. Following the selection of mRNA expression features, we applied Random Forest and K-means algorithms to assess the ability of the selected variables in identifying the occurrence of sepsis.

Results: We identified six mRNA expressions that serve as robust indicators of sepsis occurrence. Three of these genes (NM_017526, NM_004649, and NM_006099) have been previously recognized as sepsis-related biomarkers. The second gene, Homo sapiens leptin receptor overlapping transcript (LEPROT) transcript variant 1 mRNA, exhibits an inverse relationship with sepsis. The remaining three biomarkers (NM_017526, NM_001274, and NM_001071) also demonstrate an inverse correlation with sepsis. Regarding the classification task, employing only these six mRNA expressions resulted in a remarkable accuracy of 100% in classifying sepsis.
Conclusion: In our extensive analysis of 7,672 genes, the application of causal inference led to the identification of only six potential sepsis biomarkers. This discovery holds significant promise for in silico biomarker exploration. The existing repertoire of biomarkers for sepsis diagnosis lacks the necessary specificity and sensitivity in a clinical setting. Currently, no single biomarker stands as the definitive gold standard for sepsis detection. Consequently, the urgent need for the identification of new biomarkers that can be effectively utilized in clinical practice persists.

Disclosure of Interest
None declared.

IA14

Self-service application for medical appointment check-ins to reduce infections in hospital settings

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**IA14

Introduction: To reduce infections from spreading at the hospital level, it is submitted that healthcare institutions should first understand the benefits of "Self-service application for medical appointment check-ins to reduce infections in hospital settings" and implement it in their day-to-day operation. Technology applications can be extremely helpful to support the hospital's activities at a challenging time. The benefits will be discussed through case studies from different sectors. The cost and technology requirements will also be discussed in the presentation.
Objectives: To inform and educate healthcare professionals about the benefits of "Self-service application for medical appointment check-ins to reduce infections in hospital settings". To share case studies from different sectors which are using self-service applications.
Methods: The requirements are:
Educated hospital staff on the benfits of implementing self-service applications will reduce infections
To share case studies about different sectors using it in their operations.
To explain basic technology and skills required for this solution to be implemented.
As this is in the idea statge, it is a fresh topic that needs further research.
Results: As we move forward in the era of AI and technology evolution, the healthcare sector needs to move forward as well, not just in North America but around the globe too.
Ailments patients first point of contact is the hospital therefore in light of this, it is of the view that by implementing self-service applications would prevent or reduce any infection from spreading.
When case studies of the different sectors that uses similar solution, healthcare professionals would be empowered to implement it as well.
Conclusion: Technology applications like self-service can be extremely beneficial in supporting the hospital's activities during a difficult time. This solution will reduce or prevent infection from patients to nurses and doctors. Share case studies about the application's benefits. Simultaneously, the innovation will streamline data and make it easier for healthcare workers to perform their duties.

Disclosure of Interest
None declared.

IA15

Establishment of loop mediated isothermal amplification assay for the surveilliance of multi-drug resistance markers in *P. vivax* clinical isolates and chloroquine transporter markers in *P. falciparum* clinical isolates

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**IA15

Introduction: Malaria is a life-threatening disease caused by *Plasmodium species*. Emergence of resistance is a major hurdle for Malaria elimination. Routine surveillance of molecular markers of resistance can serve as useful tool. So this study has been designed to optimize LAMP strategy as a reliable and economic tool for detecting mutations in *P.vivax* and *P.falciparum*
Objectives: 1 Detection of drug resistance markers PCR and sequencing.
2 Designing of LAMP for detecting SNP's present in the studied population
Methods: 88 microscopically positive *P.vivax* and 27 *P. falciparum* patient samples were collected.
Pvmdr1* and *Pfcrt genes were amplified by PCR using suitable primers. Amplified PCR products were further sent for Sanger sequencing and analyzed using Finch TV.
LAMP primers were designed targeting SNP's in both the genes and LAMP was standardized. Limit of detection for the assay was calculated through serial dilutions of cloned *Pvmdr1* and *Pfcrt* genes. For specificity the assay was also tested on *P. falciparum, L. major, T. gondii* for *Pvmdr1* specific LAMP primers and on *P. vivax, L. major, T. gondii* for *P. falciparum* specific LAMP primers
Results: Sequencing-Variations were observed at Thr(958)Met and Phe(1076)Leu in 100% of *P. vivax* isolates and Lys(76)Thr in 74% of *P. falciparum* isolates. All the samples were found to be double mutant and single haplotype was reported M_{958} Y_{976} Y_{1028} L_{1076} for *P. vivax* isolates. In *P. falciparum* three haplotypes were reported $S_{72}V_{73}M_{74}N_{75}T_{76}$, $C_{72}V_{73}M_{74}N_{75}K_{76}$ in mutants and $C_{72}V_{73}M_{74}N_{75}T_{76}$ in wild type
LAMP: Designed LAMP primers successfully amplified SNP's in *Pvmdr 1* gene. The assay was found to be 100% sensitive and 100% specific for detecting SNP's in the target gene. For *Pfcrt* gene assay was found to be 100% sensitive and 83% specific. The limit of detection was found to be 1 copy/µl for LAMP and 10 copies/µl for PCR
Conclusion: Prevalence of SNP's is an indicator of beginning trend of *P. vivax* antimalarial drug resistance. This study optimized LAMP for detecting SNP's in *P. vivax* and *P. falciparum* in field settings, thus would be beneficial in detecting significant hubs of Chloroquine drug resistance and ultimately helping in the management of suitable antimalarial drug policy.

Disclosure of Interest
None declared.

Slide session 1: Towards a new age of HAI surveillance: Automation and digitalization

O1

Semi-automated surveillance of surgical site infections (SSI): development of artificial intelligence models and external validation of a rule-based model

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**O1

Introduction: Traditional SSI surveillance is time-consuming and has poor interrater reliability. Semi-automated surveillance can improve standardisation and reduce workload by classifying patients into low or high probability of SSI.
Objectives: To develop novel AI models for predicting patients at low risk of deep and organ/space SSI and externally validate a rule-based classification model from The Netherlands, with the intent to compare the performance of these AI and rule-based models in SSI prediction and workload reduction.
Methods: We used a prospective SSI surveillance cohort in cardiac surgery, colorectal surgery, and neurosurgery. We extracted in-hospital data from the electronic healthcare records (EHR). The dataset was split into a training (80%) and validation set (20%). We trained several AI models to predict probability of deep and organ/space SSI using K-fold cross-validation. We assessed performance of the models using negative predictive value (NPV), areas under the receiver-operating characteristic curve (AUROC), workload reduction (WR), as well as false negative rate (FNR). We used the full cohort to externally validate a rule-based classification algorithm based on reoperations, ≥ 5 cultures or positive culture, antibiotic therapy ≥ 14 days, length of stay ≥ 14 days or readmission.
Results: We included 3,971 patients, with an overall deep and organ/space SSI rate of 4.5%. The Naive Bayes classifier with a Bernoulli assumption and the dense neural networks (DNN) were the best performing models, with NPV of 98.7% (95% CI 97.6–99.4%) and 98.9% (95% CI 97.88–99.6%), respectively; AUROC of 0.94 (95% CI 0.90–0.98) and 0.89 (95% CI 0.83–0.95), respectively; and WR of 88.3% and 80.5%, respectively. External validation of the rule-based model yielded a NPV of 98.5% (95% CI 98.1–98.9%), AUROC of 0.82 (95% CI 0.79–0.86) and WR of 92.8%. FNR for the Naïve Bayes, DNN, and rule-based model were 21% (95% CI 10–37%), 17% (95% CI 7–31%), and 31% (95% CI 24–39%), respectively.
Conclusion: Automation has the potential to make SSI surveillance much less resource-intensive. AI models may perform better than rule-based models, but need to be externally validated and may be more challenging to implement.

Disclosure of Interest
None declared.

O2

Technical feasibility of automated surveillance of hospital onset bacteraemia

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**O2

Introduction: Hospital-onset bacteraemia (HOB) is currently under study as a hospital-wide target to include in (fully automated) surveillance of healthcare-associated infections. In general terms, HOB is defined as a positive blood culture, more than two days after admission.
Objectives: We aimed to study the technical feasibility of an automated HOB surveillance. We aligned our definitions as much as possible with the draft definitions formulated by the PRAISE (Providing a Roadmap for Automated Infection Surveillance in Europe) Network.
Methods: Data on hospital admissions and blood cultures in the period 2017–2021 were collected in four hospitals (1 academic medical centre (AMC) and three teaching hospitals (TH)). We developed an algorithm to identify HOBs and assess whether the algorithm could be used for different types of data sources to ensure sustainability. HOB rates (number of HOBs/1000 patient-days) were calculated.
Results: It was technically feasible to develop the algorithm and identify HOBs in a fully automated fashion. The hospital-wide incidence of HOB was between 1.8 and 2.1 per 1000 patient days for the AMC, between 0.7 and 1.2 for TH 1 and between 1.3 and 2.0 for TH 2. The ICU ward had the highest HOB rate in all hospitals (range 6.0–12.2 for the AMC, 6.0–15.7 for TH 1 and 6.9–18.5 for TH 2). Results of TH 3 will follow. The most common causative micro-organisms of HOB were Enterococci and coagulase-negative Staphylococci (CNS) (both 20%) in the AMC, and Enterobacteriaceae (26 and 23%) in both THs, together with CNS (24%) in TH 2. At the ICU specifically, the most common cause of HOB in all hospitals were Enterococci (range 18–40%) and CNS (range 17–43%).
Conclusion: It is technically feasible to develop and test an algorithm that identifies HOBs. Since the surveillance of HOB was fully automated in this study, some choices were made on HOB episode duration, how to handle common skin commensals and polymicrobial HOBs. Further research should focus on the acceptance and interpretability of surveillance results.

Disclosure of Interest
None declared.

O3

Central line-associated bloodstream infections in the adult intensive care unit: assessment of the automated monitoring system

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**O3

Introduction: In the field of Healthcare Acquired Infections (HAI), Central Line-Associated Bloodstream Infections (CLABSI) surveillance is a quality indicator in critical care medicine. CLABSI incidence is low in our adult intensive care unit (ICU), notably thanks to the preventive measures that have been put into place. EpiScope is a fully automated CLABSI monitoring system developed and used at the Centre Hospitalier Universitaire Vaudois.
Objectives: The first objective of this study was to assess the abilities of EpiScope to detect and categorize bloodstream infections (BSI). The second objective was to identify paraclinical parameters that could be used to improve the algorithm's overall performance using a nested case-control study.
Methods: This retrospective observational cohort study included 310 patients between 2016 and 2021 in the adult ICU. EpiScope's performances were evaluated using indicators such as sensitivity (Se), specificity (Sp), predictive values (PPV/NPV) and likelihood ratios (LR+/LR-). Data was collected using electronic patient records. Regarding the second objective, patients in the control group were randomly selected within the cohort.
Results: EpiScope's initial and optimized performances are described by the following table.

Indicators	Initial performances	Optimized performances
Sensitivity	88%	94%
Specificity	89%	88%
Positive predictive value	50%	48%
Negative predictive value	98%	99%
Positive likelihood ratio	8.12	8.14
Negative likelihood ratio	0.13	0.07

No correlation between paraclinical parameters and the cases wrongly categorized by EpiScope could be brought forward by the case-control study, results being statistically non-significant ($p > 0.05$).
Conclusion: This study allowed us to perform a thorough analysis of all CLABSI cases identified within a 6-year timespan as well as to apply improvements to the algorithm using paraclinical parameters. EpiScope's optimized version allowed us to increase sensitivity. Given the low incidence rate of CLABSI, both likelihood ratios were improved. These results contribute to reinforce the implementation of prevention measures against HAI. Furthermore, this new version of EpiScope will be implemented in our ICU as our CLABSI surveillance system.

Disclosure of Interest
None declared.

O4

Real-time surveillance of catheter-associated bloodstream infections in intensive care units (ICUS): development and validation of a fully automated algorithm

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**O4

Introduction: Most of the current surveillance systems for catheter-related bloodstream infections (CRBSI) and central line-associated bloodstream infections (CLABSI) are based on manual chart review.
Objectives: Our objective was to validate a fully automated algorithm for CRBSI and CLABSI surveillance in ICUs.
Methods: We developed a fully automated algorithm to detect CRBSI, CLABSI and ICU onset bloodstream infections (ICU-BSI) in patients admitted to the ICU of a tertiary care hospital in Switzerland. The parameters of the algorithm were based on a systematic review we performed. Only structured data on demographics (age, sex), administrative data (admission & discharge dates), central vascular catheter (insertion & removal dates) and microbiological results (blood cultures and other clinical cultures) obtained from the hospital's data warehouse were processed by the algorithm. Validation for CRBSI was performed by comparing results with prospective manual BSI surveillance data over a 6-year period. CLABSI were manually checked over a 2-year period.
Results: From January 2016 to December 2022, 854 positive blood cultures were identified in 346 ICU patients. The median age was 59 y [IQR, 39–79]; 98 (28%) were female. The algorithm detected 5 CRBSI, 110 CLABSI and 280 ICU-BSI. The sensitivity, specificity, positive predictive and negative predictive values of the algorithm for CRBSI, were 83% (CI 35.9–99.6), 100% (CI 99.6–100), 100% (CI 47.8–100), 99.9% (CI 99.4–100), respectively. One CRBSI was misclassified as an ICU-BSI by the algorithm because the same bacteria, a *Pseudomonas aeruginosa*, was identified in the blood culture and in a lower respiratory tract specimen. Manual review of CLABSI from January 2020 to December 2021 ($n = 51$) did not identify any errors in the algorithm. The overall CRBSI and CLABSI incidence rates for the period 2016 to 2021 were 0.18/1000 catheter days (CI 0.057–0.41) and 3.9/1000 catheter days (CI 3.2–4.6).
Conclusion: A fully automated algorithm for CRBSI and CLABSI detection using only structured data provides valid results. The next step will be to assess the feasibility and external validity of this surveillance in a large hospital network.

Disclosure of Interest
None declared.

O5

Predicting healthcare-associated infections in European intensive care units using routine surveillance data and novel programming tools

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**O5

Introduction: The European Centre for Disease Prevention and Control (ECDC) coordinates European surveillance of healthcare-associated infections (HAIs) in intensive care units (ICUs), including collection, at ICU admission, of data on risk factors for HAI.
Objectives: Our objective was to investigate novel options for prediction models for HAIs during ICU stay.
Methods: We used 2014–2018 data from nine EU Member States, including age, gender, catheters, intubation, trauma-related admission, impaired immunity, severity score and antimicrobial use, all assessed at ICU admission, to train prospective models without considering length of stay (LOS) in the ICU, and retrospective models including LOS. Model design and configuration were obtained from the OpenAI's GPT-4, and the code was subsequently reviewed prior to implementation. No data was shared with GPT-4. The selected models were generalised linear model with logistic regression (GLM), eXtreme Gradient Boosting (XGBoost) and a transformer neural network (TNN). In-sample model performance was assessed on 2014–2017 data by the Area Under Curve (AUC) in tenfold cross-validation; out-of-sample performance was assessed on 2018 data. Variable importance was assessed by feature importance procedures.
Results: There were 278 516 patients with 30 196 HAIs included in the 2014–2017 data, and 74 658 patients with 7 344 HAIs in the 2018 data. Pneumonia was the most common type of HAI. The most important predictors for HAI were intubation at ICU admission and LOS.
Table. Model performance

Type of model	Model	In-sample 2014–2017 data: AUC mean (AUC range)	Out-of-sample 2018 data: AUC
Prospective, without LOS	GLM	0.67 (0.66–0.67)	0.68
	XGBoost	0.68 (0.68–0.70)	0.69
	TNN	0.67 (0.65–0.68)	0.68
Retrospective, with LOS	GLM	0.89 (0.88–0.89)	0.89
	XGBoost	0.90 (0.90–0.91)	0.90
	TNN	0.90 (0.90–0.91)	0.90

Conclusion: Retrospective prediction and identification of HAIs in the ICU can be useful for surveillance, whilst prospective prediction for infection control was less accurate and would require additional modelling steps to account for increasing risk of HAI over time. The use of new programming tools drastically improves accessibility of novel methods, which could outperform traditional linear models. However, data availability is key for their successful implementation.

Disclosure of Interest
None declared.

O6

Ventilator-associated events and traditional ventilator-associated pneumonia: Were we missing cases?

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**O6

Introduction: In 2013, the National Healthcare Safety Network (NHSN) replaced traditional ventilator-associated pneumonia (VAP) with ventilator-associated event (VAE). The VAE surveillance uses objective criteria to detect conditions and complications in adult patients.
Objectives: The aim of this study was to assess the consistency between VAE surveillance and traditional VAP surveillance.
Methods: This study was conducted at a teaching hospital in the United Arab Emirates with 3 adult intensive care units of 45 beds. Infection control professionals conducted prospective VAE and VAP surveillance between January and December 2022 following the Centers for Disease Control and Prevention's NHSN definitions. VAE events were classified as ventilator-associated condition (VAC), infection-related ventilator-associated complication (IVAC) and possible VAP (PVAP). ICPs applied the traditional VAP algorithm to analyze all VAE cases identified by the electronic health record.
Results: The study involved 10013 ventilator-days. The surveillance identified 96 VAE with 51 (53%) classified as VAC, followed by 28 (29%) IVAC and 17 (18%) PVAP at rates of 5.1, 2.8, and 1.7 per 1000 VD, respectively. Among 96 episodes of VAE, 9 episodes were classified as VAP according to the traditional VAP algorithm. Of these 9 VAP episodes, 6 (67%) were captured by VAE surveillance as PVAP, 2 (22%) as IVAC and one case (11%) as VAC. It was interesting to see that 11/17 cases (65%) of PVAP identified by VAE were not meeting the traditional VAP criteria. Of these 11 cases, 8 (72%) were clinically defined by physicians as pneumonia and treated.
Conclusion: Our data shows that many cases of possible VAP identified by VAE surveillance were not meeting the VAP traditional criteria, while three-quarters of these cases were clinically defined by physicians as pneumonia. VAE surveillance is less time-consuming, more objective than traditional VAP and identifies a variety of infectious and non-infectious complications which can be preventable at an early stage. More studies are needed to investigate concordance between VAE and traditional VAP.

Disclosure of Interest
None declared.

O7

Semiautomated surveillance system for health care-associated infections and antimicrobial resistance in university hospital Trnava, Slovakia: a single centre experience

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**O7

Introduction: The mandatory incidence surveillance system EPIS in Slovakia provides data indicating that health care-associated infections (HAIs) affect less than 1% of hospitalized patients. However, it is worth noting that manual and passive surveillance systems are still prevalent in Slovakian hospitals, along with a shortage of infection control professionals. In light of these challenges, exploring the potential of automation in infection control measures becomes crucial. This study aims to investigate how automation can contribute to mitigating HAIs and improving overall patient safety in Slovakian healthcare settings.
Objectives: We aimed to quantify changes in the number of HAIs and AMR in University Hospital Trnava after the introduction of a semiautomated surveillance system.
Methods: We presented data from semiautomated surveillance system (HAIDI, Datlowe) in 638—beds University Hospital Trnava in Slovakia. European Centre for Disease Prevention and Control (ECDC) definitions were used and patients hospitalised from January 2022 to December 2022 were included. Incidence of HAIs was calculated per 1000 patients days (PD).
Results: In total, 5638 suspected episodes of HAIs were detected with a semiautomated surveillance system, of whom 1095 (7,1/1000 PD) have confirmed HAIs. In comparison, during the last five years (2017–2021) of manually surveillance, an average of 5,3/1000 PD HAIs were recorded. The highest prevalence of HAIs was found in the intensive care units and the most common types of HAI were pneumonia (419 cases; 2,7/1000 PD) and urinary tract infections (290 cases; 1,9/1000 PD). The most frequently isolated microorganisms were SARS-CoV-2 (16.6%), *Klebsiella pneumoniae* (11.7%), and *Pseudomonas aeruginosa* (10.0%). Concerning resistance, we observed very high proportion of carbapenem resistant Acinetobacter baumannii (82.8%), carbapenem resistant Pseudomonas aeruginosa (30.7%) and KPC Klebsiella pneumoniae (19%).
Conclusion: Using the semiautomated surveillance system of HAIs and AMR is a new effective perspective, that replaces manual surveillance and provides reducing the time spent on surveillance, while obtaining more accurate results.

Disclosure of Interest
None declared.

Slide session 2: Measuring and improving antibiotic use

O8

2012–2021 Antimicrobial consumption monitoring in the Belgian ambulatory and hospital sectors

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**O8

Introduction: The Belgian National "One Health" Action Plan 2021–2024 for the fight against antimicrobial resistance stipulates the importance of monitoring the use of antimicrobials to limit the emergence of resistant bacteria.
Objectives: Antimicrobial consumption (AMC) in the Belgian ambulatory and hospital sectors was monitored according to the quantified objectives defined in this document.
Methods: The National Institute for Health and Disability Insurance supplies reimbursement AMC data for the ambulatory and hospital sectors (identified by the Anatomical Therapeutic Chemical (ATC) and expressed as Defined Daily Doses (DDD)), number of hospital admissions and patient days for all Belgian acute care hospitals. Hospital AMC is expressed in DDD/1000 patient days and DDD/1000 admissions. AMC data expressed in DDD/1000 inhabitants/day (DID) were collected from the *European Surveillance of Antimicrobial Consumption Network*. As reimbursement criteria for fluoroquinolones (FQ) changed in 2018, total FQ consumption was calculated from total sales and reimbursment data, using 2017 as the reference year.
Results: Despite a 19% reduction from 2019 to 2021, AMC in the Belgian ambulatory sector (ATC group J01) remains above the European (EU) mean, with considerable effort required to reach the 40% reduction target by 2024. While overall FQ consumption as a proportion of total J01 decreased from 11.5% to 7% between 2012 and 2021, it remains above the 5% target and increased from 2019 to 2021. A gradual improvement is observed in the amoxicillin:amoxicillin-clavulanic acid ratio, which increased from 46:54 in 2012 to 55:45 in 2021, but is still far from the target ratio 80:20.
In the hospital sector, from 2012 to 2021 we saw a 17.6% decrease in J01 AMC when expressed in DID despite a 10.1% increase when considering AMC in DDD/1000 patient days. A reduction in the use of *Access* antibiotics was detected (from 57.7% in 2012 to 55.0% in 2021) in favor of *Watch* and *Reserve* class antibiotics, thus Belgian acute care hospitals remain below the WHO target of 60%.
Conclusion: Despite a substantial improvement, AMC in the Belgian ambulatory sector remains above the EU mean. A significant increase in AMC in acute care hospitals was detected in DDD/1000 patient days, attributable to shorter hospital stays with more intensive antibiotic treatment.

Disclosure of Interest
None declared.

O9

Impact of ministry of health restriction policy on antibiotics consumption using seasonal variations analysis in Saudi Arabia, 2016–2020

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**O9

Introduction: In Saudi Arabia, the effectiveness of governmental interventions aimed at enhancing antibiotic use has not been adequately studied, and in particular, the possible impact of seasonality on antibiotic use over the years.
Objectives: The aim of this study was to determine if the antibiotics restriction policy launched by the Ministry of Health and took place in May, 2018 has led to more appropriate antibiotic use by measuring temporal trends changes and seasonal variation following the policy enforcement.
Methods: Quarterly sales data of J01 for systemic use in standard units were obtained from IQVIA database from the first quarter of 2016 to the last quarter of 2020. Consumption was expressed in DDD per 1,000 inhabitant-day. Winter months were defined as the first and fourth quarters of the tested years. Summer months were defined as the second and third quarters of the tested years. **C**onsumption was compared between pre- and post-policy periods by computing the average consumption within each period; then, independent samples t-test, Mann Whitney U Test was used to compare the mean difference of the two periods. The effectiveness of the restriction policy was further assessed by forecasting the antibiotic use of the post-policy period if the restriction policy was not implemented, then compared the forecasted consumption with the actual consumption during the correspondent period to assess the potential difference.
Results: During the pre-policy, there were seasonal trends of antibiotic consumptions through quarters with higher consumption were observed in first quarter and fourth quarter. However, antibiotic consumptions were significantly decreased after the restriction policy with mean changes of − 96.9 DDD (p-value = .002). The comparison between the forecasted and actual models that was used to assess the seasonal variations of the antibiotic consumption during the post-restriction policy showed that the actual antibiotics consumption was lower than the corresponding forecasted one.
Conclusion: Our analysis of antibiotics consumption for the years 2016 to 2020 displays a great success for the policy implemented by the Ministry of Health in significantly reducing the overall use of antibiotics.

Disclosure of Interest
None declared.

O10

Antibiotic consumption in Dutch nursing homes: 2017–2022

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**O10

Introduction: Elderly in nursing homes are vulnerable to infections. In light of increasing antibiotic resistance, prudent antibiotic use is critical.
Objectives: This study aims to gain insight in trends and variance in antibiotic consumption in Dutch nursing homes.
Methods: From 2017 onwards, a pilot surveillance system to monitor antimicrobial use was set up in the existing Surveillance Network Infectious diseases in Nursing homes. Yearly data on total antibiotic consumption and the number of beds per location were collected retrospectively. After cleaning the data, Daily Defined Doses (DDD) and DDD's per 1000 inhabitants (DID) were calculated to allow for comparison.
Results: During the five years 139 unique nursing homes participate in the surveillance, covering 13268 beds. The consumption of antibiotics decreased from 45.4 DID in 2017 (range: 19.3–135.3) to 31.8 DID in 2021 (range: 3.3–132.2). Combinations of penicillins incl. beta lactamase-inhibitors, nitrofuran derivates and fluoroquinolones are the most used therapeutics groups of antibiotics for systemic use. The use of combinations of penicillins with extended spectrum shows the sharpest decrease with 73% (4.1 DID (range:0.0–13.6) in 2017 vs. 1.1 DID (range: 0.0–8.2) in 2021). Tetracyclines follow with 45% (3.1 DID (range 0.0–7.2) in 2017 vs. 1.7 DID (range 0.0–13.4) in 2021). Thirdly, the use of combinations of penicillins incl. beta lactamase-inhibitors decreases with 37% (14.3 DID (range: 4.7–51.1) in 2017 vs. 9.0 DID (range: 0.3–42.3) in 2021). No significant increases were observed for any of the therapeutic groups.
Conclusion: Overall, the use of antibiotics for systemic use decreases over time. There are large differences in the total consumption between facilities. Surveillance of total antibiotic consumption in nursing homes for the elderly is an feasible way to gain insight in trends and variation in antibiotic use. In the coming years, the surveillance system is being further developed and expanded to include the indication for prescription and, in addition, other antimicrobials, such as antimycotics, are being added.

Disclosure of Interest
None declared.

O11

Antimicrobial monitoring in nursing homes: a target for antimicrobial stewardship

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**O11

Introduction: Inappropriate antimicrobial consumption (AMC) is a key driving force in the emergence of antimicrobial resistance (AMR). The Belgian "One Health" national action plan to combat AMR proposes quantified AMC targets for the ambulatory and hospital sectors, without specific consideration of nursing homes (NHs)-including such long term care facilities within the ambulatory sector.
Objectives: To identify differences in AMC, in relation to national and internation targets, in comparable populations inside and outside NHs.
Methods: The National Institute for Health and Disability Insurance (RIZIV) supplied reimbursement AMC data for the ambulatory sector, identified by the Anatomical Therapeutic Chemical (ATC) and expressed as Defined Daily Doses (DDD), for the period 2016–2022, aggregated according to the prescription month, province, patient age, gender and location inside or outside a NH. Population data of the number of insured beneficiaries, characterised by the same geographic and demographic variables were collected from the Intermutualistic Agency. AMC metrics for national and international targets were calculated and compared for analogous populations inside and outside NH facilities.
Results: Considering total AMC in DDD/1000 beneficiaries/day (DBD); we observe a significant reduction within NHs from 2016 to 2021 (spearman's rho = − 0.943, p = 0.0167), but total DBD remains more than double that of the comparable external population (student *t*-test *t* = 19.478, p = 6.6e − 06). Comparing ATC groups, we see proportionally lower volumes of tetracyclines, macrolides and beta-lactams prescribed within NHs, with higher proportions of urinary tract infection—treatments, such as nitrofuran derivatives and fosfomycin in both male and female patients. Considering prescription quality

metrics such as the ratio of second to first line treatments and the ratio of amoxicillin:amoxicillin-clavulanic acid, we observe consistently "worse" metrics within NH populations, with values diverging further during the COVID-19 era. We also observe divergent correlations between patient age and AMC and regional effects when comparing populations inside and outside NHs.
Conclusion: Given the differing infection risks and higher AMC of NH residents; stewardship efforts and AMC goals should be targeted for that fragile population.

Disclosure of Interest
None declared.

O12

Surgical antibiotic prophylaxis (SAP): Are institutional recommendations followed by surgeons and anaesthesiologists?

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**O12

Introduction: Despite high-quality evidence and well-established guidelines, there remains a gap between recommendations and clinical practice regarding SAP. Limited comprehensive studies have been recently conducted on the concordance between recommendations and SAP practices.
Objectives: To assess the concordance of administered SAP with institutional recommendations at a large tertiary care hospital in Switzerland.
Methods: Prospective cohort study (March 2019–February 2020), including various surgical procedures (emergency and elective), excluding contaminated/infected surgeries, paediatrics, ophthalmology, endoscopic/endoluminal interventions, transplants, digestive and urology surgeries. Evaluated parameters were antibiotic choice, dose, time interval to incision and first intraoperative re-administration. Concordance was determined by agreement between observed practices with institutional guidelines, categorizing parameters as concordant or discordant.
Results: 11′113 interventions with 11′512 opportunities were included.
Concordance rates of SAP administration were:

- 87% for antibiotic choice (range: 12% to 92% across specialties)
- 82% for adequacy of the chosen antibiotic dosage (range: 9% to 90%)
- 75% for time interval (range: 11% to 88%)
- 78% for intraoperative redosing (range: 10% to 88%)

Complete concordance with all parameters was observed in 8′404 (73%) SAP administration opportunities, of which 1′812 (16%) were interventions not requiring SAP. Protocol deviations were most frequently observed in maxillofacial and obstetric surgery.

Concordance/surgery	ATB	Dose	Interval	Redose	Total
CARDIOVASCULAR	86.9%	72.7%	67.4%	66.6%	5.2%
GYNECOLOGY	91.6%	89.2%	87.7%	85.2%	21.5%
MAXILLOFACIAL	11.9%	9.4%	10.6%	10.0%	1.4%
NEUROSURGERY	84.4%	80.7%	60.1%	62.6%	9.3%
OBSTRETICS	72.3%	62.6%	64.3%	72.0%	10.7%
ORL	81.6%	77.7%	76.9%	61.6%	8.8%
ORTHOPAEDICS	91.8%	86.6%	76.0%	85.6%	35.1%
PLASTIC	83.9%	81.7%	75.3%	73.4%	3.2%
THORACIC	89.0%	88.1%	87.2%	87.9%	4.9%
	86%	81%	75%	78%	100.0%

Conclusion: This analysis highlights substantial room for improvement in SAP administration at our hospital. Corrective measures are currently implemented by the use of a computer decision support system.

Disclosure of Interest
None declared.

Slide session 3: COVID-19: Only harm or lessons learned?

O13

COVID-19 infection prevention and control in the context of coronavirus disease: update from the World Health Association (WHO)

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**O13

Introduction: The *Infection prevention and control (IPC) in the context of coronavirus disease 2019 (COVID-19): a living guideline* consolidates IPC technical guidance developed and published during the COVID-19 pandemic into evidence-informed recommendations. The guideline development process reflects current and evolving epidemiological trends for COVID-19 and other contextual factors.
Objectives: The purpose of this presentation is to provide an overview of the guideline, the process and to highlight what is new or updated for IPC Practitioners in attendance. This includes evidence based recommendations for healthcare and community settings.
Methods: Providing timely IPC advice during a pandemic presented a number of challenges and opportunities. The guideline development process reflects different phases with the evolution and understanding of SARS-CoV-2, epidemiological findings, the impact of public health and social measures (PHSM), immunity in various settings and other contextual factors. A series of systematic reviews were commissioned and reviewed by the COVID-19 IPC Guideline Development Group (GDG). The GDG formulated recommendations in accordance with WHO methodology, including critical appraisal of the quality of evidence and strength of recommendations using GRADE approach.
Results: The final product is a living guideline, with transition from interim guidance to comprehensive evidence based recommendations, and a change in format and publication to an online platform (MAGIC App). The process included several lessons learned, reviewing real life data as it emerged to inform recommendations for IPC practice, quality of available evidence and research gaps.
Conclusion: This session will be of interest to policy and decision-makers, public health professionals, IPC professionals and focal points for occupational health and safety of health and care workers at the national, subnational and facility levels, healthcare facility administrators, managers, and other health and care workers. The authors recognize the valuable contribution of the GDG, as integral to the development and updating of IPC recommendations for COVID-19.

Disclosure of Interest
None declared.

O14

The effect of COVID-19 waves on surgical site infections and surgical patients in the Netherlands

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**O14

Introduction: In hospitals, the COVID-19 pandemic led to postponement of plannable surgeries, a related change in patient population and to an increased focus on infection prevention. This could potentially affect the risk to develop deep surgical site infections (SSI).
Objectives: We present preliminary results of the analysis on the effect of COVID-19 waves and intervening periods on the SSI risk in the Netherlands, for different surgeries.
Methods: Data from the Dutch national nosocomial surveillance network 'PREZIES', from acute care hospitals that participated annually in the SSI surveillance after orthopedic, mamma and bowel procedures during 2016–2021 were used. We distinguished 6 periods: pre-covid, 3 COVID-19 and 2 interim periods (Table 1). We calculated the odds ratio (OR) for SSI during the COVID-19 waves and interim periods compared to pre-covid, in a multilevel logistic regression model, clustered at hospital level, and correcting for a possible baseline trend and patient characteristics (gender, age and National Nosocomial Infection Surveillance-score).
Table 1:

Phase	
2016–2019 including Jan-Feb 2020	Reference period
1st COVID-19 wave	1 March–14 May 2020
1st interim period	15 May–30 Sep 2020
2nd COVID-19 wave	1 Oct 2020–31 May 2021
2nd interim period	1 Jun–30 Oct 2021
3rd COVID-19 wave	1 Nov–31 Dec 2021

Results: The number of surgeries decreased during the COVID waves, especially for orthopedics. Neither COVID-19 waves nor interim periods were associated with a change in SSI risk, except for the 1st wave with open sigmoid resection (OR 6.21 [95% confidence interval 1.56–24.8]), 2nd wave with knee prosthesis (0.68 [0.47–0.97]) and laparoscopic sigmoid resection (2.16 [1.12–4.17]) and the 1st interim period for lumpectomies (0.52 [0.30–0.89] and lap. colectomies (0.36 [0.13–0.99]). Analysis with COVID-19, respectively interim phases together revealed comparable associations, except for lap. colectomies (interim period n.s.).
Precovid NNIS scores for orthopedic, mamma as well as colon surgery patients increased over time. When taking into account this trend patients during COVID-19 waves often had lower NNIS-scores than precovid.
Conclusion: Preliminary analyses demonstrated that the COVID-19 waves were occasionally associated with changes in the adjusted SSI risk. Further analyses are needed to explain these findings.

Disclosure of Interest
None declared.

O15

Increase of peripheral venous catheter bloodstream infections during the COVID-19 pandemic

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**O15

Introduction: Several studies suggested that central venous catheter bloodstream infections (CVC-BSIs) increased since the beginning of the COVID-19 pandemic, but none focused on peripheral venous catheter bloodstream infections (PVC-BSIs).
Objectives: To investigate catheter-related/associated BSIs (CRBSI) with a focus on catheter type distribution during the COVID-19 pandemic in a large tertiary-care center.
Methods: All CRBSI episodes in hospitalized patients at Geneva University Hospitals between 1st January 2020 and 31st September 2022 were prospectively investigated. CRBSI were classified as PVC-BSIs, short-term CVC- and long-term CVC-BSIs. We analyzed the proportions of CRBSI by catheter type. Yearly incidence rate ratios (IRR) for CRBSI stratified for catheter type were evaluated by segmented Poisson regression models using aggregated monthly data, and patient-days as offset.
Results: Among 226 CRBSI included, we observed 79 PVC-BSIs, 88 short-term CVC-BSIs and 67 long-term CVC-BSIs. The proportion of PVC-BSIs increased during late 2021 and in 2022. The rate of PVC-BSIs significantly increased during 2021 (IRR 2.08, 95% CI 1.14–3.78) and 2022 (IRR 3.32, 95% CI 1.86–5.91) compared to 2020. Short-term and long-term CVC-BSIs incidences did not significantly increase in 2021 or 2022.
Conclusion: The increasing incidence of PVC-BSIs over the past two years should raise awareness and PVCs should be targeted for enhanced infection prevention measures. PVC-BSIs should be included in local and national surveillance systems.

Disclosure of Interest
None declared.

O16

What happens to multidrugresistant organisms (MDRO) during the COVID-19 pandemic? Results of a multicenter study in 84 hospitals in Germany

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**O16

Introduction: Despite the implementation of strict infection control measures in hospitals during the COVID-19 pandemic, there are numerous reports about an increased incidence rate of hospital aquired MDRO. Reasons given are the increase of antibiotic consumption, the reduced detection of MDRO with subsquent transmission, combined with the decrease of hand disinfectant (HD) consumption by health care workers.
Objectives: This study investigated the impact of COVID-19 on the incidence rates of MDRO, antibiotic and hand disinfectant consumption.
Methods: Retrospective, multicenter study in 84 hospitals from primary to tertiary care level in Germany. Comparison of the incidence density of MDRO per 10.000 patient days (pd) age group related, the antibiotic consumption in recommended daily doses (RDD) per 100pd and the hand disinfectant consumption per pd. MDRO refers to MRSA, VRE and multidrug resistant gram negative organisms. Baseline period was from March 2019 to February 2020, compared with the first year of COVID-19 pandemic from March 2020 to February 2021 and subsequently the second year from March 2021 to February 2022. The data were expressed as mean (standard deviation). To compare the difference between the baseline and the pandemic years, we used a two sided sign test.

Results: A significant reduction in the incidence rates of MDRO over the first 2 years of COVID-19 pandemic, compared to the baseline period was observed in all age groups ($p < 0.001$). For nosocomial incidence rates of MDRO, no significant reduction was found. An increase of antibiotic consumption from 41.1RDD per 100pd (baseline period) to 45.0 and 44.5RDD per 100pd in the pandemic periods was recorded. Hand disinfection consumption increased in the first year of COVID-19 pandemic compared to the baseline period on non ICU wards from 10.3 to 12.2 HD per pd. No change on hand disinfection consumption on ICU wards.
Conclusion: The incidence density of MDRO was significantly decreased during the COVID-19 pandemic. Outbreaks or an increased import of carbapenem resistant Gram negativ organisms were not observed. The higher antibiotic consumption was due to an increased use of reserve antibiotics. The hand disinfection consumption was constant over the COVID-19 pandemic, exempt the first year with an increase on non ICU wards, hence COVID-19 wards been established and fewer elective patients admitted.

Disclosure of Interest
None declared.

O17

Epidemiology of multidrug-resistant organisms (MRSA, CRA, ESBL-producing enterobacterales) before and during COVID-19 in Hong Kong

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**O17

Introduction: The coronavirus disease 2019 (COVID-19) has influenced antimicrobial consumption and the incidence of multidrug-resistant organisms (MDROs). Each healthcare facility may have unique characteristics leading to an increase or a decrease in incidence of MDROs.
Objectives: We aimed to study the epidemiology of MDROs before and during the COVID-19 pandemic in Hong Kong.
Methods: With the maintenance of infection control measures, we described the trend of MRDOs infections, including methicillin-resistant *Staphylococcus aureus* (MRSA), carbapenem-resistant *Acinetobacter species* (CRA), and extended-spectrum-beta-lactamase (ESBL)-producing Enterobacterales, in a healthcare region (Hong Kong West Cluster) with 3400-bed before (1 January 2016 to 31 December 2019, period (1) and during COVID-19 (1 January 2020 to 30 September 2022, period (2), together with the antimicrobial consumption using piecewise Poisson regression. The epidemiological characteristics of newly diagnosed COVID-19 patients with or without MDROs infection were also analyzed.
Results: Between period 1 and 2, we observed a significant increase in the trend of CRA infections ($p < 0.001$), while there was no significant change in the trend of MRSA ($p = 0.742$) and ESBL-producing Enterobacterales ($p = 0.061$) infections. In addition, a significant increase in the trend of carbapenems ($p < 0.001$), extended-spectrum-beta-lactam-beta-lactamase inhibitor combinations (BLBI) ($p = 0.045$), and fluoroquinolones ($p = 0.009$) consumption was observed. The observed opportunity ($23{,}540 \pm 3{,}703$ vs $26{,}145 \pm 2{,}838$, $p = 0.359$) and compliance (81.6 ± 0.5 vs 80.1 ± 0.8, $p = 0.209$) of hand hygiene per year was maintained. In a multivariable model, we found that older age, male sex, referral from residential care home for the elderly, presence of indwelling device, presence of endotracheal tube, and use of carbapenems, use of BLBI, use of proton pump inhibitors, and history of hospitalization in the past 3 months were associated with a higher risk of MDROs infections among COVID-19 patients.
Conclusion: This study shows that infection control measures may control the surge of MDROs despite an increasing trend of antimicrobial consumption.

Disclosure of Interest
None declared.

O18

Using behavioral insights to understand barriers to the use of personal protective equipment when caring for residents with COVID-19 in long-term care facilities—a mixed methods study in Finland

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**O18

Introduction: Infection prevention and control practices are often suboptimal during emergencies. Behavioral insights can be used to explore barriers and facilitators associated with behaviors and to develop theory-based interventions to modify the behaviors.
Objectives: Our study explored the reasons for healthcare workers' (HCW) noncompliance with personal protective equipment (PPEs) in long-term care facilities (LTCF) in Finland during the pandemic. The study also evaluated PPE education and training opportunities for HCWs during the pandemic.
Methods: The study included a web-based survey and a qualitative study based on a behavioral insights framework, Theoretical Domains Framework (TDF). The survey used convenience sampling. The link to the anonymous survey was distributed via email to LTCFs through regional infection control experts during May-June 2022. Survey data was analyzed by using ordinary logistic regression, difficulties in PPE compliance being the outcome. Interviews were conducted among survey respondents who volunteered during June-August 2022 to gain an in-depth understanding of the behavioral domains associated with PPE compliance. Interview data were analyzed thematically using (NVIVO12).
Results: A total of 373 HCWs responded to the survey; 56% had received training on how to use PPE. Two behavioral domains were identified as negatively influencing PPE compliance: environmental context and resources, which meant a lack of human resources (Odds ratio [OR], 0.34; 95% Confidence interval [CI], 0.18–0.63) and the presence of negative emotions (OR, 2.92; 95% CI, 1.51–5.67) that were associated with stress. Twenty-two HCWs participated in the interviews which resulted in the identification of several themes that explain how a lack of human resources and negative emotions impacted the use of PPE.
Conclusion: The insights generated by this study can be used to develop interventions to improve HCW adherence with the use of PPE, which includes ensuring universal access to standardized training on the use of PPE, developing stress-reducing interventions, and ensuring a sufficient workforce during a crisis.

Disclosure of Interest
None declared.

O19

Perceptions on uptake of PPE, physical barriers and distancing in the context of COVID-19: a qualitative evidence synthesis

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**O19

Introduction: This study sought to identify qualitative evidence on the perceptions and experiences of Health and Care Workers (HCWs) of Personal Protective Equipment (PPE), physical barriers, and distancing interventions for the prevention of COVID-19. Results may improve infection prevention and control (IPC) guidelines by informing the Evidence to Decision framework (e.g., acceptability, feasibility, values and preferences) used to develop equitable and attenable guidelines.
Objectives: Despite the effectiveness of IPC interventions for preventing SARS-CoV-2, low uptake of these interventions among HCWs persists. By contextualizing the conditions that facilitate or hinder the uptake of and adherence to these interventions, IPC programmes can more appropriately implement IPC measures.
Methods: This qualitative evidence synthesis (QES) was conducted as a rapid review using Cochrane Methods. Search terms included COVID-19, IPC, perceptions, barriers and facilitators. After data extraction, the Critical Appraisal Skills Programme was used to appraise the methodological quality. Qualitative data were synthesized using a thematic synthesis, exploring factors influencing uptake and adherence to the intervention using a best-fit framework.
Results: Eighteen qualitative studies were in the QES: 11 (37%) related to masks and PPE use in healthcare settings and 7 (23%) to physical distancing and spatial separation. HCWs value the protection provided by PPE, though experienced considerable discomfort wearing PPE and thought using PPE affected their ability to offer relational care, build relationships with patients and communicate with colleagues. Clinical workflows and structural limitations influenced compliance with physical distancing.
Conclusion: Guideline development efforts on PPE should incorporate considerations for reducing discomfort and occupational challenges associated with using PPE. Values and belief systems shaped the perception and uptake of PPE. Gaps between IPC protocols and the utilization of PPE pose concerns for protection of HCWs. HCWs' perceptions of spatial barriers and distancing influence the acceptability and feasibility of guidelines.

Disclosure of Interest
None declared.

Slide session 4: Modelling: New wave of infection control

O20

The role of airborne transmission in COVID-19 clusters: epidemiological investigation, genomic analysis and aerosol modelling

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**O20

Introduction: The COVID-19 pandemic raised concerns that virus-laden aerosols produced by infected patients could endanger healthcare workers and uninfected patients.
Objectives: Characterization of the airborne transmission mode of SARS Cov-2, during two Covid-19 clusters in January and April 2021 in a Pneumology department**.**
Methods: Faure stages of investigation

1. Epidemiological survey with cluster chronogram.
2. Environmental investigation: air sampling for SARS Cov-2
3. Genotypic comparison of SARS Cov-2 strains from patients and caregivers.
4. Computer Fluid Dynamics (CFD) simulation of airflows and pathogens emitted by patients in the rooms and corridors of the department.

Results: 31 nosocomial cases were detected in total during both cluster phases, including 14 caregivers (attack rate 23%) and 17 patients (attack rate 39%). A single genomic profile was identified during the first cluster for patient and caregiver strains. 9 out of 35 air samples collected which went through RT-PCR testing had positive results (26%). Viral cultures of those samples were however negative. Air renewal in the patient rooms was very low, around ~ 2.8 Air Changes per Hour (ACH). In addition to this, an extensive CFD study showed that room geometries and specific ventilation elements (chilled beams with low ACH) led to low extraction of airborne particles emitted by patients, high and inhomogeneous stagnation within their rooms, and dispersion in corridors when doors were open. Subsequent air quality measurements confirmed particle concentration patterns (concentration is 8 times higher at the foot of the bed than near the extraction) and dynamics (1 h 15 min to extract 90% of aerosols) predicted by CFD.
Conclusion: Insufficient air exchange with a lack of extraction seemed to contribute effectively to the airborne transmission of infected aerosols to the healthcare workers. The lack of goggles worn by healthcare workers accelerated the spread of the epidemic strain in the ward.

Disclosure of Interest
None declared.

O21

Monitoring contacts to efficiently control pathogen spread in hospital settings

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**O21

Introduction: Transmission of pathogens such as methicillin-resistant *S. aureus* (MRSA) in long-term care facilities (LTCF) highly depends on contact patterns between and within patients and staff. Characterising the contact network is essential to implement effective interventions against MRSA.
Objectives: Based on real close-proximity interaction data collected over 4 months in a LTCF we explore pharmaceutical and non-pharmaceutical interventions to maximise the reduction in colonisation incidence whilst minimising the number of people targeted.
Methods: We built an individual-based model to simulate MRSA colonisation transmission dynamics over a reconstructed realistic contact network in the LTCF. Using the model we examined the impact of targeting groups of individuals with three interventions to reduce colonisation incidence: staff reallocation reducing the number of unique contacts per staff; reinforced contact precautions reducing the risk of patient-to-staff and staff-to-patient transmission; and vaccination partially protecting those vaccinated against transmission from any other individual.
Results: When targeting selected staff categories, contact precautions were more effective than reallocation. By explicitly targeting "supercontactor" individuals, instead of randomly selected individuals, we can maximise the effect of these interventions. Supercontactors can be frequency-based (highest number of unique contacts), or duration-based (longest cumulative time spent in contact). Among staff, contact

precautions or vaccination targeting frequency-based supercontactors (mostly care assistants) was most effective, whilst among patients targeting duration-based (mostly persistent-vegetative state patients) was best. For an equal number of individuals targeted, vaccination of duration-based patient supercontactors systematically prevented the highest number of colonisations.
Conclusion: Identifying supercontactors is key to implement effective interventions against pathogen spread in LTCF. Patients should be included in such interventions, as they can also be supercontactors. The nature of these supercontactors will vary depending on the healthcare institution. Our analysis demonstrates the value of collecting and analysing contact data in healthcare settings to inform intervention implementation.

Disclosure of Interest
None declared.

O22

Excess mortality and length of stay associated with nosocomial COVID-19 in outbreaks in a geriatrics department

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**O22

Introduction: Nosocomial Covid-19 (n-Covid-19) can negatively impact patient outcomes, and places a large burden on hospitals. There is no strong evidence to date capturing the excess burden of disease, in terms of mortality and length of stay (LOS), of n-Covid-19.
Objectives: To provide estimates of excess mortality and LOS of n-Covid-19 during the first pandemic wave in a geriatrics department using uninfected patients as comparators.
Methods: We performed a retrospective cohort study including all patients with n-Covid-19 in the Department of Rehabilitation and Geriatrics of Geneva University Hospitals (Switzerland), March 1 to May 7, 2020. We selected uninfected controls from the same wards as the nosocomial Covid-19 patients, with a ratio of 2:1. We developed a fully parametric multistate model within a Bayesian framework to estimate the competing hazards of death and discharge for both n-Covid-19 and uninfected patients. We calculated cause-specific hazard ratios (csHR) for death and discharge from the posterior distributions, along with 95% credible intervals (95%CrI). We also calculated population-attributable fractions for mortality (PAF-M) and population-attributable LOS (PA-LOS), which are the proportion of deaths or the prolongation in LOS, respectively, that could theoretically be avoided if n-Covid-19 could have completely been prevented.
Results: We included 83 n-Covid-19 patients and 171 uninfected controls. Mean age was 85 years for both groups. Median LOS was 65 (interquartile range (IQR) 40–101) and 33 (IQR 17–62) days for n-Covid-19 patients and uninfected controls, respectively. Mortality was higher in patients with n-Covid-19 (n = 21, 25%) than in uninfected controls (n = 18, 10.5%). The csHR for death was 2.01 (95%CrI 1.04–3.55) and for discharge was 0.68 (95%CrI 0.50–0.89). PAF-M was 27.8% (95%CrI 9.1–47.6), and PA-LOS was 2.08 days (95%CrI − 0.4 to 4.9), with a 95% posterior probability that PA-LOS > 0.
Conclusion: Nosocomial Covid-19 during the first pandemic wave was associated with significant adverse health-economic outcomes among elderly hospitalised patients. This justifies heightened efforts to better protect the elderly patients from nosocomial respiratory viral infections.

Disclosure of Interest
None declared.

Slide session 5: IPC challenges and progress in low- & middle-economy countries

O23

Incidence and clinical characteristics of clostridium difficile infection in a Chinese tertiary hospital: a growing challenge in China?

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**O23

Introduction: *Clostridium difficile* (*C. difficile*) has long been recognized as a prominent pathogen in North America and Europe, while historically it has been a rarity in Asia during the 2010s. Despite an emerging body of evidence indicating an increasing number of *C. difficile* infection (CDI) cases among patients with diarrhea, the extent of healthcare-associated CDI (HA-CDI) in a substantial cohort of hospitalized patients in China remains unclear.
Objectives: To investigate the extent of HA-CDI in a substantial cohort of hospitalized patients prospectively.
Methods: A comprehensive CDI surveillance program was implemented in 2020, utilizing a real-time nosocomial infection surveillance system, to prospectively investigate the epidemiology of CDI. During which *The Guidelines for the prevention and control of C. difficile nosocomial infection in China (2017)* was used for diagnosis.
Results: From January 1, 2020, to March 31, 2023, a total of 747,540 inpatients were monitored. Among those, 7,345 patients with diarrhea were tested for *C. difficile*, of which 6.04% (444/7,345) were toxigenic *C. difficile*. while 16.32% (1,199/7,345) exhibited a positive result for glutamate dehydrogenase (GDH) and a negative result for toxin enzyme immunoassay (EIA). The overall incidence of HA-CDI was 5.94 per 10,000 inpatients. The mean age of patients diagnosed with HA-CDI was 57.8 ± 0.53 years, and the average length of hospitalization was 36.8 ± 0.94 days, compared to the hospital-wide mean length of stay of 7.55 days.
In terms of the departments being detected HA-CDI, 76.0% (38/50) of departments were detected HA-CDI. Notably, based on infection rates, the departments with the highest incidence of infection were geriatrics (44.37/10,000 inpatients), hematology (41.76/10,000 inpatients), infection (33.89/10,000 inpatients), nephrology (19.71/10,000 inpatients), rehabilitation (17.03/10,000 inpatients), and the ICU (8.77/10,000 inpatients). Meanwhile, two outbreak cases were identified in two departments, affecting a total of 17 inpatients across 5 wards.
Conclusion: *C. difficile* represents a significant pathogen contributing to nosocomial infection. HA-CDI is prevalent in high-risk departments. The escalating burden of HA-CDI necessitates the implementation of ongoing nationwide surveillance systems.

Disclosure of Interest
None declared.

O24

Colonization with antibiotic-resistant bacteria in hospitals and communities across four countries: Bangladesh, Botswana, Guatemala, and India

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**O24

Introduction: The burden of antimicrobial resistance (AR) is greatest in low- and middle-income countries (LMICs), but limitations in surveillance preclude accurate estimates of AR.
Objectives: We aimed to evaluate colonization across communities and hospitals for two clinically important pathogens: extended-spectrum cephalosporin-resistant Enterobacterales (ESCrE) and carbapenem-resistant Enterobacterales (CRE).
Methods: Participants in hospitals and communities provided rectal swabs or stool samples for ESCrE and CRE identification. Isolates recovered from selective agars underwent confirmatory identification and antibiotic susceptibility testing using Vitek® 2, MALDI-TOF, and/or disc diffusion testing. Phenotypic definitions were uniformly applied across sites to calculate prevalence of colonization.
Results: A total of 6437 participants provided samples; 63% were females with a median age of 35 years (range: 0–99). Colonization with ESCrE was high in both hospitals and communities across study sites (range 25–86%) with CRE colonization less common and substantially lower in the community (range 0.6–15%). The predominant organisms isolated across all sites were *Escherichia coli* and *Klebsiella pneumonia*.
Table. Prevalence of Colonization with Antibiotic Resistant Organisms in Participants from Hospitals and Communities by Country

Organism	Site	Bangladesh		Botswana		Guatemala		India	
		N	%	N	%	N	%	N	%
ESCRE	Hospital	719	86%	469	39%	641	61%	556	85%
	Community	714	79%	2000	25%	518	41%	757	76%
CRE	Hospital	719	35%	468	7%	641	33%	556	23%
	Community	714	9%	2000	0.6%	518	1.2%	757	15%

Conclusion: These findings reveal a high burden of AR colonization in LMICs in both communities and hospitals. Further investigations are needed to evaluate the risk factors and geographical differences in AR colonization to inform prevention strategies.

Disclosure of Interest
None declared.

O25

Risk factors for neonatal colonisation with extended-spectrum beta-lactamase *Klebsiella pneumoniae* on a Malawian neonatal unit

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**O25

Introduction: *Klebsiella pneumoniae* (KPn) is a leading cause of neonatal infection in low-income countries. It has high rates of antimicrobial resistance genes, including Extended-Spectrum Beta-Lactamases (ESBLs), which confer resistance to 3rd generation cephalosporins. It commonly causes healthcare associated infection, however, best IPC practice in low-resource healthcare settings is unknown as there are specific challenges which necessitate a different focus; such as the role of mothers in providing care for inpatient neonates, and the sharing of cots.
Objectives: This study describes the factors affecting neonatal colonisation with ESBL KPn on a Malawian neonatal unit to guide IPC practice.
Methods: We recruited neonate-mother pairs on a neonatal unit in Blantyre, Malawi, and collected stool samples every three days. We also took hand swabs from mothers and staff, cot swabs and swabs from the ward environment. We isolated ESBL KPn using selective agar, speciated them using PCR and performed whole genome sequencing (WGS). We analysed risk factors for neonatal colonisation with ESBL KPn using a state transition model that dealt with the interval censored data by estimating the actual day of colonisation alongside other variables.
Results: Colonisation with ESBL Kpn was rapid. ESBL KPn was common on the ward; including on mothers hands, the cots and oxygen equipment. Our model highlighted female sex, oxygen therapy and antibiotics as risk factors for neonatal colonisation and showed that colonisation may be occurring earlier than is apparent by sampling every three days. WGS indicated that maternal hand and cot contamination contributed most to neonatal colonisation.
Conclusion: ESBL KPn colonised neonates rapidly and was found ubiquitously on the ward. Key areas implicated in transmission include maternal hands, cots, and oxygen equipment. IPC measures should focus on maternal hand hygiene, ensuring single-use oxygen tubing, and a reduction in the sharing of cots.

Disclosure of Interest
None declared.

O26

Assessment of the minimum requirements for infection prevention and control (IPC) programme at the national level in Sierra Leone

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**O26

Introduction: The World Health Organization (WHO) guidelines on core components and minimum requirements for Infection Prevention and Control (IPC) are the foundation for effective IPC programmes at national and health facilities. WHO and US. CDC supported the establishment of IPC programs in Sierra Leone during the 2014–2016 West Africa Ebola outbreak. An ongoing effort has been to improve and sustain the programs based on the theses guidelines.
Objectives: To assess the level of achieving the WHO minimum requirements (MR) for IPC at the national level.
Methods: A consultative meeting involving the national IPC team, Ministry of Health stakeholders, WHO (Regional and National IPC teams) and other partner organizations was held to do an objective evaluation of the national IPC program. This IPC performance assessment was carried out using the IPC Assessment Tool for the minimum requirements (IPCAT-MR) at the national level. IPCAT-MR is a standardized tool that assesses the Six WHO Core IPC components at the national level and covers a total of 25 indicators all of which were scored either 'YES' for achieved or 'NO' for not achieved. Percentage scores were derived for each component and categorized as "Achieved"(100%) or "Not Achieved"(< 100%).
Results: With an overall score of 52%, the national IPC program has not fully achieved the minimum requirements. Only one (Multimodal strategy) of the six components has achieved the requirements, and both IPC program and IPC guidelines scored 60%. The program has a clear objective and plan but without a dedicated budget allocation, and the updated national IPC guideline has not reached nationwide coverage. The least, Education/training (25%) even though the programme provides content and support training for health workers there are gaps in in-service training and evaluation of the effectiveness of IPC training. Also, the program is yet to have strategic plans for HAI surveillance (34%) and IPC monitoring (40%) with an integrated data management and feedback system.

Conclusion: Although there have been encouraging improvements in IPC implementation of the national IPC program, it is yet to fully achieve the WHO minimum requirements. There is a need to prioritise actions to have the minimum requirements in place at the national level starting with the IPC program and guidelines.

Disclosure of Interest
None declared.

O27

Reduction of colonization and infection by drug-resistant organisms in a healthcare institution in Cali, Colombia—South America

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**O27

Introduction: Colonization/infection by multidrug-resistant organisms (MDROs) is associated with increased morbidity and mortality in developing countries. Since 2014, we have implemented a strategy to reduce colonization/infection by MDROs in hospitalized patients.
Objectives: To reduce colonization and infection by MDROs in a healthcare institution in the city of Cali, Colombia, between 2014 and 2022.
Methods: Descriptive observational study conducted from April 2014 to December 2022. Rectal screening was performed upon admission for referred and readmitted patients. Hand hygiene, daily bathing with Chlorhexidine and restriction of moisturizing creams and jewelry in patients were implemented. Contact precautions were implemented for patients with detection of Carbapenemase-Producing Enterobacteriaceae (CRE) and standard precautions were followed for patients with Extended-Spectrum Beta-Lactamase (ESBL). Antibiotic consumption was calculated using Defined Daily Doses (DDD). The prevalence of CRE colonization, MDRO percentage, rates of Healthcare-Associated Infections (HAI) for CRE and ESBL were calculated. ANOVA test was used to analyze differences in rates between years, and post-ANOVA to determine which years were different since the start of the intervention.
Results: Hand hygiene compliance ranged from 79 to 85%, daily bathing with chlorhexidine ranged from 92 to 97% and contact precautions were followed in approximately 70% of cases. CRE colonization was higher among referred patients and a decrease in HAIs caused by CRE and total MDRO isolates was observed.
Rate HAI for ERC.

Year	Rate × 10,000 días pac	Decrease	p Value
2014	2.28		
2015	0.65	− 1.63	0.015
2016	1.34	− 0.94	1.000
2017	0.47	− 1.82	0.003
2018	0.84	− 1.44	0.061
2019	0.62	− 1.67	0.011
2020	0.78	− 1.51	0.037
2021	0.36	− 1.92	0.001
2022	0.43	− 1.85	0.003

Conclusion: Reduction in skin colonization by MDROs in patients and the risk of cross-transmission can be achieved. In Colombia, contact precautions are also used for ESBL organisms, increasing the demand for isolation beds. The use of standard precautions in patients with ESBL organisms, combined with daily bathing with chlorhexidine, enables safe care and contributes to resource optimization.

Disclosure of Interest
None declared.

O28

Improving environmental cleaning: a stepped wedge cluster trial across thirteen Cambodian hospitals

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**O28

Introduction: Environmental hygiene is a key component of infection prevention in healthcare, and a driver of healthcare-associated infections. One of the recommended trainings for improving environmental hygiene for low-resourced facilities, the TEACH CLEAN package, uses a training of trainers model. A selected cadre "champions" which in turn train their peers with responsibilities on environmental hygiene at the facility level. Early pilot data to test its effectiveness of this training package are very promising.
Objectives: The main objective is to evaluate the effectiveness of an environmental cleaning bundle to improve microbiological cleanliness in Cambodian hospitals—the CLEAN FRONTLINE study.
Methods: TEACH CLEAN was implemented across all hospitals (13) of three provinces in Cambodia. A stepped wedge randomised trial was used to evaluate the effectiveness of the training package to improve microbiological cleanliness in Cambodian hospitals. All facilities received the intervention at four distinct time points—the timing was randomised. The design included eleven months of data collection. The main outcome is microbiological cleanliness (< 2.5 cfu/cm2 = clean; ≥ 2.5 cfu/cm2 = not clean) measured using a non-specific agar on one side for measuring total Aerobic Colony Counts (ACC/cm2). Along the main impact evaluation, we also conducted a process evaluation based on qualitative interviews and structured questionnaire responses.
Results: The cleanliness level during the non-intervention period was overall 47.4%. We are currently undertaking the main analysis of the trial data and the process evaluation data that we aim to share during the conference.
Conclusion: This is the first randomised trial of environmental cleaning in a low-resource setting. Evidence from this trial contributes to future policy and practice guidelines about hospital environmental hygiene and ultimately could reduce healthcare-associated infections.

Disclosure of Interest
None declared.

Slide session 6: Environmental Control: Smoke on the water?

O29

Improvement and validation of a self-assessment tool for healthcare environmental hygiene

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**O29

Introduction: Healthcare environmental hygiene (HEH) is increasingly recognized as important in infection prevention and control. The Healthcare Environmental Hygiene Self- Assessment Framework

(HEHSAF) is a tool geared towards HEH managers and meant to help identify areas for improvement. A pilot study using an earlier version of the tool was conducted by Clean Hospitals in 51 healthcare facilities in 35 countries (*AJIC* 2022, 12:50, 1302–1310).
Objectives: 1. To expand the tool's scope 2. To finalize the content 3. To develop a scoring system 4. To validate the tool for global use.
Methods: The data and feedback from the pilot survey were analyzed to improve the tool and expand it to include a wider range of elements in HEH. Questions were classified as scorable or not, and a scoring system was developed. An expert group reassessed and improved the content and scoring. The HEHSAF was uploaded into the online platform REDCap. The tool was then sent to 10 partner hospitals in 7 countries. Semi-structured interviews to collect feedback for tool improvement were conducted in early 2023.
Results: Of the 9 hospitals that completed the survey, 7 participants had phone interviews. On average, survey completion took 63 min (range: 30–120). All respondents agreed that the HEHSAF was logical and contained appropriate questions. Using the HEHSAF made 5/7 participants more aware of their HEH programs and helped 6/7 identify areas for improvement. Although all participants were able to find the information needed to fill out the tool, 3/7 participants needed additional input from colleagues. Minor comments resulted in the addition of a question, helped clarify wording and optimized functionality of the online tool.
Conclusion: The HEHSAF is now a 96-question online tool which is ready for use by healthcare facilities. It is currently only published in English, but in the process of being translated into other languages as well.

Disclosure of Interest
None declared.

O30

Evaluation of the cleaning efficacy of microfiber cloths used in a clinical setting

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**O30

Introduction: Due to their ability to remove soil and microorganisms, microfiber cloths are increasingly used in healthcare settings for cleaning hard surfaces in patient rooms. However, literature concerning the cleaning efficacy of worn microfiber cloths is scarce.
Objectives: The aim of this study is to evaluate the cleaning efficacy of worn microfiber cloths vs. new microfiber cloths.
Methods: Worn cloths that are currently being used for cleaning were taken from the hospital laundry facilities and compared with new cloths that were only laundered once. The surface of a laboratory table was soiled in a standardized method: soil type Browne's Steris was used in combination with a stock solution of *S. aureus* (100.000 cfu/mL). 100 µL of this suspension was distributed over a surface (7 × 7 cm) and left to dry for one hour. Samples prior and after cleaning were taken with a RODAC (Replicate Organism Detection and Counting) TSA (Oxoid, 25 cm^2). CFUs were counted after 48 h of incubation on 35 °C. The difference between the mean numbers of CFUs was then calculated before and after cleaning. A Mann–Whitney U test was used for comparison.
Results: In total, 40 new microfiber cloths and 40 used microfiber cloths will be compared. The study is ongoing, but a preliminary analysis of 10 new microfiber cloths versus 15 used microfiber cloths showed a statistical difference (mean value reduction from 668 to 0.1 CFU/25 cm^2 for new microfiber cloths vs mean value reduction from 557.3 to 61.3 CFU/25 cm^2 for worn microfiber cloths, P-value < 0.001), with new microfiber cloths showing a better performance (Table).
Table: mean values of CFU/25 cm^2 before and after cleaning

	CFU before cleaning (mean, SD)	CFU after cleaning (mean, SD)
New microfiber cloths	668.0 (62.7)	0.4 (0.7)
Worn microfiber cloths	557.3 (68.4)	61.3 (146.3)

Conclusion: Preliminary data collection suggests that microfiber cloths should be changed more frequently, even before visual wear is present. Final results to be presented at ICPIC meeting.

Disclosure of Interest
None declared.

O31

Multicenter investigation on the identification and assessment of stains and defects in surgical instruments at material and sterilization centers

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**O31

Introduction: Effective cleaning and inspection procedures performed by nursing professionals within the Material and Sterilization Center play a crucial role in maintaining the quality and safety of healthcare product processing. However, surgical instruments that exhibit stains, oxidation, and corrosion pose significant risks, potentially leading to adverse events for patients.
Objectives: To assess stains and alterations in surgical instruments within material and sterilization centers.
Methods: A cross-sectional, multicenter, descriptive study was conducted in three hospitals in the central region of São Paulo, Brazil, from March to May 2023. Hospital A was a public facility, while Hospitals B and C were private institutions. Surgical instruments were randomly sampled and subjected to detailed inspection using an eight-fold magnifying lens. Data collection utilized a researcher-designed form based on the guidelines provided by the Aesculap Academy.
Results: A total of 900 surgical instruments were evaluated, encompassing forceps, scissors, retractors, needles, and holders. Among the instruments assessed, 365 (41.0%) exhibited spots or stains, 312 (35.0%) displayed changes in coloration, and 133 (15.0%) demonstrated signs of corrosion or oxidation. Significant associations were observed between the use of drinking water for rinsing surgical instruments, water quality, the utilization of neutral detergent, and alterations in coloration, corrosion or oxidation, as well as spots and stains on the instruments (p < 0.001). Notably, Hospital A's physical–chemical analysis reports indicated increased conductivity and hardness, while microbiological analysis revealed the presence of heterotrophic bacteria and endotoxins.
Conclusion: This study reveals significant alterations in surgical instruments, including spots, stains, oxidation, and corrosion, which pose potential risks to patient safety. The inspection stage emerges as a critical step in identifying issues that may impact instrument functionality, water quality, and the source of water employed during the cleaning process.

Disclosure of Interest
None declared.

O32

Individual clones of enterobacterales harboring carbapenemase-genes persist over 2.5 years in the main wastewater line of a tertiary care hospital in Germany

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**O32

Introduction: Carbapenemase producing *Enterobacterales* are observed in hospital wastewater worldwide. Despite the description of clonal lineages possibly adapted to hospital wastewater, little is known about long term persistence as well as evolution of these lineages.
Objectives: In this study, in distance of 2.5 years' wastewater isolates of different *Enterobacterales* species from a tertiary care hospital were characterized using whole genome sequencing (WGS).
Methods: *Enterobactereales* from wastewater samples were isolated from media selecting for resistance against 3rd gen. cephalosporins. WGS, resistance gene identification, and plasmid replicon typing was performed for *E. coli*, *C. freundii*, *S. marcescens*, *K. pneumoniae*, *K. oxytoca*, and *E. cloacae* isolates (n = 59), isolated in 2022 and compared with strains isolated from the same wastewater pipeline in 2019 (n = 240).
Results: Individual clonal lineages with highly related isolates present at both time points of investigation could be identified in *E. coli*, *C. freundii*, *S. marcescens*, and *K. oxytoca*. A common motif of all persistent clonal lineages was the carriage of mobile genetic elements encoding carbapenemase genes with evidence of horizontal gene transfer in persistent clones in this environment observed over the 2.5-year period. In 2022 isolates bla_{VIM-1} replaced bla_{OXA-48} as the most common carbapenemase gene compared to 2019. Interestingly, despite a similar abundance of carbapenemase genes (> 80% of all isolates) at both time points genes encoding extended spectrum β-lactamases decreased over time.
Conclusion: This data indicates that individual clones of *Enterobacterales* are able to persist for long periods hospital wastewater. Thereby, genes encoding carbapenemases are continuously released to the urban wastewater system, indicating that wastewater monitoring for resistance genes for the prediction of human carriage might be distorted by these clones. The evolution of the resident clones as well as the reasons for the selection advantage in this specific ecological niche needs to be further investigated in the future.

Disclosure of Interest
None declared.

O33

Economic evaluation of wastewater surveillance and population testing strategies

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**O33

Introduction: Wastewater surveillance has been useful during COVID-19 pandemic. There are various ways to design wastewater surveillance (e.g. surveillance frequency and sites, number of autosamplers, etc.) and population testing (e.g. mandatory surveillance with Polymerase Chain Reaction (PCR) test or voluntary surveillance with Antigen Rapid Test).
Objectives: To conduct cost-effectiveness analyses to inform the choice of wastewater surveillance and population testing strategies.
Methods: We developed an age-structured Susceptible-Infected-Recovered model based on a hypothetical town of 100,000 people comprising of two communities and three settings (home, school, and workplace). In the base case, we compared the cost-effectiveness, from the societal perspective, of (1) wastewater surveillance only with lockdown of infected community, and (2) wastewater surveillance with PCR test and isolation of infected individuals versus (3) no surveillance. We varied the combinations of wastewater surveillance (e.g. every 3 days vs 7 days, have more autosamplers in residentail relative to school/office), population testing (PCR vs ART), virus characteristics (e.g. transmisibility, incubation period and severity) and duration of lockdown (e.g. 10 days vs 14 days) in extensive scenario analyses.
Results: Our base case showed that compared to no surveillance, (1) wastewater surveillance with lockdown led to 98.7% to 99.9% reduction in infections at an additional USD13,049 to USD15,024 per capita while (2) wastewater surveillance with PCR test and isolation led to 94.0% to 98.2% reduction in infections at an additional USD2,672 to USD2,921 per capita. Scenario analyses suggested that residential wastewater surveillance was more effective than school/office surveillance in retarding transmission. In addition, if wastewater surveillance was conducted every 7 days instead of every 3 days, there will be more infections, hospitalizations and deaths.
Conclusion: The health gain and additional cost associated with various strategies of wastewater surveillance, population testing and characteristics were reported and may be used to inform policy making.

Disclosure of Interest
None declared.

Slide session 7: Hand Hygiene around the world

O34

Hand hygiene New Zealand: recommendations from 10-year programme review

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**O34

Introduction: Hand Hygiene New Zealand (HHNZ), a national quality improvement (QI) programme, was established in 2012. At the 10-year milestone, and in response to informal sector feedback about programme sustainability, a review was undertaken.
Objective: To evaluate whether HHNZ aligns with current best practice, meets the needs of stakeholders, and to inform future QI activities.
Method: Three components to the review:

1. National survey. 20 districts and 14 private surgical hospital hand hygiene (HH) teams, representing 81% of HHNZ participating organisations, underwent semi-structured interviews focusing on programme implementation; governance, reporting, resourcing, education and engagement.
2. Literature review of international evidence for HH since 2005 and advice for best practice from institutions, national and facility-level HH programmes.
3. Horizon scan of partner programmes, Hand Hygiene Australia (HHA) and the National Hand Hygiene Initiative led by the Australian Commission on Safety and Quality in Health Care (ACSQHC).

Results: Survey participants agreed that the programme was successful; however, the focus remains on auditing and quality assurance, not

the use of QI methods for improvement. Three-quarters of IPC teams did not have specific HH coordinator roles; the IPC service was tasked with delivering the programme. Senior leadership support was limited. Sustaining adequate number of auditors in the context of a pandemic was also challenging.
Multimodal improvement strategies remain most effective; the three key components of this approach are governance, education and monitoring. Alternate strategies for monitoring compliance have not been critically appraised.
HHNZ has a longstanding collaboration with HHA. Following the transition of the responsibility to ACSQHC, HHNZ retained access to the online educational modules. Sustaining an adequate number of auditors and poor engagement with doctors were common themes across both programmes.
Conclusions: Current approach has been successful, but issues with the sustainable delivery were identified. These included the need for adequate resources for programme delivery, senior leadership support, sustaining and acknowledging auditors and refreshing training material.

Disclosure of Interest
None declared.

O35

Belgian campaign for improving glove use after COVID-19 pandemic

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**O35

Introduction: Inappropriate glove use increased during the COVID-19 pandemic and contributed to an increase in healthcare-associated infections (HAIs).
Objectives: To promote correct glove use, a countrywide educational campaign was launched in Belgian hospitals (February–August 2023; http://www.handhygienedesmains.be). The campaign was preceded and followed by a knowledge test on the proper use of gloves.
Methods: A questionnaire covering 46 activities routinely performed by caregivers was developed by the national working group (http://www.bapcoc.be) based upon WHO and Belgian Superior Health Council recommendations. Via the open-source web application LimeSurvey caregivers with direct patient contact (physicians and non-physicians) were asked to fill out the survey anonymously. Hospitals received a feedback and benchmark report at the end of each test period. Correct answers were expressed as an overall score on 20, and as % of correct answers for each question, stratified by professional group and department.
Results: All hospitals in Belgium (n = 166) were invited and 72% participated in the pre-test (Table 1). The questionnaire was completed 22,730 times, mainly by nurses (74.5%).
Table 1 Participation in the pre-campaign knowledge test on appropriate use of gloves in hospitals, Belgium 2023

# of hospitals per type	
General	97
Specialized	1
Psychiatric	21
Total	119
# of participants per professional group	
Doctor	1968 (8.7%)
Nurse	16,930 (74.5%)
Nurse assistant	1365 (6.0%)
Physiotherapist	681 (3.0%)
Other	1790 (7.9%)
Total	22,730

Preliminary results showed that on average 82.4% of the questions were answered correctly. Nurses had a significantly better mean score (17.1/20) compared to the other professional groups (pairwise *t*-test between groups with corrections for multiple testing), followed by physicians (15.7/20).
Conclusion: It can be concluded that the participation degree of the Belgian hospitals for the pre-campaign test was high, except for the specialized hospitals. The individual hospital reports reveal for each hospital where knowledge can be improved. A national report will be drafted with before-after statistics on score (overall, per profession, per department).

Disclosure of Interest
None declared.

O36

A 3-year longitudinal analysis of the who multimodal hand hygiene strategy on ICU healthcare-associated infections

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**O36

Introduction: Hand hygiene (HH) is the main measure to reduce healthcare associated infections (HAI), which have a high prevalence in Intensive Care Units (ICU). In Chile, there are no reports on the impact of the multimodal-World Health Organization strategy for hand hygiene in adult centers.
Objectives: Measure the effect of the implementation of the strategy in the ICU on the rates of HAIs and incidence of hand dermatitis in health personnel.
Methods: Retrospective longitudinal observational study in ICU of a level I trauma center in Chile between 2019 and 2022. Implementation was evaluated with HH compliance with the WHO`s 5 moments for HH and consumption of soap and alcohol-based products. The effect on HAIs was evaluated with rates of Ventilator Associated Pneumonia (VAP), Catheter Related Bloodstream Infections (CRBSI) and Catheter Associated Urinary Tract Infections (CAUTI), and the annual incidence of dermatitis.
Results: HH compliance increased from 91 to 95% ($p < 0.05$). Total HH product consumption increased from 0.17 to 0.48 L/day/bed. Antiseptic soap consumption decreased from 47% to 1.5%. Alcohol-based product use increased from 31 to 49% of total HH products. The annual rate of VAP decreased from 10.3 to 5.6, CRBSI decreased from 0.8 to 0.0, and CAUTI decreased from 4.2 to 2.2. The annual rates of HAIs after implementation of strategy were under the national rates. The annual incidence of dermatitis decreased from 25% to 1.2% ($p < 0.05$).
Conclusion: The implementation of the strategy contributed to the decrease of HAIs and prevention of dermatitis in ICU.

Disclosure of Interest
None declared.

O37

High frequency of culture positive sars-cov-2 on the hands of persons with covid-19: support for direct contact as an important mode of transmission

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**O37

Introduction: Transmission modes for SARS-CoV-2 remain an area of scientific debate with some suggesting it is mostly airborne, discounting fomites and hands as vehicles of transmission. There is a dearth of studies of cultivable SARS-CoV-2 or surrogates on the hands of persons with acute COVID-19.
Objectives: We sought to assess the Cycle threshold (Ct) and quantitative cultivability of SARS-CoV-2 on human hands.
Methods: NP and handwash samples were collected from infected hospital and community patients using convenience sampling during the pandemic. RT-PCR assays used the CDC N gene primers and assay methods. We used a handwash technique where each consenting person performed a 20–30 s vigorous handwash in 10 ml of DMEM supplemented with antibiotics and 2% fetal bovine serum. Ten-fold serial dilutions were then applied to monolayers of Vero (CCL-81) or Vero E6/TMPRSS2 cells, cultured for 2–3 days in MEM plus antibiotics and carboxymethyl cellulose and fixed and stained to visualize plaques. Plaque morphology, PCR, immunohistochemistry, and/or sequencing were used to confirm the identity of the specimens.
Results: We collected hand cultures from 29 patients (35 hand specimens) over 3 years at a mean of 3.8 (± 2.4 SD) days post-symptom onset. We found 30.4% (7/23) of patients with culture positive (C+) NP swabs had C+ hand cultures with titers varying from 5.5×10^1–1.4×10^3pfu/ml. Using ROC curve analysis which revealed a N gene Ct < 29 accurately identified 95% of truly infectious virus samples, and including C+ samples, 17/26 (65.4%) persons tested to date would be predicted to have C+ hand samples. Of 24 person-handwashes tested to date by PCR, 24 (100%) were N gene+. Persons with C+ hands exhibited a mean Ct of 20.2 (± 1.8 SD).
Conclusion: We have identified a high burden of SARS-CoV-2 on the hands of persons in the first 7 days of illness. The levels of C+ virus ranged from 8 to 200-fold higher than the infectious dose in human challenge studies, supporting hands as an important transmission means and emphasizing hand hygiene as a mitigation measure. Scientifically rigorous studies on all modes of transmission of SARS-CoV-2 are required.

Disclosure of Interest

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O38

Improving hand hygiene compliance among healthcare workers—the effect of feedback during the COVID-19 pandemic

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**O38

Introduction: Hospital-acquired infections continue to burden more than 7% of all patients in European countries but can be reduced by improving hand hygiene compliance (HHC).
Objectives: We aimed to investigate the effect of nudging with group and individual feedback on healthcare workers (HCWs) HHC during the COVID-19 pandemic.
Methods: In 2021, an 11-month, prospective, interventional study was conducted in two inpatient departments at a Danish university hospital. An electronic monitoring system (sani nudge™) was used to collect the data. Hand hygiene opportunities and alcohol-based hand rub events were measured in patient rooms, medication rooms, and staff restrooms. Data were provided as HHC rates. We compared baseline HHC across two intervention periods.

- **Baseline** (month 1–3)
- **Intervention 1** (month 4–9): All HCWs (n = 174) received weekly HHC feedback in groups. Leaders presented and discussed the HHC data at regular staff meetings. Graphics were printed and placed on boards in staff rooms.
- **Intervention 2** (month 8–9): Approximately half of the participants (n = 91) volunteered to receive weekly individual feedback in addition to group feedback. A weekly email with individual HHC data was sent.
- **Follow-up** (month 10–11)

For analysis, all HCWs were divided into two groups "Only group feedback" and "Both group AND individual feedback" to assess if there was a difference in baseline HHC between the two groups.

Results: We collected data from physicians (n = 65) and nurses (n = 109). In total, 231,022 hygiene opportunities were included in the analysis. Overall, there was no significant effect of feedback with either group or individual feedback. There was a trend towards a higher baseline HHC among HCWs receiving both group feedback AND individual feedback compared to the HCWs receiving only group feedback.
Conclusion: The electronic hand hygiene system enabled the assessment of the interventions. We found no significant effect of the group or individual feedback in the two departments. However, other factors may have influenced the results during the pandemic, such as time constraints, PPE use (self-protection), and leadership support. The results indicate that changing behavior and routines are difficult and that interventions should be evaluated continuously.

Disclosure of Interest

A.-M. Iversen: None declared, M. B. Hansen Employee of: Konduto ApS; the developer of Sani Nudge, S. Ellermann-Eriksen: None declared.

O39

The consumption of alcohol-based hand hygiene products is not necessarily correlated with good hand hygiene performance during the COVID-19 epidemic

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**O39

Introduction: Alcohol-based hand hygiene (HH) product consumption and compliance are indicators of HH performance in healthcare facilities. However, their relationship during an epidemic remains unexplored.
Objectives: This study aims to observe HH product consumption and compliance during the COVID-19 pandemic at National Taiwan University Hospital (NTUH) in Taiwan.

Methods: Since January 2020, COVID-19 has been a notifiable disease in Taiwan and three major COVID-19 waves occurred in May 2021, May 2022, and October 2022. HH compliance was evaluated among healthcare workers (HCWs) by infection control nurses. Alcohol-based HH product consumption was measured monthly. A comparison of alcohol-based HH product consumption and HH compliance was conducted from 2019 to 2022.
Results: Peak reported COVID-19 cases at NTUH were in May 2021, May 2022, and September 2022 (4952, 8073, and 2264 cases respectively). Alcohol-based HH product consumption peaked in June 2021 and May 2022, at 26.8 L and 23.8 L per 1000 patient days respectively, moderately correlating with monthly COVID-19 cases (Pearson correlation: 0.53).
HH compliance significantly decreased during 2020 to 2022 compared to 2019 ($P < 0.05$, respectively). Notably, compliance after touching a patient's surroundings significantly declined compared to 2019 ($P < 0.05$, respectively) (Table 1). Infection control nurses observed HCWs maintaining good HH practices for COVID-19 patients but being less diligent for non-COVID-19 or undiagnosed patients.
Table 1 The HH compliance among HCWs in the NTUH during 2019–2022

	2019	2020	2021	2022
HH compliance	93.1%	88.8%	87.4%	88.3%
HH compliance by indication				
1: before touching a patient	88.5%	86.7%	92.2%	84.6%
2: before a procedure	90.0%	80.9%	89.5%	91.2%
3. after a procedure or body fluid exposure risk	94.7%	90.1%	86.1%	87.4%
4. after touching a patient	93.9%	91.5%	90.9%	91.6%
5. after touching a patient's surroundings	95.3%	81.0%	79.8%	81.2%

Conclusion: During the COVID-19 pandemic, HCWs showed decreased HH compliance, particularly after touching a patient's surroundings, possibly due to time constraints or fatigue. Alcohol-based HH product consumption did not necessarily reflect good HH performance. Therefore, continued HH education and compliance monitoring are crucial during epidemics.

Disclosure of Interest
None declared.

O40

Stabilization of the hand microbiome by alcohol-based hand antisepsis

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**O40

Introduction: Importance of alcohol-based hand rub (ABHR) to prevent health care associated infections is undisputed especially in light of the spread of antimicrobial resistant bacteria as well as in epidemic and pandemic situations.
Objectives: Because the influence of daily frequent hand antisepsis on skin microbiome is unknown, we aimed to determine the short-term effect of repeated use of ABHR on the hand microbiome.
Methods: Four nurses in a NICU were included into the prospective clinical trial (positive ethic vote, voluntary participation). After paid of 14 days without any hand antisepsis on the first working day hands were sampled before the first hand rub. The re-sampling took place at the end of shift on days 1, 7 and 28. To analyze the hand microbiome composition, microbial cells were collected using the glove-juice technique at the beginning and end of shifts of the four nurses and pro- and eukaryotic community profiles were created using amplicon sequencing of 16S and 18S rRNA markers.
Results: On average, hand hygiene was performed 155 times per working shift. Microbial communities were dominated by taxa typically found on human skin, e.g. Firmicutes, Proteobacteria, Actinobacteria and Fungi (such as Dothideomycetes belonging to the Ascomycota and Malasseziomycetes being classified in the Basidiomycota). Although this finding was persistent across all nurses, a clear nurse-specific microbiome signature was seen. Exposure to ABHR affected the pro- and eukaryotic communities differently. For Prokaryota, daily exposure led to the end-of-the-day microbiomes being more similar to each other across nurses (primarily Firmicutes). In contrast, longitudinal effect of 28 day-application revealed more similarity of the Eukaryotic community.
Conclusion: Regularly performed hand antisepsis with ABHR reduces the transient skin microbiota but stabilized the resident skin microbiome. Thus, daily hand hygiene retains its significance as the most important procedure of basic hygiene.

Disclosure of Interest
None declared.

Slide session 8: Advances in prevention of SSI and BSI

O41

Investigating the effectiveness of post infection reviews (PIR) on the incidence of hospital-acquired MRSA bacteraemias though the COVID-19 pandemic

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**O41

Introduction: Healthcare Associated methicillin resistant *Staphylococcus aureus* (HA-MRSA) is one of the sentinel indicators in infection. Apart from ongoing horizontal infection prevention (IP) measures, a post infection review (PIR) is a program initiated to investigate potential areas for improvement and prevent future MRSA bacteraemias through a root cause analyses.
Objectives: We aim to study the effectiveness of the PIR investigations on HA-MRSA incidence rate through various time periods pre/post pandemic and report outcomes from the root cause analyses.
Methods: This is a prospectively cohort study conducted from 1st May 2014 till 31st March 2023 involving all HA-MRSA bacteraemias, defined as a Laboratory-Identified (LabID) Event as per National Healthcare Safety Network (NHSN) criteria and reported as an incidence rate of HA-MRSA bacteraemias events per 10,000 patient days. The baseline is from 1st May 2014 till 31st March 2017, after the last horizontal measure for MRSA. Period 2 occurred from the time MRSA PIR was implemented from 1st April 2017 till 31st December 2019 prior to onset of COVID-19 in Singapore and Period 3 occurred during the COVID-19 pandemic from 1st January 2020 till 31st March 2023.

Results: The incidence rate for the baseline period is 0.87 MRSA bacteraemias per 10,000 patient days. A significant reduction in MRSA bacteraemias is noted during Period 2 with 0.44 MRSA bacteraemias per 10,000 patient days and an IRR of 0.50 (95% CI 0.36–0.69) compared to the baseline period; while during Period 3 had 0.46 MRSA bacteraemias per 10,000 patient days with no significant difference noted in the MRSA bacteraemias when comparing Period 3 (COVID-19) with the Period 2 nor a significant difference in overall trends between periods. 80% (n = 132) of all PIRs conducted had root causes that were potentially preventable; inappropriate line care and thrombophlebitis was the most common root cause (n = 45, 28%).
Conclusion: The implementation of the MRSA PIR led to an initial decrease in the incidence of HA-MRSA and was unaffected during the COVID-19 pandemic. PIRs is helped identify correctable lapses for future prevention.

Disclosure of Interest
None declared.

O42

One size does not fit all: customizing chlorhexidine mouthwash application for critically ill patients

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**O42

Introduction: Despite unproven effectiveness, chlorhexidine (CHX) mouthwash is still largely used among critical patients for the purpose of respiratory tract infections prevention. In the last decade, two meta-analyses found this practice to be harmful and enhance in-hospital mortality. However, a clinical trial addressing the de-adoption of CHX mouthwash in intensive care units (ICU) failed to prove any clinical benefit of it. Therefore, the controversy continues. We hypothesize that CHX mouthwash may be useful for treating critically ill patients with established oral infections and harmful to those with healthy oral status.
Objectives: To evaluate the impact on mortality of CHX mouthwash customized application among critically ill patients.
Methods: This is a cohort analysis nested in a quasi-experimental study (Trial register: RBR-4jmz36) evaluating if dental care could reduce mortality in the ICU setting. For the cohort study, we included only patients admitted during the intervention period in 2019. All patients received routine oral hygiene, performed by nursing staff, and dental care as needed. At their discretion, dentists performed 0.12% CHX rinse and/or 1.0% CHX gel application only for patients with established oral infections, such as periodontal disease. We used a logistic regression model to assess the effect of CHX exposure on mortality, the primary study outcome.
Results: Among the 352 patients included, 205 (58.24%) were submitted to CHX application. Most (95%,195/205) received 0.12% CHX rinse, and 30% (61/205) received 1.0% CHX gel. Mortality rates were similar among patients exposed and not exposed to CHX (26.83% and 32.65%, respectively, RR = 0.89, 95% CI 0.72–1.09). In the multivariate model, death was independently associated with age (OR = 1.02; 95% CI 1.00–1.04) and baseline severity of illness, inferred by the SAPS III score (OR = 1.05; 95% CI 1.03–1.07), but not with CHX exposure (OR = 0.96; 95% CI 0.55–1.70).
Conclusion: CHX mouthwash customized application by dentists among critically ill patients did not increase mortality in the ICU when used as a treatment and not for prevention.
Funding: FAPESP and FAEPA, two non-profit foundations.

Disclosure of Interest
None declared.

O43

Reducing surgical site infections following Cesarean section in Ras Al-Khaimah, United Arab Emirates

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**O43

Introduction: Surgical site infections (SSI) following cesarean section (C-section) are serious events associated with increased hospitalization, costs and morbidity.
Objectives: The objective of this study was to determine the prevalence for SSI following cesarean section in Ras Al-Khaimah, United Arab Emirates.
Methods: The study was conducted at a newly-opened gynecology hospital of 81 beds between January 2019 and December 2022. Qualified Infection Control Professional (ICP) conducted a prospective surveillance based on the CDC/NHSN (Centers for Disease Control and Prevention/National Healthcare Safety Network) definitions of SSI. Cases were tracked for 30 days following the operative procedure by calling-back the patients and assessing their signs and symptoms of SSI. Furthermore, the medical charts of the patients were reviewed during hospitalization following surgery, on re-admission, through emergency department or clinic visits. Multiple interventions were implemented throughout the surveillance and included implementation of SSI prevention bundle and education of patients.
Results: The study included 3799 C-sections. A total of 51 SSI were identified throughout the surveillance period at an overall rate of 1.3%. The SSI rates decreased from baseline at the beginning of the surveillance (1.6% and 2.4% in 2019 and 2020, respectively) to 1% and 0.6% in 2021 and 2022, respectively. Moreover, the overall compliance with the SSI prevention bundle increased from 70% in 2019 to 90% in 2022.
Conclusion: Our data shows that implementation of SSI prevention bundle, involvement of multidisciplinary team, as well as patient engagement and education were associated with reduction in SSI rates. Further surveillance is needed to examine the long-term effect of these interventions in reducing SSI.

Disclosure of Interest
None declared.

Slide session 9: MDRO surveillance: Search to destroy

O44

Ten years of prevalence surveys in Germany: results of the 2022 point prevalence survey on healthcare-associated infections and antimicrobial use and comparison with previous surveys

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**O44

Introduction: For the third time after 2011 and 2016, Germany participated in the European point prevalence survey (PPS) on healthcare-associated infections (HAI) and antimicrobial use (AU) in 2022,

which was initiated by the European Centre for Disease Prevention and Control (ECDC).
Objectives: The objectives were to estimate the HAI and AU prevalence in German acute-care hospitals and to identify trends by comparison with previous surveys.
Methods: The German PPS was organized by the German national reference centre for surveillance (NRC) and conducted in alignment with the ECDC PPS protocol. Participation was voluntary and possible for all acute-care hospitals in Germany. Data were collected by trained local staff in the months May–July 2022. Collected data were transferred to the NRC through a web portal.
Results: Data from 252 hospitals and 66,586 patients were included in the PPS 2022. The prevalence of patients with HAI was 5.2% (95% confidence interval 5.0–5.4), which was considerably higher than in 2016 (4.6%) and moderately higher than in 2011 (5.1%). The prevalence of patients with AU was slightly higher in 2022 (26.9% [26.5–27.2]) than 2016 (25.9%) and 2011 (25.5%). The most frequently documented HAI in 2022 were surgical site infections (23% of all HAI), lower respiratory tract infections (22%) and urinary tract infections (20%). The most frequently prescribed antimicrobial groups in 2022 were penicillins plus beta-lactamase inhibitors (33% of all antimicrobials), third-generation cephalosporins (10%) and second-generation cephalosporins (9%).
Conclusion: HAI remain a common phenomenon in German acute-care hospitals. Against the backdrop of a decrease in average length of stay in German hospitals, the burden of HAI in Germany is likely to have increased more than the mere prevalence might suggest. The fact that two of the three most frequently administered antimicrobial groups were broad-spectrum antibiotics, raises the question whether antimicrobial stewardship concepts are sufficiently disseminated in Germany.

Disclosure of Interest
None declared.

O45

Excess health risk of antibiotic-resistant bloodstream infections for six pathogens in Europe—a systematic review

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**O45

Introduction: Antimicrobial resistance (AMR) is a significant health threat, with bloodstream infections (BSIs) leading AMR-associated deaths. Alternative interventions targeting AMR, such as vaccines and monoclonal antibodies, require pathogen-specific burden data for appropriate development, implementation and evaluation.
Objectives: We performed a systematic review and meta-analysis to evaluate pathogen-specific excess health burden of drug-resistant BSIs in Europe.
Methods: We searched MEDLINE, Embase, and grey literature (Jan-1990–May-2022) for data on the burden of BSIs for 6 pathogens: carbapenem resistant (CR) *P. aeruginosa* and *A. baumannii*, 3rd gen cephalosporin or CR *E. coli* and *K. pneumoniae*, methicillin resistant *S. aureus* (MRSA) and vancomycin resistant *E. faecium* (VRE). Any excess health risk compared to drug-susceptible BSIs or uninfected patients was recorded.
Results: We screened 7154 titles, 1,079 full-texts (for 6 infection types), and found 56 studies BSIs for of selected pathogens. Most studies compared outcomes of drug-resistant to susceptible BSIs (46/56, 82%). Mortality was most frequently reported (51/56 studies, 91%). The pooled excess all-cause mortality (crude data) of drug-resistant versus drug-susceptible BSIs ranged between an odds ratio (OR) of 1.31 [95% CI 1.03–1.68] for CR *P. aeruginosa* to OR 3.44 [95% CI 1.62–7.32] for CR *K. pneumoniae*, compared to susceptible infections. Pooled estimates comparing mortality to uninfected patients were available for VRE and MRSA BSIs with an OR of 11.19 [95% CI 6.92–18.09] and OR 6.18 [95% CI 2.10–18.17], respectively.
Conclusion: Drug-resistant BSIs-attributable mortality estimates vary widely per pathogen and comparator group. Large knowledge gaps exist in the cuurent literature; future AMR research should address pathogen-infection specific burden to guide development of novel AMR intervention strategies.

Disclosure of Interest
None declared.

O46

The impact of active surveillance program on the containment of infections caused by multi drug resistant organisms

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**O46

Introduction: Unrecognized MDRO carriers can serve as a potential source of transmission to other patients.
Objectives: The aim of the present study was to examine the impact of active surveillance cultures on the containment of MDRO in an acute healthcare facility.
Methods: The study was conducted between January 2022 and March 2023 in a 484-bed general hospital located in Athens, Greece. From January 2022 to September 2022 the infection control measures were based on clinical samples and isolation precautions for all patients with MDRO infection/colonization. In the period between October 2022 and March 2023, active surveillance cultures were added in the intervention measures. All patients with previous hospitalization (more than 48 h in the last 12 months) and all patients transferred from LTCFs were screened upon admission with cultures of rectal swabs and bronchial secretions and urine, when indicated, for CRAB, CRE, CRPs, VRE and MRSA. All the screened patients were under isolation precautions until screening results were available. The mean monthly incidence rates of all hospital acquired MDRO infections/colonizations and the slope of linear trend were estimated in the two study periods.
Results: 350 patients were screened upon admission; 47% of them were hospitalized in ICU. Sixty-seven (19%) of screened patients were colonized with MDROs. The mean age of carriers was 71.8 years

vs 66.3 years for non-carriers. 59.7% of patients were colonized with VRE, 46.2% with CRE, 16.4% with CRAB, and 2.9 with CRPS or MRSA. The mean monthly incidence rate of MDRO infections/colonizations declined from 0.64/1000 patient-days in the first time period to 0.33/1000 patient-days in the second time period and the slope of linear trend during the second period was −0.13 (95% Confidence Interval, −0.26 to 0.001; p = 0.051).
Conclusion: The addition of active screening to infection control interventions can attain maximum containment of MDRO infections in endemic acute healthcare settings. When universal screening of all admissions is not feasible due to limited resources, there is a need for prioritization of screening of "high risk" patients.

Disclosure of Interest
None declared.

O47

Characterization of broad host range INCC plasmid bearing multiple carbapenemases: KPC-2, NDM-1, AND VIM-24

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Introduction: Antimicrobial resistance seriously threatens health systems, and plasmids in Gram-negative bacteria are key drivers of its worldwide dissemination. *Klebsiella pneumoniae* has acquired multidrug resistance and is the causative agent of serious community- and hospital-acquired infections. This bacterium often harbors multiple plasmids and may bear multiple carbapenemases. Colombia is considered endemic for the two main variants of *K. pneumoniae* carbapenemase: KPC-2 and KPC-3. Outbreaks of *K. pneumoniae* harboring other carbapenemases such as NDM and VIM metallo-β-lactamases, alone or in combination with KPC have been reported.
Objectives: Characterize *K. penumoniae* strains carrying multiple carbapenemases.
Methods: *Klebsiella* strains previously identified as multiple carbapenemase-producers, from Colombian hospitals, were sequenced using Nanopore long-read sequencing technology. We used superaccurate basecalling, Flye assemblere, and Medaka for polishing. The strains and plasmids were characterized and annotated.
Results: We identified a *K. pneumoniae* ST987, with a KL64 capsular locus and O3b locus, harboring an IncC-typed 178 kb plasmid. It contained 3 carbapenemase genes: bla_{KPC-2}, bla_{NDM-1}, and bla_{VIM-24}, and displays high similarity to other IncC plasmids except for the antibiotic resistance islands. The bla_{KPC-2} gene was located in a NTE element (non Tn4401), bla_{VIM-24} on a class I integron, itself flanked by bla_{NDM-1} and an IS91 element. The conjugative transfer *tra* genes were also identified.
Conclusion: The acquisition of multiple carbapenemases, often of different classes (serine-proteases and metallo-beta-lactamases) by *K. pneumoniae* is increasingly reported. Whether these carbapenemases confer an advantage, possibly to novel beta-lactamase inhibitors combinations, remains poorly understood. The identification of broad host range plasmids such as IncC plasmids with multiple carbapenemase genes represent a strong potential for horizontal antibiotic resistance spread among bacteria that may cause dire consequences for health institutions around the world. Long-read sequencing technology is allowing for refined analysis of plasmids, which is necessary to understand how antibiotic resistance spread is happening.

Disclosure of Interest
None declared.

O48

No added value of screening patients on the same ward as VRE-positives unless they are roommates

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Introduction: The incidence of vancomycin-resistant *Enterococcus faecium* (VRE) infections in the Netherlands is low (< 1%) due to screening of patients at risk, contact tracing and infection prevention measures. The exact prevalence of carriage outside the hospital is unknown, but estimated to be approximately 3–6%. Dutch guidelines recommend labelling roommates of VRE-positive (VRE-P) patients as VRE-V (suspect in Dutch) and patients on the same ward as VRE-S (need to be screened). Both groups are screened for VRE-carriage with 4 rectal swabs, but VRE-V patients are placed in isolation pending their results, while VRE-S patients are not.
Objectives: We evaluated the usefulness of screening VRE-S patients by a retrospective analysis of an VRE MLST type 117 outbreak in a pulmonary ward.
Methods: The outbreak, involving 25 patients eventually, started with a routine departmental VRE-screening in March 2018, which revealed 6 unexpected positive patients. VRE-P patients were put in contact isolation in a single room, and weekly screening of the ward was initiated. Cleaning of the bathroom and high-touch surfaces in VRE-P rooms was intensified to twice daily with chlorine and H_2O_2 fogging was used to disinfect rooms after discharge. During the course of the outbreak, which lasted approximately 2 months, 92 VRE-V and 112 VRE-S patients were screened in relation to the VRE-P patients.
Results: Of the 92 VRE-V patients, 9 (9.8%) were culture positive. Of the 112 VRE-S patients, only 2 (1.8%) were culture positive; this is lower than the prevalence of patients outside the hospital. The low yield of VRE-P patients from the VRE-S category, led us to discard the category of VRE-S patients. Instead, we focused on the VRE-V patients and more intensive cleaning measures to control the outbreak.
Conclusion: We demonstrated the irrelevance of screening patients on the same ward during an VRE outbreak for VRE-carriage, despite the instruction in Dutch guidelines to do so. We also confirmed the relevance of roommates of VRE-P patients during an outbreak with VRE. This new approach, has since been shown to be cost-effective and has not led to an increase in the incidence of VRE outbreaks or extended duration of the outbreaks in our hospital.

Disclosure of Interest
None declared.

O49

Duration of CRE intestinal colonization: observations from single-centre cohort with a high prevalence of MBL-producing CRE

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Introduction: Carbapenem-resistant enterobacteriacea (CRE) poses significant public health threat, necessitating strict infection prevention and control measures. Uncertainties remain regarding the

duration CRE colonization and timing of deisolation, particulary in cases of metallo-β-lactamase (MBL)-producing CRE.
Objectives: To investigate the duration of CRE intestinal colonization within our carriers cohort.
Methods: We conducted a retrospective cohort study at a 1617-bed teaching hospital in Malaysia. Patients with confirmed CRE intestinal carriage, admitted between 2018 and 2022, and who had at least 2 subsequent surveillance swabs were included. Follow-up was conducted until April 2023 to observe spontaneous intestinal clearance (CRE-IC), defined as 2 consecutive CRE-negative rectal swabs. Intermittent intestinal shedding (IS) referred to the positive CRE surveillance after achieving CRE-IC. The primary outcomes were the rate of CRE-IC and the median time to intestinal clearance (MT-IC).
Results: Among the 62 patients included, the majority (66%) were male, with median age of 57 (IQR 42–69) years. Carbapenemase-producing CRE (CPE) accounted for 86% of cases, mainly New-Delhi MBL (70%), oxacillinase (17%) or both (13%). The rate of CRE-IC was 27%, with 14 cases in the CPE-group and 3 in non-CPE group. 3 patients exhibited IS following achievement of CRE-IC. These patients had been admitted to Intensive Care Unit, requiring prolonged broad-spectrum antibiotics and tested CRE-positive again through ICU-exit surveillance, with average interval of 13 days. The MT-IC was 179 (IQR 26–502) days, with the CPE-group showing a non-statistically significant longer MT-IC of 322 (IQR 33–665) days compared to the non-CPE group [MT-IC of 26 (IQR 25–103) days], p-value = 0.244.
Conclusion: Spontaneous intestinal decolonization of CRE can take several weeks to month, with intermittent shedding possible event after achieving CRE-IC, especially in patients with risk factors.

Disclosure of Interest
None declared.

Poster session: Epidemiology, identification and reduction of catheter-related bloodstream infections

P1
Eripheral venous catheter: Do the practicing healthcare professionals respect the standard recommendation?
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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P1

Introduction: The World Health Organization (WHO) reports that Healthcare Associated Infections (HAIs) remain a significant public health issue, with millions of cases each year. Routine use of Peripheral Venous Catheters (PVCs) exposes children to an increasing risk of catheter-related bloodstream infections, leading to local and systemic complications that increase healthcare costs and may result in fatalities.
Objectives: This study aimed to assess good practices in inserting PVCs in a Tunisian tertiary care teaching hospital.
Methods: A cross-sectional study was conducted among healthcare professionals at the University Hospital Sahloul of Sousse from March to July 2022. Trained investigators collected data using an observation grid based on High Health Authority recommendations for evaluating professional practices.
Results: A total of 90 PVC installation observations were evaluated, with drug administration being the main indication in 71.4% of cases. Overall compliance with the PVC installation protocol was 77.8%. Skin antisepsis was performed according to the recommended standards in 63.9% of cases, while hand hygiene was the most poorly implemented criterion, with a compliance rate of only 22%. This represents a significant risk of HAIs for patients and a risk of blood exposure accidents for healthcare professionals. Additionally, the absence of traceability reflects the underestimation of the PVC's nosocomial infectious risk by healthcare professionals.
Conclusion: The study found that several recommended procedures for managing PVCs were not being adhered to by healthcare professionals. Therefore, training programs should be implemented to prevent HAIs and reduce additional healthcare costs.

Disclosure of Interest
None declared.

P2
Implementing the Australian commission on safety and quality in health care peripheral intravenous clinical care standard at healthscope hospitals in Australia
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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P2

Introduction: The Australian Commission on Safety in Quality in Healthcare (ACSQHC) released the Peripheral Intravenous Catheter (PIVC) Clinical Care Standard in 2021. To ensure all Healthscope hospitals in Australia complied with this Standard, Infection Prevention nurses conducted a gap analysis against the Standard, which demonstrated the need for all tools to be revised to ensure compliance.
Objectives: To ensure a consistent method was implemented to educate all clinical staff, doctors, patients and their families on the requirements of the ACSQHC PIVC Clinical Care Standard at all 39 Healthscope Hospitals in Australia and thereby reduce preventable infections and complications associated with the use of PIVC.
Methods: We revised and developed a new suite of tools to ensure reliable consistent care with PIVCs and to reduce our healthcare associated bloodstream infection (HCA BSI) rates and complications. This included current policies, audits, documentation forms and consumer information for PIVC insertion and management. A new 'toolkit' of resources was developed, including a specific developed best practice bundle for PIVC management to ensure compliance with the Standard, and was rolled out at all 39 Healthscope sites across Australia in 2022. HCA BSI reporting was closely monitored throughout the reporting period.
Results: The cost of one *Staphylococcus aureus* bloodstream infection (SABSI) is estimated to be upwards of AUD$20,000 and our SABSI rate has reduced by more than 50% since the implementation of the PIVC toolkit in 2022. SABSI rates have remained low in 2023, with some hospitals reporting no SABSI in 2022 and 2023.
Conclusion: The introduction of this package of PIVC resources has been well received at all Healthscope hospitals by clinical staff. Documentation has significantly improved, and clinical staff, doctors and patients are now more engaged and educated about PIVC management and the potential complications. This clinical practice innovation now ensures that reliable consistent care is simple, easy to follow, promotes team work and adherence to best clinical practice, and improves patient clinical outcomes and patient experience.

Disclosure of Interest
None declared.

P3
Construction and evaluation of a machine-learning-based model for predicting CLABSI among continuous renal replacement therapy patients
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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P3

Introduction: Continuous Renal Replacement Therapy (CRRT) patients with central lines are often in immunocompromised status and they are therefore at risk for developing CLABSIs, leading to increased mortality, prolonged hospitalization and elevated health care costs.
Objectives: To construct a machine-learning-based model through diagnosis and treatment data of CRRT patients to predict CLABSI and provide support for early intervention of clinical treatment.
Methods: 3103 CRRT patients from 2013 to 2018 in a teaching hospital with 4300 beds were selected and randomly divided at 2:1 ratio into training set (n = 2069) and testing set (n = 1034). Demographic data as well as clinical diagnosis and treatment data collected before the occurrence of CLABSI were filtered out by WEAK Software through 3 stages. Firstly, 5638 variables of the original data set were obtained. secondly, a total of 150 variables were screened out through the single factor filter feature selection method. thirdly, irrelevant variables were excluded through Z/Chi-square test, 6 variables of field experience were added, 5 redundant variables were eliminated through the scatterplot matrix and expert consultation, and 6 variables of $P \geq 0.05$ were removed. Finally, the selected integrated feature subset formed with a total of 34 variables were used to analyze the independent risk factors. Prediction model of HAI was constructed with logistic regression by SPSS and 5 machine-learning algorithms (BayesNet, NaiveBayes, Log, MLP, J48). Area under the receiver operating characteristic curve (AUC) was adopted to evaluate the prediction efficacy of four prediction models.
Results: CLABSIs occurred in 238 CRRT patients, incidence of CLABSI was 7.67%. Logistic regression analysis showed that dwell time of vascular access > 5.5 days, CRP > 112.5 mg/L, and direct bilirubin > 14.15 μmol/L were risk factors for CLABSI. AUC values of logistic regression (by SPSS), BayesNet, NaiveBayes, Log, MLP, J48 prediction models for predicting CLABSI in CRRT patients in the test set were 0.763, 0.764, 0.751, 0.760, 0.677, 0.674 respectively.
Conclusion: Machine-learning-based model for predicting CLABSI is conducive to the early identification of CLABSI and relevant risk factors, and facilitates timely preventive and control measures in CRRT patients, thus reduces the incidence of CLABSI.

Disclosure of Interest
None declared.

P4

Predicting central line-associated bloodstream infections in hospitalized patients: a systematic review

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Introduction: Central line-associated bloodstream infections (CLA-BSIs) are the most common source of hospital-acquired infections (HAIs) associated with higher morbidity and costs, and considered a priority target for prevention. Tools to predict individuals' CLA-BSI risk may help improve infection control in hospitals. In this systematic review, we aimed to evaluate the risk of bias and applicability of published CLA-BSI prediction models, and discuss practical problems for implementing them.
Objectives: To systematically review the risk of bias and applicability of published prediction models for risk of central line-associated bloodstream infection (CLA-BSI) in hospitalized patients.
Methods: Searches were conducted on June 10, 2022 using PubMed, Embase, Web of Science Core Collection and Scopus, including studies describing the development or validation of predictive models for CLA-BSI that have at least two predictors. Articles that did not report the original research (i.e., reviews and conference abstracts), without full text, or qualitative studies were excluded. Two authors independently appraised risk models using CHARMS and assessed their risk of bias and applicability using PROBAST.
Results: We reviewed 18 models from 15 studies predicting CLA-BSI risk, including 13 regression models and 5 machine learning models. The C-indexes ranged from 0.67 to 0.82 for internal validation and 0.53 to 0.77 for external validation. None of the models were internally validated for calibration and only 1 externally validated model plotted the calibration curve. All models were at high risk of bias due to using inappropriate proxy outcomes, measuring predictors that were unavailable when needed, inadequate number of events per variables (median = 3), missing data, and lack of calibration assessment. 17 out of 18 models had high applicability concerns, and 1 model was unclear due to incomplete reporting.
Conclusion: We critically evaluated 18 risk prediction models for CLA-BSI and did not identify any model suitable for practically clinical use. Therefore, there is an urgent need for a well-developed and applicable model using either regression or machine learning techniques.

Disclosure of Interest
None declared.

P5

Secular trends of bloodstream infections (BSIS) in hemodialytic patients in a Swiss tertiary care centre

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Introduction: Healthcare-related BSIs in hemodialysis (HD) patients cause substantial harm. It is unclear whether in the context of preventive efforts to decolonize *S. aureus* in HD patients, Gram-negative BSIs replace *S. aureus* BSIs as causative pathogens.
Objectives: We evaluated the temporal trends, causative organisms, and resistance patterns of healthcare-related BSIs among HD patients at Geneva University Hospitals where a 'screen-and-treat' strategy for *S. aureus* decolonization has been in place since 2001.
Methods: We performed a longitudinal study of prospectively collected data on healthcare-related BSI episodes, occurring > 48 h after admission or diagnosed in outpatient clinics. Contaminants were excluded. Gram negative BSI included Enterobacterales and non-fermenters BSIs. We calculated annual incidence rates (BSI episodes per 100 patient dialysis months) from 2003 to 2021. For trend analysis, we used Poisson regression models.
Results: 317 BSI episodes were detected during 42,636 patient-HD-months. The annual BSI incidence rate by any pathogen ranged between 0.29 and 1.79 episodes per 100-patient-HD-months. We observed a decreasing trend for BSI of − 7.6% per year (95% CI − 5.5%, − 9.8%, $p < 0.001$). A total of 142 Gram-negative isolates were detected (113 Enterobacterales and 29 non-fermenters), and 90 *S. aureus*; annual incidence rates ranged between 0.07–0.98 and 0.04–0.88 episodes per 100-patient-HD-months, respectively. For both *S. aureus* and Gram-negatives, we observed a decreasing trend of − 9.7% (95% CI − 5.8%, − 13.8%, $p < 0.001$) and − 6.0% (95% CI − 2.8%, − 9.3%, $p < 0.001$), respectively. Multi-drug resistant Gram negative BSI was infrequent (19 episodes), with a non-significant annual incidence trend of 4.0% increase (95% CI − 4.6%, 13.6%, $p = 0.390$) per year. During the same time, we observed 30 MRSA BSI episodes, with a decreasing trend of − 17.4% (95% CI − 10.0%, − 25.4%, $p < 0.001$).
Conclusion: An intervention targeting *S. aureus* in HD patients did not result in an increase of Gram-negative healthcare-related BSI, which also decreased substantially in this population.

Disclosure of Interest
None declared.

P6

A successful improvement project to reduce dialysis events in a secondary care hospital in Saudi Arabia

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Introduction: Patients who undergo dialysis treatment require frequent or long-term vascular access and have an increased risk for infections which cause substantial morbidity and mortality and unnecessary hospital expenditure. Surveillance has long been recognized as a critical component in the prevention of the dialysis events (DE).
Objectives: The study shows successful improvement project to reduce DEs at a secondary care hospital in Saudi Arabia and improve patient outcomes.
Methods: We performed a prospective single-center surveillance to investigate the incidence and the spectrum of DEs among our outpatient hemodialysis center from 2019 till 2022. DE data was reported according to the National Healthcare Safety Network (NHSN) definitions (IV antimicrobial start, positive blood culture and pus, redness, or increased swelling at the vascular access site). Inpatients and peritoneal dialysis patients were excluded from the DE numerator and denominator reporting. Overall DE rates were calculated and analyzed. Z-test was used to compare the percentage change and a p-value less than 0.05 was considered significant. Beginning in 2020, we launched a performance improvement project to reduce DEs. Our team used brainstorming to create change ideas and then applied the plan-do-study-act (PDSA) methodology to implement and monitor the improvements. A bundle of interventions that included updating policies and procedures for vascular access management, introducing simulation training, launching an awareness campaign for all dialysis healthcare workers and included patient and family engagement, enhancing cleaning and disinfection processes, automation of data collection and performing root cause analysis for each DE. Regular reviewing of data and running of analysis reports was done to improve our patient outcomes.
Results: The overall DE rate (per 100 patient-months) by the end of 2019 reached 3.77. In 2020 and on, the improvement project was initiated and resulted in DE rate reduction to 0.83 by the end of 2022 (78% decrease, p-value < 0.05). The significant achievement of the project was maintaining zero DEs since May 2022 till date.
Conclusion: The implemented interventions effectively reduced the DEs in our hemodialysis center and led to sustainable results. Our initiatives to transform dialysis outcomes for patients were successful.

Disclosure of Interest
None declared.

P7

Risk factors of central line associated bloodstream infections associated to peripherally inserted central venous catheter in neonates admitted in a Tunisian neonatal intensive care unit

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Introduction: The use of peripherally inserted central venous catheters (PICC) is a common practice in neonatal intensive care units (NICUs). It is subject to placement and monitoring guidelines aimed at detecting the occurrence of complications, particularly infectious ones.
Objectives: This study aims to identify the risk factors (RF) of central line associated bloodstream infections (CLABSI) in a NICU.
Methods: A prospective study among neonates (NN) having undergone a PICC placement since at least 48 h, admitted to the NICU of a Tunisian university hospital during the period of November 1, 2020 to November 30, 2021. Analysis of the RF was performed by a Kaplan Meier analysis and then a COX multivariate analysis model. RF independently associated with infectious complications related to PICC were expressed as Hazard Ratio (HR) and a 95% Confidence Interval (CI). A significance level of $p < 0.05$ was considered.
Results: A total of 151 NNs were enrolled, with a mean gestational age of 32.95 ± 3.64 WA. The median age at placement was 4 days (IQR: 2–6) and the median weight was 1500 g (IQR: 1232.5–2017.5). Incidence density of CLBSI was 13/1000 PICC days. In univariate analysis, factors significantly associated with CLABSIs were: weight at delivery < 1500 g (HR = 2.95 (95% CI 1.5–5.8); p = 0.002), term of delivery < 30 WA (HR = 1.88 (95% CI 1.07–3.33); p = 0.02), infectious motif at admission (HR = 5.11 (95% CI 2.47–10.57); p = 0.001), mechanical ventilation (HR = 3.85 (95% CI 1.99–7.43); p = 0.001), hemodynamic disorders (HR = 2.43 (95% CI 1.03–5.76); p = 0.04), and duration of catheterization > 10 days (HR = 3.31 (95% CI 1.65–6.61:); p = 0.01). In the multivariate analysis, the RF independently associated with infectious complications were: the weight of placement more than 1500 g (HR = 0.48 (95% CI 0.24–0.97); p = 0.04), the infectious motif on admission (HR = 3.23 (95% CI 1.52–6.84); p = 0.002), and mechanical ventilation (HR = 2.97 (95% CI 1.5–5.85); p = 0.002).
Conclusion: Targeted preventive measures according to revealed risk factors should be taken to reduce this hazard in this population.

Disclosure of Interest
None declared.

P8

Investigating the impact of temporary interruption of perfusions on central line associated bloodstream infections in hematological patients: a before-after study

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Introduction: The role of perfusion interruption in the development of central line associated bloodstream infections (CLABSI) remains unknown.
Objectives: To evaluate the effect of 70% isopropyl alcohol-impregnated central venous catheter (CVC) caps associated with temporary interruption of perfusion therapies on CVC associated bloodstream infections (CLABSI) in hematological patients at Geneva University Hospitals (HUG).
Methods: We performed a before-after study in two hematology units at HUG where patients are admitted for allogeneic stem cell transplantation and its complications, for chemotherapy for acute leukemia or severe aplastic anemia therapy. From September 2020 to August 2021 all CVC received a continuous infusion without interruption of perfusions (baseline). From September 2021 to August 2022, we introduced the utilization of 70% isopropyl alcohol-impregnated CVC caps for temporary interruption of perfusions during patients transport out of the unit. Incidences of CLABSI per 1000 patient-days were calculated for baseline (BP) and intervention periods (IP). In addition, we calculated incidence rate ratio (IRR) for IP using segmented Poisson models. We also systematically assessed non-infectious complications during IP.
Results: Overall, 454 patients were hospitalized during the study period, including 255 during the IP. We observed 10 and 6 CLABSIs

during the BP and IP, respectively. The incidence was 1.80 per 1000 patient-days during the BP and 1.17 per 1000 patient-days during the IP. IRR for the intervention compared to the BP was 0.37 (95% CI 0.04–3.46, p = 0.38). We documented 63 utilizations of disinfecting caps and we observed only 6 episodes of non-infectious complications.
Conclusion: Temporary interruption of perfusions using 70% isopropyl alcohol-impregnated CVC caps did not impact CLABSI incidence in hematological patients. Further studies evaluating the impact of temporary interruption of perfusions without disinfecting caps on CLABSI development are needed.

Disclosure of Interest
None declared.

P9

Interventional study on central line associated blood stream infections (CLABSI) infections using chlorhexidine dressing and an alcohol-impregnated caps during the COVID-19 pandemic

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P9

Introduction: Central line associated blood stream infections (CLABSI) infections affects patient's morbidity and mortality; is preventable. Singapore hospital detected the first COVID-19 in Singapore in January 2020, numerous infection prevention strategies were introduced to prevent the spread. 2 CLABSI preventive measurements such as the chlorhexidine dressing (CHG-d) and an alcohol-impregnated cap (AIC) together in October 2021 during the pandemic.
Objectives: We aim to understand the overall effect of COVID-19 and the interventions had on CLABSI incidences.
Methods: The standards from the National Healthcare Safety Network (NHSN) definitions to identify a CLABSI and eligible central lines (CL). Data was collected from SGH from the November 2017 to December 2022 excluding patients with ineligible CL or patients on haemodialysis because of incompatibility with the interventions. The data and incidence rates per 1,000 CL days were analyzed using interrupted time series analysis (ITSA).
Results: The pre-pandemic incidence rate was 0.81 (n = 73) CLABSI incidences per 1,000 central line (CL) days. The average trend is an increase by 0.2 (95% CI − 0.05–0.10, p-value: 0.72) CLABSI infections with each passing month right up to the pandemic. The pandemic incidence rate was before the interventions were introduced, was 0.40 (n = 37) per 1,000 CL days, with an IRR of 0.58 (0.39–0.86, p-value: 0.004) with no significant change in the trend. There is some evidence of an immediate decrease in the CLABSI rate at − 0.43 (95% CI − 0.86 to − 0.01, p-value: 0.04). When the interventions were introduced, the incidence rate was 0.53 (n = 29) incidences per 1,000 CL days compared to pre-pandemic rates, with an IRR of 0.56 (95% CI 0.38–0.85, p-value: 0.002). When comparing the intervention period with the pandemic baseline; the immediate decrease, trend and IRR of 1.08 (95% CI 0.66–1.76, p-value: 0.74) was not statistically significant.
Conclusion: Introducing infection prevention interventions for CLABSI in the middle of an ongoing pandemic waves makes it difficult to determine what is the true effectiveness of the interventions. More data is required to compare periods outside the COVID-19 pandemic.

Disclosure of Interest
None declared.

P10

Prevention of tunneled, central catheter infection by antibiotic-heparin combination therapy in hemodialysis patients

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Introduction: Central venous catheters are frequently used as vascular access for patients requiring dialysis, but the resulting infectious complications remain a major clinical issue.
Objectives: This study aimed to compare the outcome of heparin alone or combined with vancomycin and amikacin antibiotics in preventing catheter-related infection in 60 patients (two groups of 30) undergoing hemodialysis in end-stage renal disease patients.
Methods: In this clinical trial, 60 hemodialysis patients with end-stage renal disease (in two groups of 30), for whom a central tunnel catheter of the internal jugular vein was recently implanted, were included in the study. After obtaining informed written consent, patients were randomly assigned to two groups (receiving 5000 U/ml heparin alone and 5000 U/ml heparin plus 500 mg/ml vancomycin and 500 mg/ml amikacin). For each patient, a checklist including demographic information and history of the disease has been completed. In the 6-month follow-up, the information related to the examination of the subcutaneous path of the catheter in terms of purulent discharge, as well as fever and chills during dialysis, and in case of purulent exudate, the culture results of purulent discharge and peripheral vessels were statistically analyzed.
Results: The average age of the patients was 59 years. (57.4%) Thirty-five patients were male. There was no statistically noticeable difference between the two groups regarding age and sex. The infection rate in patients receiving antibiotics and heparin lacquer was significantly lower than in patients receiving only heparin lacquer (p = 0.049). But in terms of fever and chills, this difference was not considerable. A positive catheter culture was notably higher in patients with heparin lacquer than in patients with antibiotics and heparin lacquer (p = 0.024). Despite the higher positive blood culture in the group of patients with heparin lacquer, this difference between the two groups was not significant.
Conclusion: The use of topical vancomycin, amikacin antibiotics, and heparin can effectively reduce the infection rate of tunneled central catheters in hemodialysis patients.

Disclosure of Interest
None declared.

Poster session: Surgical site infection: Prevention

P11

The reduction of surgical site infection using a multimodal strategies amidst COVID-19 pandemic—road to sustainability in a tertiary teaching hospital

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P11

Introduction: Surgical site infections (SSI) are one of the commonest hospital-acquired infections (HAI) and a major contributor to increased length of stay, morbidity, mortality and healthcare cost. COVID-19 pandemic has a significant impact on patient care and outcomes. Three waves of COVID19 have affected Malaysia's healthcare system since February 2020, when the first locally transmitted case was reported.
Objectives: The purpose of this study is to assess the impact of a multimodal strategy in the rates of the SSI following post-open reduction and internal fixation surgery (ORIF), mastectomy, coronary artery bypass surgery (CABG), and neurosurgery before, during and after the COVID-19 pandemic in University Malaya Medical Centre (UMMC).
Methods: A hospital based prospective study which included all patients who underwent ORIF, mastectomy surgery, CABG, and neurosurgery procedures. The study was conducted over three periods (P) in relation to COVID-19 pandemic; P1 before the COVID-19 pandemic (January 2018 to February 2020), P2 during the pandemic (March 2020–June 2022) and P3 recovery phase (July 2022–February 2023). A multimodal strategy which included a SSI prevention bundle, education, training, audit and feedback was implemented in a step wise manner from June 2018 to June 2019 with the involvement of a multidisciplinary team and key stakeholders. SSI rate per 100 procedures and compliance to the components to the bundle were analyzed.
Results: The total cases analyzed in the PI, P2 and P3 were 1108, 1245, 503 respectively. The SSI rate reduced by 25% from 9.48 (P1) to 7.45 (P2) per 100 procedures and continued to decrease by 36% to 4.57/100 procedures (P3). The SSI prevention bundle significantly improved from P2 to P3.
Conclusion: Despite the disruption of routine healthcare services during COVID-19, the surgical site infection rate reduced and the compliance to the SSI prevention bundle improved. This illustrates the importance of implementing a multimodal strategy with the involvement of key stakeholders in ensuring the sustainability of the intervention and optimal patient outcome.

Disclosure of Interest
None declared.

P12

Post-operative duration of surgical antimicrobial prophylaxis for cardiac surgery: is 24 hours adequate?

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P12

Introduction: The optimal duration for surgical antimicrobial prophylaxis (SAP) in cardiac surgery is unclear; most guidelines recommend 48 h. A national surgical site infection improvement (SSII) programme for cardiac surgery was established in Aotearoa New Zealand in 2015; from mid-2016 onwards all five hospitals performing cardiac surgery contributed data. One hospital had reduced the SAP duration from 48 to 24 h in January 2015.
Objective: Compare the SSI rate for patients receiving 24 h (Group A) versus 48 h of SAP (Group B).
Methods: Prospective observational study. Data was collected on adult patients undergoing cardiac surgery (CABG and/or valve replacement): patient demographics, procedure characteristics, risk factors for SSI (BMI, diabetes, smoking), adherence to guidance for skin antisepsis, SAP (type, dose, timing, post-operatively duration), and diagnosis of SSI at sternotomy site. CDC/NHSN definition of SSI was applied. SSI rate, patient and specific procedure variables were compared between groups for 1 July 2016–31 December 2022.
Results: There were 16,607 procedures over 78 months, 7458 (45%) received 24 h of SAP (A) and 9149 (55%) received 48 h (B). There was no significant difference in the SSI rate.

Sternotomy SSI rate	Group A, 24 h SAP Rate of SSI (95% CI)	Group B, 48 h SAP Rate of SSI (95% CI)	P value
Overall	2.48% (2.14–2.87)	2.08% (1.81–2.39)	0.09
Superficial SSI	1.01% (0.8–1.26)	0.89% (0.72–0.11)	0.48
Deep/organ space SSI	1.47% (1.22–1.77)	1.19% (0.77–1.43)	0.13

Most patients were male (A, 72.8% and B, 75.3%) but there were significantly more female patients in group A ($p<0.0001$). Patients in group A were less likely to have diabetes ($p<0.001$) or smoke ($p<0.001$). There was no significant difference in ASA scores ($p=0.20$) or patients with BMI > 30 ($p=0.59$).
Conclusion: In the setting of a national quality improvement programme with high adherence to SAP guidance, there was no significant difference in the SSI rate for patients receiving 24 h or 48 h of post-operative SAP with cefazolin.

Disclosure of Interest
None declared.

P13

Re-dosing and duration of surgical antibiotics prophylaxis in cardio-thoracic surgeries—a report

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P13

Introduction: Hospital accreditation programs insists hospitals to monitor timing and choice of surgical antibiotic prophylaxis (SAP), which was adhered as per guidelines by most of the surgical units. However, the duration of SAP and re-dosing for surgeries lasting longer than 4 h like cardio-thoracic surgeries (CTS) was not audited regularly and very limited data available in the literature. In this study we are evaluated the adherence to re-dosing of antibiotics and duration of SAP in a cardiac tertiary care hospital in South India.
Objectives: To monitor the timing and choice of surgical antibiotic prophylaxis. To evaluate the adherence to re-dosing of antibiotics.
Methods: This retrospective observational study was conducted in a tertiary care referral cardiac care hospital in south India between January 2019 to April 2023. Patients who underwent elective CTS, treatment charts were reviewed by pharm D intern and hospital infection control team using validated audit tool. Data regarding re-dosing of intra-operative antibiotics and duration of SAP was analyzed using simple statistics.
Results: During the study period 6765 subjects were receiving surgical prophylactic antibiotics. The analyzed data were shown in table-1.
Table-1. Data on re-dosing & duration of antibiotics in cardio-thoracic surgeries.

Parameters	Values
Total surgeries conducted	6765
Antibiotics stopped within 48 h	471 (6.9%)
Antibiotics stopped after 48 h	5698 (84.2%)
Total surgeries lasted more than 4 h	5164 (76.3%)
Total no of surgeries re-dosed	465 (9%)
Mean duration of antibiotics prophylaxis	3.7542

Conclusion: Only 9% of CTS were re-dosed in south Indian hospitals. Mean duration of SAP in this study was 3.7542 days. In the future aantibiotic stewardship practices should focus on re-dosing as well as duration of antibiotics apart from timing and choice antibiotics in the developing world.

Disclosure of Interest
None declared.

P14

Pre-surgery cutaneous preparation practices in a Tunisian hospital

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P14

Introduction: Surgical site infection (SSI) is a serious infectious complication that can result in increased medical costs and mortality rates. Appropriate pre-surgery cutaneous preparation can help prevent this complication.
Objectives: The purpose of this study was to evaluate the pre-surgery cutaneous preparation practices in all operating rooms at the University Hospital Sahloul in 2021.
Methods: This was a descriptive evaluation study (audit) of pre-surgery cutaneous preparation practices conducted over a two-week period in 2021 at the University Hospital Sahloul. All operation rooms were included in the study, and a trained doctor collected data using a pre-established data collection form. Data entry and analysis were performed using SPSS 20.
Results: Clean surgery was scheduled in 70% of cases. Patient jewelry was removed in the majority of cases (88.6%), and nail polish was removed in over half of cases (57.1%). Only 8.6% of patients were informed about the complete preoperative preparation, and among the informed patients, 71% had a complete shower at home using mild liquid soap (43%) and shower gel (57%). Depilation was performed in 45.7% of patients, and it was done in the block on the day of the intervention in 56.2% of cases. The most common method of hair removal was mechanical shaving (88%). Cleansing, rinsing, and drying were performed in 14.3%, 5.7%, and 11.4% of cases, respectively. Dermal antisepsis was the most well-respected step, with all criteria having scores above 50% except for the criterion related to the two applications of antiseptics separated by drying time (48.5%). Only 34.3% of cases had traceability of skin preparation.
Conclusion: Raising awareness and providing training to healthcare professionals on the importance of each step of pre-surgery cutaneous preparation is crucial for preventing surgical site infections.

Disclosure of Interest
None declared.

P15

Reducing surgical site infections caused by staphylococcus aureus, using hygiene interventions at a surgical outpatient clinic in a Dutch hospital

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P 15

Introduction: *Staphylococcus aureus* (*S. aureus)* bacteria is part of the human skin flora. *S. aureus* is the leading cause of surgical site infections (SSI's) in healthcare facilities associated with increased morbidity and mortality.
Objectives: The aim of this topic is to describe which strategies were taken to reduce the SSI's caused by *S. aureus* at a surgical outpatient clinic (SOC) in a Dutch general hospital.
Methods: Data analyses over the last 4 years (2019–2022) were performed to determine the amount of SSI caused by *S. aureus*. Only wounds classified as clean (National Healthcare Safety Network) which had a positive culture within 30 days after surgery, were included. The association between the type of procedure, physician and the operation theater (OT) was examined. Thirty *S. aureus* samples were sequenced and observations and interviews with the SOC staff were performed. Based on the information obtained through the described methods, interventions were implemented. After implementation, data analyses were performed for 4 months to conclude whether the interventions were effective.
Results: Data analyses showed an increase of *S. aureus* infections over the past 4 years (Table 1). There was no epidemiological link between the sequenced samples. Observations showed that physicians used colorless skin disinfectant. Patients entered the OT with visually contaminated hands. Implementation of colored disinfection and hand hygiene with water and soap, performed by the patient before disinfection, resulted in decreased infection rates (Table 2).
Table 1: *Infection rates before intervention 2019–2022.*

Year	Infections (%)	Total procedures
2019	6 (0.24)	2548
2020	26 (1.15)	2251
2021	38 (1.70)	2230
2022	33 (1.47)	2252

Table 2: *Infection rate after interventions.*

2022	Infections (%)	Total procedures
January–July (pre-intervention)	26 (2.10)	1236
August–December (post-intervention)	6 (0.59)	1016
Total	33	2252

Conclusion: A combination of observations, interviews, awareness and hygiene interventions resulted in a decrease of the SSI's caused by *S. aureus*.

Disclosure of Interest
None declared.

P16

Measurement equivalence between physicians and nurses in individual determinants of surgical site infection prevention compliance: results of a cross-sectional survey

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Introduction: Healthcare-associated infection prevention compliance varies between physicians and nurses. Understanding these differences is the key to adapt, i.e., tailor interventions to promote compliance. To identify the determinants on which to base tailoring, reliable and valid assessment instruments with measurement equivalence (ME) across professional groups are needed.

Objectives: To determine the reliability, validity, and ME of questionnaire scales used to assess determinants of surgical site infection (SSI) prevention compliance based on the Capability|Opportunity|Motivation–Behaviour (COM-B) model, and explore their associations with self-reported compliance.
Methods: Data on self-reported SSI prevention compliance and COM-B-based determinants were assessed using a questionnaire survey of 90 physicians and 193 nurses from six German hospitals outside the university sector. Single- and multi-group confirmatory factor analyses, t-tests, and multiple linear regression analyses were performed.
Results: Scales for individual determinants (capabilities, motivation, planning) but not opportunities showed reliability and validity among both physicians and nurses, and ME across both groups. Whereas no group differences were found in compliance or determinants, capabilities ($\beta = 0.31$), and planning ($\beta = 0.20$) showed theory-conform associations with compliance among nurses. For physicians, this only pertained to capabilities to a lesser extent ($\beta = 0.22$).
Conclusion: The scales assessing motivation, capabilities, and planning regarding SSI prevention compliance can be used to compare physicians and nurses. Scales with ME for social and physical environments (opportunities) have yet to be developed. The prediction of self-reported compliance was better and more in line with theory among nurses, indicating further research needs regarding physicians in order to adapt interventions to increase their compliance.

Disclosure of Interest
None declared.

P17

To study the existing system of surgical safety for cataract surgery at tertiary care ophthalmic centre to implement who surgical safety checklist

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P17

Introduction: Background: The study was done in a COE which provides state of the art patient care, expand human resources for medical education and undertake research to find solutions to eye health problems of national importance. Average numbers of cataract surgeries performed per month are 700 to 1000.
Objectives: The study was designed to check compliance of the surgical safety checklist in a COE. This would also lead to identification challenges in implementation of Surgical safety checklist in an institution.
Methods: Anticipating implementation in 50% cases hundred cases of cataract surgery were observed to study the existing system of surgical safety followed and gap analysis done, against the WHO surgical safety checklist for cataract surgery. Modified WHO surgical safety checklist for cataract surgery was developed and implemented in the centre. Barriers in implementation of surgical safety checklist were also identified, and remedial measures suggested.
Results: Significant improvement was noticed in all the parameters after introduction of modified checklist. The additional points which were added in modified surgical safety checklist were implemented in almost all the cases by the nursing staff. Overall mean compliance percentage before implementation of modified surgical safety check list was $37\% \pm 10.1$ ($P = 0.001$). While after introduction of modified surgical safety check list the mean compliance has improved to $62.7\% \pm 10.3$, Wilcoxon rank sum test/Independent test is applied for each domain.
Conclusion: Cataract procedure is the most common surgical procedure performed in the population in India. High volume and high turnover increase the potential for errors. Compliance to surgical safety check list before intervention was 32%. After intervention in form of a focus group discussion and introduction of modified surgical safety check list has resulted in increase in the compliance rate to 67%. This study revealed that changes or additional work is not happily accepted by the staff. After six months of intervention of modified surgical safety checklist compliance rate was still high, this suggests that constant supervision and monitoring by senior staff can sustain the compliance rate.

Disclosure of Interest
None declared.

P18

Participation of patients in surgical site infection prevention: their perceptions and those of healthcare professionals

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Introduction: Surgical site infection (SSI), the most common postoperative complication, impacts patients' morbidity and mortality and is associated with increased length of stay and hospital costs; however, about 60% of them are preventable through prevention measures. Although the recommendations for SSI prevention consider relevant the education and inclusion of patients as active agents in the process, there is little national evidence analyzing the perception of the participation of patients in SSI prevention.
Objectives: To analyze patients' and healthcare professionals' perception about patients' involvement in SSI prevention.
Methods: A descriptive-exploratory, cross-sectional study, including a convenience sample of elective surgical patients in the postoperative period and healthcare professionals (surgeons and nurses), involved in the care of surgical patients from two health institutions (public and private) of the city of São Paulo.
Results: The sample consisted of 123 patients and 92 healthcare professionals. The majority fully agreed with the relevance of patient participation for SSI prevention. Also, 85.4% of patients would like to be involved in SSI prevention. Having previously undergone surgery was associated with the perception that patient participation impacts SSI rates ($p = 0.021$). There was a divergence between the groups regarding the most appropriate time for patient education, in which patients indicated the postoperative period, and professionals, the preoperative period ($p < 0.001$). The strategies considered most effective for patient participation in SSI prevention were oral exposure, video, and pamphlets, in which there was a significant difference between groups' perceptions ($p < 0.001$, $p = 0.009$, $p < 0.001$, respectively). Patient education was related to the preference for the oral exposure strategy ($p = 0.026$) and conversation round ($p = 0.033$).
Conclusion: Patients and healthcare professionals believe that patient participation in SSI prevention is important and that impacts SSI rates. In addition, most patients want to get involved in SSI prevention and consider that the most effective strategies for patient participation are oral exposure, videos, and pamphlets, similar to healthcare professionals' perception.

Disclosure of Interest
None declared.

P19

Surgical site infections: 10-year prevalence trend (2012–2021) and risk factors in a Tunisian University Hospital

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P19

Introduction: Surgical site infections (SSIs) are nosocomial infections that represent a real public health problem, given their individual and economic repercussions. Several risk factors are involved in its occurrence.
Objectives: We aimed to describe the trend in the prevalence of surgical site infections and to identify risk factors associated with these infections.
Methods: A descriptive cross-sectional prevalence study was carried out on patients operated on at the Sahloul University Hospital with a single visit on a given day per department. All patients, operated on in the 30 days preceding the visit and/or for whom a prosthesis had been fitted during the year preceding the visit were collected. Socio-demographic and clinical data were collected using a synoptic form prepared from the medical records of the patients under study.
Results: A total of 1111 operated patients were identified. The mean age was 48.97 ± 22.3 years with a male predominance and a sex ratio of 1.57. The median length of stay was 10 days [5–19]. In our sample, the number of SSIs was 70, giving an average prevalence rate of 6.3%. The prevalence of SSIs in this sample showed a linear significant upward trend. Analysis by site showed 49 superficial and 21 deep infections. The occurrence of a surgical site infection was significantly associated with the placement of a prosthesis ($p = 10^{-3}$), length of hospital stays of 7 days or more ($p = 10^{-3}$), and ASA score greater than or equal to two ($p = 0.023$).
Conclusion: In the light of these results, the high rate of SSIs underlines the importance of strengthening prevention measures by implementing a prevention programme targeting the suggested risk factors.

Disclosure of Interest
None declared.

P20

Prevalence of extended-spectrum βeta-lactamase and carbapenemase-producing enterobacteriaceae among patients with surgical site infections in specialized hospitals, Northwest Ethiopia

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P20

Introduction: The emergence of extended-spectrum beta-lactamase (ESBL) and carbapenem-resistant Enterobacteriaceae and poor infection prevention and control strategies increased the incidence of surgical site infections (SSI), especially in resource-limited settings, like Ethiopia.
Objectives: The aim of the study was to determine the prevalence of ESBL and carbapenemase-producing Enterobacteriaceae among participants with SSI.
Methods: A hospital-based cross-sectional study was conducted from 1 May to 15 July 2022 in two big hospitals, in Northwest Ethiopia. A convenient sampling technique was used to include 241 study participants. Data on socio-demographics and clinical characteristics were collected using a structured questionnaire. Besides, wound swabs were collected for bacteriological culture and antimicrobial susceptibility testing (AST). AST, ESBL, and carbapenemase detection, and interpretation were done based on the Clinical Laboratory Standards Institute guideline. Data were entered into SPSS version 25 for analysis. Logistic regression was done to identify factors associated with SSI.
Results: Of the swabs collected from 241 study participants, 106 (44%) were culture-positive. The prevalence of ESBL and carbapenemase-producing Enterobacteriaceae were 52.8% and 5.7%, respectively. The most common EESBL-producing isolates were E. coli and Enterobacter spp., whereas E. coli and K. pneumoniae were found the predominant carbapenemase-producing isolates. Most of the isolates at 91 (85.8%) were found multi-drug resistant (MDR). Dirty wound type, presence of discharge at the surgical site, length of hospital stay for > 2 weeks, previous history of operation, and taking a prophylactic antibiotic after an hour were factors found associated with SSI.
Conclusion: The prevalence of ESBL-producing Enterobacteriaceae and carbapenemase production was alarming. Dirty wound type, length of hospital stay, and presence of discharge were associated with SSI. Therefore, actions on continuous surveillance of antimicrobial resistance, ESBL, and Carbapenemase screening should be strengthened.

Disclosure of Interest
None declared.

P21

Analysis of risk factors for postoperative infection in patients with colorectal cancer

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Abstract video clip description: Analysis of risk factors for postoperative infection in patients with colorectal cancer.
Abstract: Objective: To explore the risk factors of postoperative infection in patients with colorectal cancer, and provide a basis for the prevention and exploration of postoperative infection in colorectal cancer.
Method: A retrospective cross-sectional study was conducted on 3337 patients with colorectal cancer in the Department of Gastrointestinal Surgery, West China Hospital, Sichuan University, from July 2019 to April 2022. The patients were divided into infection group and control group, and related factors such as age, operation method, diabetes, anemia, operation duration, intraoperative blood transfusion, incision grade, ASA score and other related factors were analyzed. SPSS 16.0 software was used for one-way ANOVA and unconditional logistic regression to explore the risk factors and preventive measures affecting postoperative infection of colorectal tumors.
Result: Among 3337 patients with colorectal cancer, 115 had postoperative infection, and the postoperative infection rate was 3.45%. The result of One-way ANOVA indicated that the age of patients with colorectal cancer, the presence of diabetes, the presence of anemia, the duration of surgery, the length of hospital stays, and the ASA grade were associated with the occurrence of postoperative infection after colorectal cancer surgery ($P < 0.05$). Multivariate Logistic regression analysis showed that diabetes mellitus, anemia, operation time $\geq$ 120 min, and ASA grade $\geq$ III were risk factors for postoperative infection in patients with colorectal cancer.
Conclusion: Diabetes mellitus, anemia, operation time $\geq$ 120 min, and ASA grade $\geq$ III were risk factors for postoperative infection in patients with colorectal cancer. Healthcare institutions should focus on prevention of postoperative infections for patients with diabetes, anemia, operation time $\geq$ 120 min, and ASA classification $\geq$ III.

Disclosure of Interest
H. Zhuang Consultant for: no.

Poster session: Surgical site infection: Surveillance

P22

The incidence of surgical site infections in China: a comprehensive literature review

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Introduction: The incidence of SSIs in the mainland of China is still largely unclear. To address the recent incidence of SSIs in the mainland of China, we composed a review based on literature review.
Objectives: Our primary aim was to present the incidence of postoperative SSIs as a whole (regardless of the surgical site) and that stratified by major sites in the last decade in the mainland of China. Our secondary aims were: (1) to present the spectrum of microorganisms associated with SSIs, and (2) to evaluate the impact of SSIs on patient outcomes and financial burden in the China mainland.
Methods: We searched six databases for studies of SSIs in the mainland China published between January 2010 and February 2023. All studies or surveillance data related to SSIs published in English or Chinese were eligible, while review articles, case reports, case–control studies, editorials/letters, and cross-sectional surveys were excluded.
Results: A total of 231 eligible studies were included for analysis. We identified a median SSI incidence of 2.91% and calculated a pooled SSI incidence of 3.18%. We found that various criteria were used for determining SSIs. Among the 15 surgical sites or procedures screened, the highest SSI incidence (median, 14.89%; pooled, 12.54%) was seen after colorectal surgeries. Enterobacterales were the most common type of microorganisms recovered from samples associated with SSIs after various surgeries involving the abdomen, while staphylococci were the dominant type associated with SSIs after cardiac and neurological procedures. SSIs prolonged hospital length of stay and led to increased mortality rates and also imposed elevated direct economic burden for affected patients.
Conclusion: The findings highlight the necessity of establishing a nationwide network for surveillance on SSIs with unified criteria with the aid of informatic techniques, underscore the importance of implementing tailored tackling measures well informed by local data and observation, and identify the impact of SSIs as a critical area for further studies. We hope that this review could serve as a stepping stone to inspire more studies of SSIs in China.

Disclosure of Interest
None declared.

P23

Clustered and isolated healthcare associated infections in surgery facilities: analysis of the national notification system

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Introduction: In France, severe or uncommon healthcare associated infections (HCAI), according to microorganism (MO), location, associated death, or clustered cases, should be mandatory notified to health authorities.
Objectives: To describe the HCAI which has been reported in surgery facilities for the last 10 years.
Methods: HCAI notifications were extracted from the national notification database between 2011 and 2022. Colonization, community-acquired infections and Covid-19 clusters were excluded from the analysis. Notifications were studied at two levels: surgical site infections (SSI) or not ("non-SSI") and cluster (CC) or isolated cases (IC).
Results: Overall, 2,107 notifications were analyzed included 59% of SSI and 41% of non-SSI. Of them, 75% were monomicrobial, and 15% mentioned a death. Tables 1 and 2 show the main HCAI characteristics.
Table 1: Main location and MO in the 1,244 SSI notifications.

Infection location	IC N = 1026		CC N = 218		
	Rate of notifications	Main MO	Rate of notifications	Main MO	Median number of patients (min–max)
Orthopedic	35%	*S. aureus*	36%	*S. aureus*	2 (2–46)
Ophthalmic *e.g.* cataract surgery	28%	*S. epidermidis*	23%	*S. epidermidis*	5 (2–24)
Cardiovascular	7%	*S. aureus*	11%	*S. aureus*	5 (2–42)

Table 2: Main location and MO in the 863 non-SSI notifications.

Infection location	IC N = 674		CC N = 189		
	Rate of notifications	Main MO	Rate of notifications	Main MO	Median number of patients (min–max)
Ophthalmic *e.g.* intravitreal injection	18%	*S. epidermidis*	12%	Coagulase negative staphylococci	2 (2–13)
Respiratory	14%	*L. pneumophila*	19%	*Virus influenzae*	4 (2–63)
Digestive	11%	*C. difficile*	25%	*C. difficile*	4 (2–80)
Blood	11%	*K. pneumoniae L. monocytogenes*	14%	*K. pneumoniae*	3 (2–7)

Conclusion: Both SSI and non-SSI are notified in surgery facilities. The notification system highlights the cases of usually low-frequency infections (*eg.* ophthalmic HCAI), which are otherwise hard to track. Despite the notifications being incomplete by design, their analysis provides additional insight to the SSI incidence surveillance system. Clusters represent a non-negligible part of HCAI notifications, suggesting the need for promoting infection control in these facilities.

Disclosure of Interest
None declared.

P24

The implications of post-caesarean surgical site infection at a rural district hospital in Zimbabwe: a period prevalence survey

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Introduction: Surgical site infection (SSI) is a major health-care associated infection (HAI) in developing countries. Caesarean delivery is the most common surgical procedure at district hospitals in Sub-Saharan Africa. This study was conducted at an 80-bedded rural district hospital in Zimbabwe with a Caesarean Section rate of 14%.
Objectives: To determine the prevalence of post-caesarean SSI (PCSSI), its impact on hospital stay and cost of antibiotics and the level of implementation of active PCSSI surveillance and the use of the WHO surgical safety checklist (SSC).
Methods: A retrospective review of routinely collected data was done for women who underwent Caesarean sections between 1 July 2018 and 30 June 2019. Data was abstracted from theatre registers, patient notes, WHO SSC and PCSSI surveillance checklists. The development of PCSSI was verified from patient notes and surveillance checklists. Data analysis was done using Stata 16.
Results: Of 185 women who had Caesarean sections, 9 (4.9%) developed PCSSIs; 5 (55.6%) superficial, 4 (44.4%) deep and none involving organ/space. The mean (SD) days to development of PCSSI was 7.3 (3.2) days. The women who developed PCSSIs endured a mean (SD) additional hospital stay of 11.0 (8.2) days and incurred a mean (SD) cost of additional antibiotics of USD 150.22 (75.60). The PCSSI surveillance and WHO surgical safety checklists were completed in 34 (18.4%) and 8 (4.3%) of women in the study population respectively.
Conclusion: While there was a lower PCSSI prevalence than previously reported in the country and region, there were significant cost implications. Hospital stay increased fivefold and the cost of the additional antibiotics per patient was high, equivalent to two to-three months' salary for a Zimbabwean domestic worker. PCSSI surveillance and the use of WHO SSC need to be strengthened, to achieve sustainable gains in the prevention of PCSSIs.

Disclosure of Interest
None declared.

P26

Incidence of surgical site infections in the service of obstetric gynecology in 2017

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Introduction: Monitoring of surgical site infections (SSI) is a priority in our facility. In the Obstetrics Gynecology department, the incidence of SSIs has significantly decreased since it joined the active surveillance network since 2006.
Objectives: - Calculate the SSI's incidence.
- Identify risk factors related to the occurrence of SSI.
Methods: Descriptive longitudinal study for analytical purposes. Data collection was carried out between 1st February and 10th April.
2017 with a follow-up up to + day 30. The SSI diagnosis was established according to the criteria of the CDC Atlanta. Data entry and analysis was done on the Epi Data Entry 3.02 and Epi Data Analysis software.
Results: A total of 200 interventions were included. The average age is 41 + / − 12 years old. 49% had an ASA score = 1, the average length of stay was 6.77 + / − 7.48 days. The percentage of patients reviewed on D + 30 was 91.5%. More than two thirds of the interventions were clean contaminated (71%), 44% of operated had a score of NNIS = 1 and almost a quarter of the interventions carried out in emergency (22.5%). The SSI's incidence is 6.5% (12 patients), the average age of infected patients was 41.44+/−9.56 years and mean time to onset of infection is 6.3 + / − 4.5 days.
The SSI's incidence was significantly greater when the patients had performed a depilation using a razor, RR = 4.05.
IC [1.13–14.49] $p < 0.04$, for the other types of depilation: cream and mowing, The infected patients had a significantly higher average age (41.44 ans ± 9.56 years versus 39.38 ans ± 11.19, $p < 0.04$). The SSI rate was significantly higher when the class Altemeier was contaminated (10.3% versus 2.3% clean contaminated, $p < 0.05$).
Conclusion: The surveillance of SSI in Gynecological Obstetrics has highlighted risk factors that should be taken into account to improve the management and prevention of risks associated with surgical care. The aim is to reduce the average duration of surgery, to be cautious in patients with multitares, to avoid mechanical shaving and to promote other types of hair removal: cream and hair trimmers.

Disclosure of Interest
None declared.

P27

Surgical site infection detection: contribution of data mining models and data extracted from the hospital information system

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Introduction: To improve efficiency and overcome the difficulties, recent surveillance strategies proposed to apply routinely collected data available in hospital electronic databases to facilitate Surgical site infections (SSIs) monitoring.
Objectives: Our aims was to assess the contribution of both medical data (diagnosis and medical procedures) from the diagnosis related groups information system and datamining method (DM).
Methods: A retrospective cohort study has been established. The gold standard was the presence of a SSI, diagnosed by a surgeon. The performance of a base algorithm and new models was evaluated and then the models were compared together. 3900 patients operated of a selected surgery in one year at an university hospital were included. Patients were followed up to 30 days after surgery. Prediction models were constructed using random forests and AdaBoost models. They have been established by combining different data sources. Models' performances were achieved by determining sensitivity, specificity, area under the ROC curve (AUC) and the Net reclassification improvement (NRI).
Results: SSI rate was 4.9%. DM models were built from about 2500 variables. The sensitivity and specificity of SSI detection were, respectively, 76% [CI95: 69.7–81.7] and 93%[92.2–93.8] for base algorithms, 81.4%[68.7–89.9] and 97.8%[96.8–98.6] for random forests model, 79.7%[66.8–88.6] and 97.9%[96.9–98.7] for AdaBoost models. The two DM models were more efficient than the base one for both the AUC ($p < 10^{-5}$) and the NRI ($p < 10^{-3}$).
Conclusion: The models built by DM showed a better performance in terms of SSI detection. Using DM in routine seems possible but requires further validation with other data.

Disclosure of Interest
None declared.

P28

Evaluation of a national implementation strategy on semi-automated surveillance of surgical site infections after hip or knee arthroplasty—a pilot study

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Introduction: For the national implementation of automated surveillance (AS) of surgical site infections after total hip or knee arthroplasty, PREZIES (Dutch surveillance network for healthcare-associated infections) developed a decentralized implementation strategy. Hospitals develop and implement local AS systems, according to a protocol with minimal requirements. A user manual, education module, individual guidance and user group meetings were offered by PREZIES.
Objectives: We aimed to perform an effect and process evaluation as well as an evaluation of barriers and facilitators of the implementation to determine the effectiveness of this strategy and to improve the implementation strategy before upscaling.
Methods: We conducted a mixed-method study using interviews and a survey among stakeholders in 5 pilot hospitals, based on the feasibility framework of Bowen et al. and the Consolidated Framework for Implementation Research (CFIR) of Damschroder et al. Interviews were conducted to explore the experiences of stakeholders with the implementation strategy, and barriers and facilitators of the implementation. Based on the interview results, a survey was developed to quantify the results. We monitored required capacity and workload, and algorithm performance.
Results: First results of 5 interviews among various stakeholders showed that the education module could be more specific and practically usable. Individual guidance and the user manual were helpful. Important barriers of implementation were capacity of the information technology department, availability and linkage of source data, and relative priority of the project in the hospital. Important facilitators were motivation and engaging local stakeholders, examples from other hospitals and a fruitful collaboration within the implementation team and within the hospital. Results of the survey, workload and system performance will follow.
Conclusion: This study describes an implementation strategy for large scale AS and indicates the effectiveness of components. Barriers and facilitators found in this study can be taken into account in hospitals starting implementing AS.

Disclosure of Interest
None declared.

P29

Prediction of surgical site infection: a comparative analysis between two surgeries based in artificial neural networks

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Introduction: A survey was performed in six hospitals, in Belo Horizonte (3 millions inhabitants), on surgical site infection (SSI), between July 2016 and June 2018, in patients undergoing to two surgery procedures: orthopedic trauma (OT) and prosthetic(P).
Objectives: Statistically evaluate and compare such incidences and enable an analysis of the predictive power of SSI, through MLP (Multilayer Perceptron) algorithm.
Methods: A data collection on SSI was carried out, thus, three procedures were performed: a treatment of the database collected for use of intact samples; a statistical analysis on the profile of the collected hospitals and; an evaluation of the predictive power of five types of MLPs (Backpropagation Standard, Momentum, Resilient Propagation, Weight Decay and Quick Propagation) for SSI prediction. The MLPs were tested with 3, 5, 7 and 10 neurons in the hidden layer and with a division of the database for the resampling process (65% or 75% for testing, 35% or 25% for validation). They were compared by measuring the AUC (Area Under the Curve—from 0 to 1) for each of the configurations.
Results: From 23,464 (P) and 2035 (OT) records, 11,765 (P) and 1412 (OT) where able for analysis. Statistically, was evaluetad: average age: 38 (OT) and 47 (P) years; average surgery time:107 (OT) and 156 (P) minutes; death rate reached: 3.7%(OT) and 1.57 (P) and the SSI rate reached 2.4%(OT) and 1.29%(P). A maximum AUC of 0.594 (OT) and 0.7 (P) was found.
Conclusion: The data collection lost approximately 50%(P) and 30%(OT) of samples. However, even with 10 times more samples for (P), the prediction for (OT) showed an approximate 10% better capacity. To optimize data collection, two mobile application were developed, for monitoring the patient in the hospital and for monitoring after hospital discharge. The SSI prediction analysis tool is available at www.nois.org.br.

Disclosure of Interest
None declared.

P30

Surgical site infection predictive analysis: a comparative evaluation of multiple surgeries procedures

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P30

Introduction: Between July 2016 and June 2018, in Belo Horizonte (3 millions inhabitants), a survey was performed in five hospitals, about surgical site infection (SSI) in patients undergoing to three surgeries procedures: explorer laparotomy (EL), emergency surgeries (E) and small intestine (SI).
Objectives: Statistically evaluate and compare such incidences and evaluate the SSI predictive power, through MLP (Multilayer Perceptron) algorithms.
Methods: A data collection on SSI was performed, followed by: the database's treatment; a statistical analysis and an assessment of the SSI predictive power of five types of MLPs (Backpropagation, Momentum, Resilient Propagation, Weight Decay and Quick Propagation). The MLPs were tested with 3, 5, 7 and 10 neurons in the hidden layer and with a division of the database for the resampling process (65% or 75% for testing, 35% or 25% for validation). They were compared by measuring the Area Under the Curve (from 0 to 1) for each of the configurations.
Results: From 2369 (EL), 226 (SI) and 10,177 (E) records; 1032 (EL),172 (SI) and 7,402 (E) were able for analysis. The following findings were obtained, as the average age: 45 (EL), 56 (SI) and 34 (E) years old; surgical average time: 126 (EL), 141 (SI) and 86 (E) minutes; death rate: 37%(EL), 2.89%(SI) and 1.7%(E); and the SSI rate: 4%(EL), 2.89%(SI) and 2%(E). A maximum prediction power of 0.6857 (EL), 0.9761 (SI) and 0.63 (E) were found.

Conclusion: There was a loss of more than 50%(EL), 24%(SI) and 30%(E) of database samples. However, it was possible to achieve a prediction of 30% more for (SI). To optimize data collection, two mobile application were developed: one for monitoring the patient in the hospital and another for monitoring after hospital discharge. The SSI prediction analysis tool is available at www.nois.org.br.

Disclosure of Interest
None declared.

P31

Development and evaluation of a Brazilian mobile app for surgical site infection post-discharge surveillance

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Introduction: Surgical site infection (SSI) is a leading infection within healthcare, associated with high financial losses, morbidity, and mortality. Most SSIs present in the patient's home, requiring effective post-discharge surveillance (PDS). Therefore, considering the constant evolution of technological resources, developing a mobile application for SSI post-discharge surveillance becomes pertinent.
Objectives: The general purpose was to create and evaluate a mobile application for SSI post-discharge surveillance as a clinical decision support system. For specific aims, we sought to develop a mobile application with interoperability with a web system; evaluate the content related to SSI post-discharge surveillance, the technical quality, and the usability of the developed mobile application.
Methods: Technological development study, guided by the theoretical framework of the Agile Scrum method, developed in three stages: (1) definition of requirements and elaboration of the content of the mobile application; (2) structuring, generation of implementation alternatives and prototyping of the mobile application and (3) evaluation of the mobile application, carried out by eight health professionals, eight specialists in computer engineering and information systems and ten surgical patients, using the tools Suitability Assessment of Materials, for content evaluation; ISO/IEC 25010 standard of 2011, for technical quality assessment and System Usability Scale, for usability assessment. FAPESP grant number 2019/22306–0.
Results: The application called VigiApp had specific SSI PDS content considered "excellent" or "adequate" by health professionals. Health professionals and computer engineering and information systems specialists evaluated the technical quality as excellent. Usability assessed by healthcare professionals, computer engineering and information systems specialists, and surgical patients received a median rating**.**
Conclusion: The VigiApp was created and evaluated from different perspectives. It can act as a clinical decision support system by allowing, through its functionalities, the monitoring and detection of SSI and interoperability with a web system for access by healthcare professionals to know the results of their patients' health evaluations.

Disclosure of Interest
None declared.

P32

Neurosurgical site infection with *Cutibacterium sp.*: a retrospective cohort study

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Introduction: *Cutibacterium sp.* is increasingly recognized as a cause of neurosurgical infections.
Objectives: We aim to describe the clinical characteristics and outcomes of patients with a *Cutibacterium sp.* neurosurgical site infection in a secondary care hospital in Valais, Switzerland.
Methods: We conducted a retrospective cohort study of all patients who presented with a surgical site infection (SSI) with *Cutibacterium sp.* after a neurosurgical procedure performed at the Valais Hospital between 1 January 2015 and 11 April 2022. Cases were defined according to the following criteria (1) onset of infection up to 1 year after surgery; (2) growth of *Cutibacterium sp.* on culture from an aseptically collected specimen from the surgical site; and (3) a targeted antibiotic therapy or a diagnosis of SSI by an infectious disease specialist. Cases were identified by matching the registry of patients undergoing neurosurgery during the study period and the positive results of neurosurgical specimens for *Cutibacterium sp* from the hospital microbiology laboratory.
Results: We identified 23 patients. Incidence of *Cutibacterium sp.* infections in neurosurgery was 4.96 per 1′000 operations during the study period. The median age at the time of the surgery was 60 years old (range 16–81) and 17 (73.9%) were men. The surgical indication was related to trauma in 10 (43.5%) and to degenerative disease in 7 (30.4%) cases. Osteosynthesis implants were used in 20 (87.0%) cases. Disinfection was performed in all cases and 22 (95.7%) cases received an antibioprophylaxis within 60 min prior to incision. The median time from surgery to the first positive *Cutibacterium sp* specimen was 27 days (range 7–340). Nineteen (82.6%) cases presented with clinical signs while 4 cases presented with biological and/or radiological signs only. Fourteen (60.9%) patients needed one surgical revision, 7 (30.4%) needed two surgical revisions and 9 (45.0%) had implant removal. The median length of all hospital stays was 29 days (range 7–51).
Conclusion: Patients were predominantly male, relatively young and underwent frequent reinterventions and implant removal. Routine disinfection and compliance with antibiotic prophylaxis did not prevent the occurrence of SSI. Other prevention measures such as subcutaneous disinfection should be further explored.

Disclosure of Interest
None declared.

Poster session: Viral and bacterial respiratory tract infection

P33

Mortality associated with bacterial pneumonia and sepsis in patients hospitalized with COVID-19 during omicron waves in Hong Kong

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Introduction: Bacterial infections are major complications in patients with respiratory viral infections including COVID-19.
Objectives: This study aimed to characterize occurrence of sepsis and bacterial pneumonia in COVID-19 patients during Omicron waves in Hong Kong and to estimate the risk of mortality associated with these two infections.
Methods: We conducted a retrospective cohort study on hospitalized adult patients with community-acquired COVID-19 between January and October 2022 using territory-wide electronic health records. Exposures were pre-defined suspected bacterial pneumonia and sepsis during admission by modified CDC surveillance definitions, stratified by early and late onset (occurrence within or beyond 3 days of admission). The primary outcome was all-cause mortality 60 days after admission. Multivariable logistic regression was used to examine the association between early or late bacterial pneumonia and sepsis and mortality adjusting for demographics, comorbidities, admission during epidemic peak, vaccination and drug use before admission.

Results: We included 51,571 patients with 73.0% (n = 37,664) aged over 64 years. Overall, 18.5% (n = 9,545), 2.3% (n = 1,187) and 3.0% (n = 1,539) of the patients had bacterial pneumonia, sepsis, and both pneumonia and sepsis, respectively, with most infections occurred early within 3 days of admission. The crude 60-day mortality ranged from 20.5% in patients with early bacterial pneumonia to 56.6% in patients with both bacterial pneumonia and sepsis occurred late compared to patients without the infections (10.9%). Higher adjusted odds ratios (aOR) were estimated for sepsis (late: aOR 7.9, 95% CI 6.2–10.2; early: 5.7, 4.8–6.7) or both infections (late: 8.6, 6.9–10.9; early: 7.0, 6.1–8.1) than for bacterial pneumonia (late: 2.4, 2.2–2.6; early: 1.9, 1.7–2.0). In addition, admission during epidemic peak increased mortality while COVID-19 vaccination may lower the risk of death.
Conclusion: Bacterial pneumonia and sepsis especially late occurred infections were strongly associated with increased mortality in hospitalized COVID-19 patients during Omicron waves in Hong Kong. The findings highlighted the importance of early identification of bacterial infections particularly sepsis in improving mortality for COVID-19 patients.

Disclosure of Interest
None declared.

P34

Mind the hap: a multidisciplinary project to reduce the incidence of hospital acquired pneumonia on the elderly care wards at the Royal Berkshire Hospital, UK

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Introduction: Hospital acquired pneumonia (HAP) is the most common nosocomial infection in the UK. It is associated with prolonged length of stay and significant mortality. In 2019 HAP incidence on the Royal Berkshire Hospital Elderly care wards represented 5% of hospital admissions, exceeding the national average. This led to the launch of a multidisciplinary project to improve HAP diagnosis, management and prevention.
Objectives: To improve the diagnosis and management of HAP and reduce HAP incidence through the implementation of preventative interventions.
Methods: A steering group was formed by relevant clincal and non-clinical staff. At the ward level HAP champions were nominated from the nursing and health care assistant (HCA) staff.
The project was lauched with a HAP awareness day and poster campaign alongside dissemination of a patient leaflet to those diagnosed with HAP. A structured multidisciplinary teaching programme was delivered in addition to basic swallow assessment training for nursing staff. Patients at high risk of HAP were also identified daily through the nursing safety huddle.
To monitor the effectiveness of the interventions 3 audit cycles were performed between 2019 and 2023 to evaluate the diagnosis and management of HAP cases. The frequency with which prevention measures were performed was captured daily and displayed on an electronic HAP dashboard. Findings were reviewed monthly and fed back to all wards.
Results: Between 2019 and 2023 HAP incidence is now maintained significantly below 5%, diagnostic accuracy has increased from 35 to 81%, antimicrobial guideline usage has increased from 29 to 78%, sputum collection has increased from 9 to 24%, and HAP preventative approaches have been embedded across all wards.
Conclusion: By taking a multidisciplinary approach to problem solving, communication, analysis and interventions, significant improvements have been achieved in the diagnosis, management and prevention of HAP on the elderly care wards. This has ultimately led to a substantial reduction in HAP incidence.

Disclosure of Interest
None declared.

P35

Prevention of ventilator-associated pneumonia- guideline adherence and outcomes

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Introduction: Ventilator-Associated Pneumonia (VAP) is one of the leading causes of morbidity and mortality in Intensive Care Units (ICU). VAP has a high incidence rate that can be reduced through the use of bundles, thus ensuring better outcomes. However, its effectiveness is closely related to implementation and dissemination strategies.
Objectives: To assess adherence to a VAP prevention bundle; to assess the impact of adherence on outcomes (VAP, mortality rate, hospital length of stay (LOS), and duration of invasive ventilation (IV)).
Methods: A quasi-experimental study was conducted, pre-and post-intervention, with historical control in three ICU over 6 months. The bundle was implemented and disseminated based on a multimodal approach, targeting physicians and nurses. The sample comprised patients hospitalized in the ICU aged ≥ 18 years and submitted to endotracheal intubation for more than 48 h. Adherence to the bundle was assessed through auditing by observation. Outcome data were collected daily and entered into an intern database. Results were processed by the Statistical Package for the Social Sciences. The study was approved by the Ethics Committee and the hospital's Board of Directors following the ethical principles for health research.
Results: The sample comprised 828 patients aged between 18 and 95 years (M = 61.85; SD = 15.8 years). Increasing adherence to most of the recommendations over the course of the study was found, with two being statistically significant ($p = 0.014$), ($p = 0.002$). Also, adherence to all interventions simultaneously increased from 83.4% to 88.2% ($p = 0.015$). These results showed the effectiveness of a multimodal strategy approach. In addition, the statistical analysis confirmed that greater adherence to maintaining endotracheal tube cuff pressure was associated with shorter IV ($p < 0.001$), ICU LOS ($p < 0.001$) and lower mortality rate ($p = 0.002$). On the other hand, results showed that greater adherence to all interventions simultaneously was directly related to fewer in ICU LOS ($p = 0.004$) and fewer IV ($p = 0.016$, $p = 0.005$).
Conclusion: From the data obtained on the association between adherence to each recommendation and health outcomes, this study provided a valuable contribution to better understanding the effectiveness of each intervention individually concerning VAP prevention.

Disclosure of Interest
None declared.

P37

The role of respiratory viruses along with COVID-19 in pediatric lower respiratory tract infections

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Introduction: COVID-19 pandemic had significant impact on child health and respiratory infections is one the most common presentation of it.
Objectives: The aim of the study was to determine the role of other respiratory viruses along with COVID-19 in children with lower respiratory tract infections (LRTI).
Methods: All children with LRTI aged 2 months till 14 years referring to Akbar pediatric hospital in Mashhad-Iran from January till June 2021 were tested for nine respiratory viruses including COVID-19 by Multiplex real-time PCR.
Results: From 102 children with LRTI, 60 (58.8%) were male and 70 (68.6%) without any underlying illness. Twelve (11.8%) of them admitted in intensive care unit. Respiratory viruses were detected in 81 (82.6%) of the patients. COVID-19 was positive in 26 (25.4%) of the samples. RSV was positive in 11 (11.2%) followed by Rhinovirus 4 (5.9%), Bocavirus 4 (5.9%) and Adenovirus4 (5.9%).
Conclusion: Other respiratory viruses should be considered in children with LTI during COVID pandemic.

Disclosure of Interest
None declared.

P38

Trends of healthcare-associated infections in a Tunisian University Hospital during COVID-19 pandemic (2019–2023)

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Introduction: Healthcare-associated infections (HCAIs) represent a major public health problem worldwide. In Tunisia, COVID-19 started in March 2020, and resulted in a varied adherence to infection control measures.
Objectives: The aim of our study was to determine the overall trend of HAIs, as well as their trends according to the infectious site during COVID-19 pandemic.
Methods: We conducted a repeated cross-sectional study over 6 years in Sahloul University Hospital of Sousse from 2019 to 2023. All patients hospitalized for at least 48 h were included.
Results: The prevalence of HCAIs was 9.5% in 2019, then it increased to 15.5% in 2020, and decreased to 10.1% in 2021, 8.4% in 2022, then rose to 12.5% in 2023. The prevalence of infected patients was 8.5% in 2019 then it rose to 14.9% in 2020, and decreased to 9.6% in 2021, 8.1% in 2022, then 10.2% in 2023.
Urinary infections was almost stable beween 2019 and 2020 (24.1% and 23.9% respectively), then it reached a pic in 2021 (31.8%), and fell to 13.6% in 2022 and 19.2% in 2023. Surgical site infections rose from 17.2% in 2019 to reach a pic at 26.1% in 2020, then it decreased to 13,60% in 2022, and then reached a second pic in 2023 (30.7%). Bacteremia decreased from 13.8% in 2019 to 6.5% in 2020. Then, it suddenly rose to 27.2% in 2021, decreased again to 4.5% in 2022, and reached another pic in 2023 (26.9%). Respiratory infections steadily decreased from 27.6% in 2019 to 13.6% in 2021. Then, there was a rise to 27.2% in 2022 and 11.5% in 2023.
Conclusion: The prevalence of HCAIs was high in full Covid-19, and then probably decreased with the improvement of hygiene measures. However, this prevalence increased after COVID-19. Infection prevention trainings should be continuously repeated to better control HCAIs.

Disclosure of Interest
None declared.

P39

Nosocomial infections in patients with and without COVID-19 in intensive care units

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Introduction: Nosocomial infections (NI) are a significant patient safety concern, particularly in intensive care units (ICUs). Patients with COVID-19 infection require extended hospitalization and aggressive treatments, which may increase their risk of developing NI.
Objectives: This study aimed to compare the incidence and risk factors for NI between COVID-19 infected patients and non-COVID-19 patients in the ICU.
Methods: We conducted a prospective incidence study over three months at Sahloul University Hospital, including all patients hospitalized for more than 48 h in seven ICUs. We extracted data from medical records, including diagnoses, laboratory results, microbiological data, and antibiotic use. Microbiologically-confirmed bacterial and fungal pathogens from clinical cultures were assessed to characterize community- and healthcare-associated infections.
Results: A total of 225 patients were included in the study, with a total prevalence of NI of 8% (18 cases). Patients were divided into two groups based on their COVID-19 status; the prevalence of NI among COVID-19 infected patients (group 1) was 25.9% compared to 5.5% in non-COVID-19 patients (group 2) ($p < 0.001$). Regarding NI risk factors, there were significant differences between group 1 and group 2 in terms of mean age (61.14 ± 11.9 vs. 36.12 ± 20.2 years, $p = 0.001$, respectively), medical history of cardiopathologies (28.5% vs. 18.18%; $p = 0.01$), presence of urinary catheter (100% vs. 63.7%; $p = 0.015$), peripheral venous catheter (100% vs. 27.8%; $p = 0.01$), and sedation (100% vs. 63.7%; $p = 0.007$).
Conclusion: Reducing the transmission of NI remains a significant challenge, particularly in the context of the COVID-19 pandemic, which has placed a significant burden on hospitals and healthcare providers. It is essential to gain a deeper understanding of the transmission pathways of NI to implement infection prevention guidelines and improve patient protection.

Disclosure of Interest
None declared.

P41

Inadequate infection prevention in Pakistan's tertiary care hospitals and the rise of co-infections of RSV, influenza, and SARS-CoV-2 during 2019–2023

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Introduction: Inadequate infection prevention and control (IPC) measures in tertiary care hospitals can have serious implications for public health. The co-infection of multiple respiratory viruses, including RSV, influenza, and SARS-CoV-2, can lead to increased morbidity and mortality rates.
Objectives: This study aims to investigate the consequences of inadequate IPC with a specific focus on co-infections. It include identifying associated risk factors, assessing clinical outcomes and disease severity, investigating genetic characteristics of viral strains.
Methods: Between December 2019, and April 2023, 1523, nasopharyngeal samples were collected which fulfil extended SARI and ILI cases definition from different tertiary hospitals in Pakistan. These

samples are screened for the presence of RSV, SARS-CoV-2 and Influenza by real-time PCR and whole genome sequencing.
Results: Of the 1523 samples collected, 198 (13%) tested positive for RSV, with 178 (90%) positive for RSV-A and 20 (10%) for RSV-B. Of the positive RSV samples, 14 (7.07%) were also positive for influenza and 13 (5.57%) for SARS-CoV-2, with co-infections associated with more severe symptoms. Phylogenetic analysis revealed that the RSV-A sequences belonging to the A23 clade. Influenza A/H1N1 had higher divergence rates and from clade 6B.1A.5a.2a, while Influenza A/H3N2 sequences had a lower divergence rate from clade 3C.2a1b.2a.
Conclusion: Insufficient protocols, resources, and training for healthcare workers, coupled with inadequate infrastructure and overcrowding, contribute to a compromised IPC environment. Consequently, there is an elevated risk of transmission and outbreaks of RSV, influenza, and SARS-CoV-2 within these hospital settings. These infections have severe implications, including higher morbidity, mortality, prolonged hospital stays, and a significant economic burden. Adequate vaccine coverage of SARS-CoV-2 and influenza can decrease co-infection cases. It is essential to strengthen IPC protocols, improve healthcare worker training, enhance infrastructure, implement effective surveillance systems, Policymakers and healthcare administrators.

Disclosure of Interest
None declared.

P42

Comparison of 28-day mortality between hospital- and community-acquired influenza patients

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Introduction: Hospital-acquired respiratory influenza (HAI) is associated with increased mortality and morbidity, and prolonged hospital stays.
Understanding the impact of HAI on patient outcomes when compared to CAI may point to opportunities for improvement in effectiveness and efficiency of patient care.
Objectives: The aim of this study was to compare 28-day mortality between patients who have HAI and those who have CAU during the 2017–2019 influenza seasons in a tertiary care center in Istanbul, Turkey.
Methods: This retrospective cohort study was done in the adult wards of a university hospital. All hospitalized patients who have influenza were included. A negative Influenza test and/or absence of influenza like illness on admission and a positive test at any point after 72 h of admission was defined as HAI. Influenza PCR positive patients who were admitted in whom tests were done within 72 h of admission or earlier was defined as community acquired influenza (CAI). The primary outcome was 28-day mortality after influenza diagnosis. Possible confounding factors, age, biological sex, admission to the ICU, presence of COPD, cardiovascular and immunosuppressive comorbidities, influenza subtype and other variables identified with univariate analyses were entered into a logistic regression. Admission to ICU was used as a surrogate for severity of illness in this analysis.
Results: During the study period 92 (46%) of 201 hospitalized patients were identified as HAI. Univariate analysis showed no differences between survivors and non-survivors in any of the characteristics except higher ICU admission in non-survivors. Multivariable logistic regression analysis showed that HAI was associated with a 5.6-fold increased odds of mortality (95% CI 1.6–19.3; $p = 0.006$), after adjustment for age, gender, comorbidity, and ICU admission.
Conclusion: The results of this study reveal that in a context with low influenza vaccine coverage, like Turkey, patients who have HAI are more likely to die within 28 days compared to those who have CAI, even after controlling for key factors that could affect the results. This underscores the need for prompt identification and antiviral administration to improve outcomes.

Disclosure of Interest
None declared.

P43

Influenza vaccine refusal among Tunisian healthcare workers: prevalence and associated factors

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Introduction: Healthcare workers (HCWs) are among the most exposed to the risk of infections especially to influenza mainly for those managing immunocompromised or at-risk persons. However, the coverage of influenza vaccination is still low among HCWs.
Objectives: Our study aimed to determine the prevalence of influenza vaccination and factors associated to its refusal among HCWs.
Methods: A cross-sectional study among Tunisians from December 2021 to January 2022 using an online questionnaire developed with Google Forms and submitted through social media. Data analysis was performed using the Statistical Package for Social Sciences (SPSS) version 21.0. Factors associated with influenza vaccination refusalwereanalyzed using chi square test. We used $p < 0.05$ as the level of statistical significance.
Results: A total of 257 Tunisians participated in the study with predominance of females (82.5%) with a mean age of 41 ± 11 years. Only **30.7%**of the HCWswere vaccinated. Therefusal was more prevalent among people without chronic diseases than those with chronic diseases (73.4% Vs 55.2%; $\mathbf{p = 0.008}$). The rate of influenza vaccination refusal was 100% in rural areas and 68.9% in urban regions ($p = 0.55$). No significant difference was found between influenza vaccination refusalamong HCWs with orwithout history of infection by coronavirus (74.1% Vs 68%; $p = 0.38$).
Conclusion: Our study has shown that the coverage of influenza vaccination is low among HCWs. Thus, a good communicationamong HCWs is needed to explain to them the possible risks of contracting influenza and to encourage them to be vaccinated.

Disclosure of Interest
None declared.

P44

Epidemiological and virological characteristics of influenza in Tunisia in 2022–2023

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Introduction: Seasonal influenza is a highly contagious viral infection which can cause significant morbidity and mortality among high-risk groups. Worldwide, the COVID-19 pandemic has had a considerable impact on influenza circulation the past two years.
Objectives: Our study aimed to describe the epidemiological characteristics of influenza in Tunisia during 2022–2023 season and to identify the isolated circulating viruses.

Methods: We conducted a descriptive analysis of all data collected in the network of ILI (Influenza-like illness) and SARI (Severe acute respiratory infection) Sentinel Sites and the National Influenza Center. Influenza surveillance started from week 40/2022 to week 17/2023). All samples were tested for influenza viruses, SARS-CoV-2 virus and other respiratory viruses. WHO case definitions of ILI and SARI were used. Data were entered in the influenza electronic platform and analysis was using Epi-Info 7.2.
Results: During the 2022–2023 season, 30,655 ILI cases were recorded out of 610,146 consultants (an overall proportion of 5.02%). The epidemic threshold (7%) was exceeded in W50 to peak in W51, W01–02 and W4-W5. ILI cases were mainly aged 5–15 years followed by the age groups 0–5 years and 15–50 years. Overall, 1807 samples were analyzed, of which 380 were positive for influenza, 262 were type A with a predominance of subtype A (H1N1) pmd09 virus (n = 175; 66.79%). We detected 7 cases of co-infection of influenza and SARS-COV-2 and 2 cases of co-infection of two influenza types.
Conclusion: The 2022–2023 season was marked by an early and active circulation of influenza viruses. This probably results from lifting of restrictive measures and changes in SARS-COV-2 characteristics. Influenza surveillance remains essential to detect any epidemiological or virological changes, particularly in this time of transition after COVID-19 pandemic.

Disclosure of Interest
None declared.

P45

Association between seasonal influenza vaccination and attitude of healthcare workers toward covid-19 vaccine: a Tunisian cross-sectional study

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Introduction: Active immunisation practices are crucial to counter influenza, especially for people at risklike Healthcare workers (HCWs). As well as for the COVID-19; vaccination is a required strategy to overcome this disease, especially for HCW given their increased risk of exposure to COVID-19.
Objectives: We aimed to determine the impact of seasonal influenza vaccination status on the willingness of COVID-19 vaccination among Tunisian HCWs.
Methods: We conducted a cross-sectional study among Tunisian HCWs. The survey was administrated through Google forms.
The questionnaire was made accessible for two months from December 2020 to January 2021. Data analysis was performed using the Statistical Package for Social Sciences (SPSS) version 21.0
Results: A total of 257 HCWs participated in the study with a median age of 40 [34; 50] years. Among participants, 21% previously tested positive for SARS-CoV-2. Almost half of the respondents (44%) were caring for COVID-19 patients, 27.6% of them had no intention to be vaccinated, and 21.8% were hesitant. COVID-19 vaccine avoidance or hesitancy was justified by the suspicion of safety (92.1%), efficacy or quality (66.1%), and utility (15.7%). Coverage of seasonal influenza vaccinationamong HCWs was 30.7%. Among HCWsvaccinated against influenza, 67.1% had the intention to be vaccinated against COVID-19, 13.9% refuse it and 19% hesitated (p = 0.001).
Conclusion: Despite its low prevalence, seasonal influenza vaccination was significantly associated to higher willingness to receive COVID-19 vaccine among HCWs. Therefore, a good communication and health education are needed.

Disclosure of Interest
None declared.

Poster session: Urinary tract infection

P46

Post-discharge surveillance of urinary tract infections in patients after hip and knee prosthesis surgery

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Introduction: Urinary tract infections (UTIs) are one of the most common forms of healthcare-associated infections (HAIs), especially in surgical patients. Hip and knee arthroplasty (HPRO and KPRO) are one of the more common surgical procedures.
Objectives: The aim of the study was to assess in post-discharge the incidence of UTI after HPRO and KPRO in the postoperative period, along with the identification of risk factors among Polish patients.
Methods: The analysis was carried out based on an anonymized database of the National Health Fund (NFZ), including 83 525 patients over 18 years of age undergoing HPRO or KPRO in 2017. Data include only procedures performed within the general health care system, identified on the basis of ICD-9 codes: 81.51–55, 00.7 or 00.8. A diagnosis of UTI was made based on the ICD-10: N30.0, N30.9 and N39.0, up to 30 days after surgery. In the statistical analysis, relative and absolute frequencies were used for nominal variables and the mean value with standard deviation for quantitative variables (age). Chi2 test and Student's t-test were used to compare the groups of patients (hip vs. knee arthroplasty).
Results: Among 56,068 patients undergoing HPRO procedures, there were 415 UTIs, an incidence rate of 7/1000 patients, and among 27,457 patients after KPRO, there were 135 cases of UTI, an incidence rate of 5/1000 patients.
In both types of procedures, a higher risk of UTI was confirmed in women, with an incidence rate in HPRO 0.82 vs. 0.63 in men, and in KPRO 0.5 vs. 0.4, respectively. In patients over 65 years of age, the incidence rate was 0.91 vs.0. 43 in younger patients in HPRO and 0.58 vs.0.27 in KPRO, respectively.
Gastrointestinal diseases, including diabetes, significantly increased the risk of UTI in both patient groups—in HPRO 0.64 vs. 0.84 and twicely after KPRO 0.6 vs. 0.32. Multimorbidity, prolonged hospitalization and ICU stay during the 1st hospitalization had no effect on UTI incidence rates in both populations.
Conclusion: Our study identified groups of patients particularly in need of effective implementation of UTI prophylaxis—women, diabetics and the elderly. The problem of infection prevention in the elderly population, especially those residing in long-term care facilities, is a significant challenge in Poland due to shortages of qualified personnel, including medical.

Disclosure of Interest
None declared.

P49

Implementing a multidimensional approach in reducing catheter associated urinary tract infections

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Introduction: The catheter associated urinary tract infections (CAUTI) persisted as the most common healthcare associated infections for several years in cardiology hospital and the implementation of a nurse-led protocol in 2019 contributed to 50% reduction in CAUTI events (6 cases) in comparison to 2018 (12 cases). However, Covid-19 pandemic attributed to increased CAUTI rates and we implemented the evidence-based practices to reduce CAUTI and to promote patient safety.
Objectives: To reduce CAUTI rate to 50% by the end of December 2022.
Methods: A comprehensive gap analysis of significant risk factors in the development of infections was conducted with real time notification to unit leaders. We empowered our nursing champions to educate nurses about the CAUTI preventive strategies to standardize staff practices on perineal care, maintaining close system during insertion, use of chlorhexidine 2% wipes for wiping catheter tubing and auditing staff compliance to evidence-based practices. Ensuring the availability of supplies/resources, patient/family education and involvement of physician champions are crucial in CAUTI prevention.
Results: The CAUTI rate decreased to 47.7% (1.36/4416 urinary catheter days [UCD]; 6 events) in 2019 compared to 2.6/4615 UC days (12 infections) in 2018. In 2020, the sudden increased rate to 86.76% (2.54/3933 UCD; 10 events) was associated to shortage of manpower and supplies during Covid pandemic. Though the urinary catheter days increased to 52% in 2021 with 10 events, the CAUTI rates (1.68/5967 UCD) was reduced by 34%. In 2022, a significant reduction to 50% in CAUTI events (5), 24.55% in urinary catheter use and 33.9% in CAUTI rate (1.11/4499 UCD) was attributed to the implementation of standardized practices in reducing CAUTI.
Conclusion: The standardization of staff practices in implementing the evidence-based practices focusing on availability of resources and supplies, staff education and training, patients and family education, nurse-led protocol, teamwork, proactive approach, dedication, continuous monitoring and communication and strong leadership support will make a significant change in reducing CAUTI.

Disclosure of Interest
None declared.

P50

The impact of bundles implementation on catheter-associated urinary tract infection (CAUTI) rate: a comparative study in a tertiary teaching hospital in Palestine

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Introduction: Catheter-associated Urinary Tract Infections (**CAUTIs**) are a common type of healthcare-associated infection, the implementation of care bundles that include evidence-based interventions of infection control practices is crucial to reduce the incidence of Device-associated infections and improve patient outcomes.
Objectives: The study was planned to evaluate the impact of the catheter care bundle in reducing CAUTI rate comparing the results in Intensive care units (ICUs) versus non-intensive care units (non-ICUs).
Methods: Over a period of two years, patients admitted to NNUH underwent a retrospective interventional study before and after the trial study (pre-implementation phase: January–December 2021; post-implementation phase: January–December 2022). This phase included healthcare worker education and training as well as the implementation of a catheter care bundle and weekly compliance monitoring rounds. The infection control team used the Centers for Disease Control and Prevention (CDC) guidelines to calculate the rates of catheter-associated urinary tract infections before and after implementation.
Depending on whatever interventions were thought to have the greatest influence on CAUTI rates and were the easiest to adapt, a select department implemented plan-do-study-act cycles, ICUs versus non-ICUs. Five care bundles were implemented, including urinary catheter maintenance procedures, indications for indwelling urinary catheters, appropriate CAUTI testing, alternatives to indwelling devices, and aseptic technique.
Results: The CAUTI rates between 2021 and 2022 demonstrate a significant reduction in both ICUs and non-ICUs settings. **ICUs saw a 91.9% decrease in the CAUTI rate**, which went from 3.2 in 2021 to 0.26 in 2022. **The CAUTI rate in non-ICUs decreased by 77.6%**, from 3.4 in 2021 to 0.76 in 2022.
Conclusion: These significant reductions in CAUTI rates can be linked to the use of effective prevention techniques, such as correct catheter insertion and maintenance, adherence to evidence best practice, and improve staff knowledge and education. The findings emphasize the benefit of multidisciplinary strategies and ongoing initiatives to enhance patient safety and lower healthcare-associated infections in both ICU and non-ICU settings.

Disclosure of Interest
None declared.

P51

Catheter-associated urinary tract infection (CAUTI) care bundle compliance in the ICU versus surgical or geriatric wards of a Belgian hospital network

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Introduction: In 2021, the Belgian government launched "HOST", a pilot project which involves the creation of extra IPC/AMS teams at the hospital network level to unify surveillance and support quality improvement projects. A gap analysis within the Ghent Hospital network revealed the absence of CAUTI surveillance and of a formal CAUTI bundle in the partner hospitals, despite it being nationally recommended since 2017.
Objectives: Prior to the implementation of a care bundle, we wanted to measure the overall compliance with four selected bundle elements, and evaluate what the difference in adherence was between the ICU and non-ICU setting.
Methods: A prospective observational cohort study was performed within the four hospitals of the Ghent Hospital Network. Patients in the ICU or in the surgical and geriatric wards were observed at predetermined times during two months. The compliance with the CAUTI bundle elements was measured, i.e. correct urinary catheter fixation, good urine drainage, no contact of the urine collector with the ground and height of the collector below the bladder level. Only if all elements were correct, bundle compliance was considered to be respected. Statistical difference between the compliance in ICU versus non-ICU wards was tested using chi square test.
Results: A total of 226 patients with a urinary catheter were observed, of which 80 (35.4%) were admitted to ICU and 146 (64.6%) to a surgical or geriatric unit. The networkwide mean bundle compliance was 27.4%. Bundle compliance in ICU was 47.5% versus 16.4% in the geriatric and surgical wards ($\chi^2 = 25.05$; $p < 0{,}001$).
Conclusion: The overall low compliance with the bundle elements emphasizes the need for a formal CAUTI bundle. A significant difference was found between ICU and non-ICU wards, which might be explained by the higher awareness on the importance of HAI, more protocolized care and the culture of multidisciplinary teamwork in the ICU. Better understanding of this difference is needed to further improve bundle compliance.

Disclosure of Interest
None declared.

P52

Effectiveness of simulation sessions for the professional training of medical students and nursing students in the correct and proper placement of a urinary catheter

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Introduction: In the current education of medical and nursing students, educators are working to implement new educational strategies.
Objectives: The objective of the study was to evaluate the role of simulation sessions in facilitating the learning of correct placement and adherence to aseptic rules for urinary catheterization.
Methods: Eighty-three students were divided into experimental groups (n = 42) and control groups (n = 41).
The students were observed and interviewed at the end of their clinical rotation and were evaluated using an assessment grid consisting of 20 items:

- Observation of the following actions during catheter insertion: Request for technical assistance, Hygienic hand washing, Genital hygiene is performed using antiseptic, the hygiene is performed from the genital region towards the anal region, genital hygiene is performed using sterile gloves, a swab soaked in Betadine is left in contact with the meatus, Hand washing is performed after local antiseptic application, A sterile drape is placed on the patient's thighs, Sterile gloves are used, The catheter is connected to the urine collection bag, The labia minora of the vulva are separated using compresses soaked in an antiseptic solution, The swab or compress is removed from the meatus sterilely by the assistant, The catheter is advanced another 3 to 5 cm after urine flow, The balloon is inflated with 10 cc of sterile water, The catheter is withdrawn a few centimeters, the catheter is secured with adhesive tape, The bag is suspended below the level of the bladder, The bag is dated, A hygienic hand washing is performed after the care.
- The observation concludes with a question: in case of aseptic error, do you change or not the equipment.

For the statistical analysis of the data, chi-square tests were performed. Statistical significance was determined at $p < 0.05$.
Results: There is a statistically significant difference in terms of hygienic handwashing before patient installation ($p = 0.02$), correct performance of genital hygiene ($p < 0.001$), urinary catheter insertion technique ($p < 0.001$), and urine bag installation technique ($p < 0.001$).
Conclusion: Simulation sessions prove to be highly important in learning the technique of correctly placing a urinary catheter following strict aseptic guidelines.

Disclosure of Interest
None declared.

P53

Assessment of urinary tract catheter insertion among health care professionals working in a tertiary care teaching hospital

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Introduction: Urinary catheterization is an indispensable procedure performed in hospitals. The majority of all health-related urinary tract infections are caused by inappropriate urinary catheterization.
Objectives: The aim of this study was to evaluate the practice of urinary catheterization among health Care professionals working in a Tunisian tertiary care teaching hospital.
Methods: A cross sectional study was conducted among health professionals working in the University Hospital Sahloul of Sousse, on November 2022.
The data was collected by trained investigators using a pre-established observation grid based on the recommendations of the High Health Authority as part of the evaluation of professional practices.
Results: A total of 104 urinary catheterization were analyzed in16 services and two operating rooms.
This act was performed by a medical doctor in 59.1% of cases. The Patient's identity was verified in 95.2% of cases.
Schematically, the urinary catheterization have been divided into 4 steps:
Preparation of the material, Clean and non-sterile time of antiseptic toilet; Sterile time: Last site antisepsis and probe insertion and finally the and traceability step with an overall compliance of 60.10%, 50.94%, 54.7% and 45.05% respectively.
Wearing proper personal protective equipment was respected only in30.65% of cases wich may expose the patient to the risk of HAIs and health professional to the risk of biological fluid exposure accident, a double risk that affect the quality of care and patient safety.
The absence of traceability reflects the underestimation of the HAIsrisk of the urinary catheterization among healthcare professionals.
Conclusion: While many urinary catheterization practices are consistent with evidence-based guidelines, there is still a need for improvement. Training programs should be put in place to prevent HAIs and extra costs.

Disclosure of Interest
None declared.

P54

Bacterial profile, antibiotic susceptibility pattern and associated risk factors of urinary tract infection among patient suffering from chronic and/or acute prostatitis at the Yaoundé Central Hospital, Cameroon

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Introduction: A febrile urinary tract infection in men should suggest acute prostatitis. Any infection of the male urinary tract has the potential to affect the prostate. Acute prostatitis happens when your prostate gland becomes suddenly inflamed.
Objectives: The objectives of our study were to determine the prevalence of urinary tract infections and the associated risk factors in men presenting chronic and/or acute prostatitis.
Methods: We conducted a prospective and cross-sectional study from February to June 2021. Urine samples from 77 male patient presenting clinical signs and symptoms of urinary tract infection at the Urology Department of the Yaoundé Central Hospital were collected. Sample analysis and antimicrobial susceptibility testing (AST) following the AST committee of French Society of Microbiology was preformed at the Bacteriology laboratory of the Yaoundé University Teaching Hospital.

Results: The prevalence of urinary tract infection in our studied population was 15.58%. Bacterial species isolated included *Escherichia coli* (25%), *Proteus vulgaris* (25%), *Citrobacter freundii* (16.7%), *Pseudomonas fluorescent* (16.7%), *Enterococcus spp.* (8.3%) and *Proteus penneri* (8.3%). Antibiotic susceptibility testing revealed reduced susceptibility to 3rd generation cephalosporins. Beta-lactams showed very low activity on almost all the family of Enterobacteriaceae strains isolated. Over 50% of the bacteria isolated were resistant to the tested flouroquinolones. All the isolated Gram negative bacteria were multi-drug resistant. Patients with a history of urinary tract tumors, urinary catheters, and diabetes were the most exposed to urinary tract infection.
Conclusion: Overall, Enterobacteriaceae were primarily isolated from patients with prostatitis. Urological history such as urinary tract tumors, and Diabetes were significantly associated with UTI.

Disclosure of Interest
None declared.

P55

Mobile-based video learning outcomes in the professional training of medical and nursing students in aseptic placement of a urinary catheter

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Introduction: Mobile gadgets are an everyday aspect of life for the younger generations. Now is the moment to incorporate mobile device use into education.
Objectives: The goal of this study was to examine the impact of a mobile-based video clip on the learning of medical and nursing students in correctly and aseptically inserting a urinary catheter.
Methods: A total of 69 students participated in this study: 35 in the intervention group and 34 in the control group.
The intervention group was able to download a video clip on how to execute a urinary catheterization to their own mobile devices.
At the end of their clinical rotation, students were tested for their performance skills.
They were evaluated using an assessment grid consisting of 20 items:

- Observation: Request for technical assistance, hygienic hand washing, genital hygiene is performed using antiseptic followed by Betadine, the hygiene is performed from the genital region towards the anal region, genital hygiene is performed using sterile gloves, a swab soaked in Betadine is left in contact with the meatus, hand washing is performed after local antiseptic application, a sterile drape is placed on the patient's thighs, Sterile gloves are used, the catheter is connected to the urine collection bag, the labia minora are separated using sterile compresses, the compress is removed by the technical assistant, the catheter is advanced another 3 to 5 cm after urine flow, the balloon is inflated with 10 cc of sterile water, the catheter is withdrawn a few centimeters, the catheter is secured with adhesive tape, the bag is suspended below the level of the bladder, The bag is dated, a hygienic hand washing is performed.
- The observation concludes with a question: In case of aseptic error, do you change or not the equipment.

For the statistical analysis of the data, chi-square tests were performed. Statistical significance was determined at $p < 0.05$.

Results: There is a statistically significant difference in terms of request for technical assistance to support the operator ($p < 0.001$), correct performance of genital hygiene ($p = 0.01$) and urine bag installation technique ($p < 0.001$).
Conclusion: Our findings imply that mobile video clips can be used to teach medical and nursing students how to properly place a urinary catheter.

Disclosure of Interest
None declared.

Poster session: Antimicrobial use and stewardship 1

P56

Prospective audits of antimicrobial prescriptions to tailor antimicrobial stewardship interventions in various surgical departments

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P56

Introduction: Core elements of hospital antibiotic stewardship programs (ASP) include interventions to improve antibiotic use.
Objectives: As part of an institutional ASP, we aimed to collect qualitative data about prescribing practices and to identify specific areas for improvement in various surgical departments.
Methods: We conducted weekly point prevalence audits of antimicrobial prescriptions over 1 to 2 months in selected surgical departments. All patients receiving on the days of assessment antimicrobials as surgical prophylaxis outside the operating theatre or as treatment were included. Antimicrobial prescriptions were evaluated through a standardized flow chart regarding their indication, duration, administration route, spectrum and dosing. Assessments were based on local guidelines and expert opinions. Conclusions were directly communicated by phone to prescribers. Summarized results combined with personalized key messages were finally presented to the medical teams of each department at the end of the audit period.
Results: Between July 2022 and March 2023, antimicrobial prescriptions were assessed in six surgical wards during 35 audits. Among 672 patients, 143 (21%) received an antimicrobial including 32 surgical prophylaxis and 111 treatments. Co-amoxicillin and Piperacillin-tazobactam were the most frequent prescribed prophylaxis and treatment respectively. Global antimicrobials appropriateness was 54%. It was only 3% for prophylaxes, in most cases due to administration beyond the operative time, and amounted to 67% regarding those prescribed as treatment, spectrum and duration being the most frequently proposed optimisations.
Conclusion: These results show that there is room for improvement in antimicrobial prescribing, especially for surgical prophylaxis administered for prolonged periods beyond surgery and for prescriptions that fall into the WATCH category of the WHO classification. Qualitative data are an essential complement to quantitative data to tailor intervention strategies.

Disclosure of Interest
None declared.

P57

Antimicrobial survey in university hospitals of Mashhad-Iran

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Introduction: Antibiotic resistance is one of the 10th top treat to global health.
Objectives: The purpose of this study was to determine antibiotic prescription in hospitalized patients in academic hospitals of Mashhad-Iran as a part of Global PPS Project.
Methods: This study was a point prevalence survey of antibiotic usage **in** all patients admitted to four hospitals affiliated to Mashhad University of Medical Sciences in 2019–2020 in two consecutive periods/seasons. Data was entered into a standardized checklist and then into the Global PPS software.
Results: A total of 968 patients from four university hospitals: Imam Reza, Qaem, Dr. Sheikh and Akbar were included in the study. The highest frequency of antimicrobial usage in Akbar hospital was in internal medicine department (72 patients, 43.9%), Dr. Sheikh hospital in the pediatric hematology-oncology department (48 patients, 46.6%), Imam Reza and Qaem hospitals in the internal medicine department of adults (161 patients, 57.1%) and surgical department of adults (158 patients, 37.7%), respectively. Vancomycin in Akbar (26 patients, 15.9%) and Dr. Sheikh (18 patients, 17.5%) hospitals and ceftriaxone in Qaem (91 patients, 21.7%) and Imam Reza (52 patients, 18.4%) was the most common prescribed antibiotics. The most common indication for prescribing antibiotics was community-acquired infections.
Conclusion: Antibiotic usage is relatively high in Mashhad university hospitals and last resort antibiotics such as vancomycin has become normal.

Disclosure of Interest
None declared.

P58

Prevalence of antimicrobial use in armenian hospitals: results of pps study—Armenia, 2022

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P58

Introduction: Not-rational antimicrobial use (AMU) is major public health problem worldwide. In 2015 the government of Republic of Armenia developed "Antimicrobial Resistance and Prevention Strategy Action Plan for 2015–2020" and now is working on the plan for 2022–2026. However, we have no data for prevalence of antimicrobials prescription in Armenia.
Objectives: The Aim of this study was to estimate the prevalence of antimicrobial use in Armenian hospitals.
Methods: The first Pilot Point prevalence survey (PPS) of healthcare-associated infections (HAIs) and AMU was performed in March 2022 in 2 selected hospitals. The ECDC Protocol v5.3 for a PPS of HAIs and AMU in European acute care hospitals was used. Data collection forms were filled in by hospital and national teams. Results were entered into HELICSWinNet computer database. Analysis was carried out using HELICSWinNet and Microsoft Excel. Descriptive analysis was also performed.
Results: 112 (43.6%) out of all 257 patients, patients received at least 1 antimicrobial: 6 patients—3 antimicrobials, 22 patients—2 antimicrobials, and 84 patients—only 1 antimicrobial. Totally they received 146 antimicrobials (1.3 per patient).
The main route of antimicrobial administration was parenteral—76.7%. 61.6% antimicrobials (AMs) were prescribed for surgical prophylaxis, 15.1%—for medical prophylaxis, and only 23.3%—for treatment.
For treatment of community infections most frequently were used Penicillins and third-generation cephalosporins (by 21.4%); for HAIs—Carbapenems (25%) and Fluoroquinolones (20%).
For surgical prophylaxis were used third-generation cephalosporins (56.7%), Fluoroquinolone (15.6%) and Metronidazole (11.1%); for medical prohylaxis—third-generation cephalosporins (59.1%).
The prevalence of antimicrobial use was the highest among ICU patients (1.29 AMs/pts), Urological (1.0 AMs/pts) and cardiology surgical wards (0.94 AMs/pts).
Only for 43 (29.5%) antimicrobials the reason of prescription was indicated in patient charts/notes.
Conclusion: This Pilot PPS showed, that the total prevalence of antimicrobial use in selected hospitals was higher than in the EU: 43.6% vs 30.5%. The majority of antimicrobials were prescribed for prophylaxis, while in the EU—for treatment. AMU guidelines should be developed at both national and facilities levels and implemented in all Armenian hospitals.

Disclosure of Interest
None declared.

P59

Antimicrobial use and urinary tract infections in Finnish long-term care facilities, 2020–2021

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P59

Introduction: In Finland, the Resident Assessment Instrument for Long Term Care (RAI-LTC) has previously been considered a feasible tool for collecting data on antimicrobial use (AMU) and healthcare-associated infections (HAI) from residents of long-term care facilities (LTCF). As a benchmarking system RAI-LTC produces quality-of-care indicators, a couple of which are related to infections and currently provided for Finnish LTCFs and relevant regional infection control (IC) experts.
Objectives: We analyzed data on AMU and HAI indicators in Finnish LTCFs by region and over time.
Methods: Every LTCF resident is assessed at admission, at least twice a year during care and when the health condition or functional capacity changes substantially. We used AMU and HAI data of all residents in 24-h service housing for whom RAI-LTC form was completed during 2020–2021, including four data collection periods and covering around half of the population of particular LTCFs in Finland. RAI collected AMU data within 7 days prior to the assessment. Infection data were based on a checklist, and for urinary tract infection (UTI), the time period was one month prior to the assessment. The data were examined by data collection periods and by 21 regions. Descriptive statistics were used to summarize the data.
Results: In total, RAI-LTC assessments covered 114 421 residents during 2020–2021. The proportion of residents receiving at least one antimicrobial (other than methenamine) and residents using methenamine was 3% (range by region, 2–5%) and 2% (range by region, 0–5%), respectively. Both AMU and methenamine use decreased by one percentage point from the first data collection to the last. UTI prevalence was 4% (range by region, 3–7%), and 4% of residents had a urinary catheter; both remained unchanged during 2020–2021.
Conclusion: Prevalences of AMU and UTI were lower than in our previous study which was also based on RAI data. IC link nurses in LTCFs trained and given consultations by regional IC experts could increase the usage of the indicators when evaluating local IC activities. Further analyses are needed to assess thresholds for identifying IC problems and outliers.

Disclosure of Interest
None declared.

P60

Impact of the COVID-19 pandemic on antibiotic prescribing in high prescribing primary care physicians in Switzerland

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P60

Introduction: The SARS-CoV-2 pandemic has been a massive challenge to healthcare services and public health that endangered the continuation of state-of-the-art healthcare for other conditions. An area of such concern was adherence to antimicrobial stewardship programs in primary care in particular during the first year of the pandemic in the absence of vaccines and effective antiviral therapy.
Objectives: To investigate antibiotic use in primary care during the first Sars-CoV-2 pandemic year (2020) compared to the years 2017–2019.
Methods: Antibiotic prescription rates per month from 2017 through 2020 per 100 consultations are calculated and used to assess the change during the first Sars-CoV-2 pandemic year (2020) compared to the pre-pandemic years 2017–2019. Using the Interrupted time series analysis, we analyzed the claims data for medium to high-prescribing primary care physicians in Switzerland by extending our data from our previous trial to 2020.
Results: Data are based on 2945 of 3426 physicians (86.0%) from the randomized intention-to-treat physician population of the original trial with over 4 million consultations annually, which dropped in both groups during the first pandemic year by 43% compared to the baseline year 2017. Median antibiotic prescriptions were in 2017, the baseline year of the trial in the intervention group 8.44 (Interquartile range (IQR) 6.32; 11.50) and the control group 8.35 (6.34;11.74) per 100 consultations with little change in both groups during the intervention period of the trial, but increased to 15.63 (10.69; 23.81) and 16.31 (10.65; 24.72) per 100 consultations during the first pandemic year. Incident rate ratios for the immediate pandemic effect were for overall antibiotic prescriptions 2.32 (95% CI 2.07; 2.59), for macrolides 2.70 (2.64, 2.76), for other beta-lactam antibiotics 2.53 (2.46, 2.60), and for quinolones 2.9 (2.60, 3.30).
Conclusion: In the medium to high-prescribing Swiss primary care physicians, a significant increase in antibiotic prescription rates per 100 consultations was found during the first pandemic wave with persistent high prescriptions above levels of previous years. Our findings indicate that antibiotic stewardship in primary care may be weakened in a pandemic.

Disclosure of Interest
None declared.

P61

The impact of COVID-19 pandemic on the level and profile of antibiotic consumption in polish tertiary hospital, pre-post study

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P61

Introduction: COVID-19 pandemic had substantial impact on many areas in health care, including infection control and antibiotic consumption.
Antibiotic therapy or prophylaxis for patients with mild and moderate COVID-19 with no clinical suspicion of a bacterial infection was not recommended. Different situation was in case of severe COVID-19, however with regard to patient host factors and local epidemiology.
Objectives: To assess antibiotic usage in hospital settings before and during COVID-19 pandemic.
Methods: The study collected patient data in a tertiary hospital in Cracow, Poland—admissions in 2019 and 2020. Antibiotic usage was measured as a percent of patients with antibiotic and number of days of therapy (DOT).
Results: Study enrolled 80 638 patients in total, with 3 426 (4.3%) SARS-CoV-2 positive. Average age of a patient in 2020 has significant increased from 50.7 years in 2019 to 54.1 in COVID negative and 61.6 years in positive patients. On average, patients stayed in hospital longer in 2020: non-COVID patients were hospitalised for 8.50 days, while COVID patients' stay averaged 19.03 days; comparing to 7.08 in 2019.
We observed increased consumption of antibiotics in the year 2020 and in patients with COVID-19. In 2020, 79.2% of patients with COVID-19 and 40.1% of non-Covid were treated with antibiotics comparing to 28.8% in 2019. Substantial changes in antibiotic treatment pattern were also observed, especially high increase of cephalosporins of 3rd and 4th generation in 2020, with significance differences. For this class of antibiotics the number of DOTs per 100 patients days in 2019 was 1.2 comparing to 24.1 in 2020 in COVID patients and 9.1 in non-COVID.
Conclusion: The level of antibiotic consumption and change in its profile in 2020 comparing to 2019 did not correspond proportionally to differences in basic demographic characteristic of patients. It indicates, that antimicrobial treatment was based rather on uncertainty and fears than on scientific recommendations.

Disclosure of Interest
None declared.

P62

Promoting antibiotic stewardship for commercial poultry production in Bangladesh: using social and behavioral change communication (SBCC) approach

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P62

Introduction: Bangladesh has a high prevalence of antimicrobial resistance due to extensive over-the-counter antibiotic sales as well as irrational antibiotic use in humans and animals.
Objectives: This study aimed to develop social and behavioral change communication (SBCC) strategies to increase the rational use of antibiotics.
Methods: In 2022, we used formative research to explore contextual determinants of antibiotic sales, purchase, usage, and promotion across four stakeholder groups in Narsingdi, Bangladesh: (1) poultry farmers, (2) pharmacy shop employees, (3) veterinarians, and (4) pharmaceutical sales representatives. We used formative research findings and multiple intervention design workshops with groups to select target behaviors and develop SBCC messaging. To analyze and summarize findings, the behavior change wheel model was employed.
Results: Participants identified their behaviors considered to be changed and assisted to develop SBCC for all four stakeholder groups. Poultry farmers had two behaviors to change: not following infection control measures and irrational antibiotic use. SBCC target behaviors included taking appropriate infection control measures, seeking registered veterinarian consultations, and rational antibiotic use. Pharmacy shop employees had one behavior to change: unnecessary antibiotic dispensing practices. SBCC target behaviors included asking farmers for prescriptions and referring them to registered veterinarians. Registered veterinarians had one behavior to change: unnecessary

antibiotic prescribing practices. SBCC target behaviors included rational antibiotic prescribing practices and increasing farmer awareness for rational antibiotic use. Pharmaceutical sales representatives had one behavior to change: unethical antibiotic promotion. SBCC target behaviors included rational antibiotic promotion.
Conclusion: We identified stakeholders considered behavior change and SBCC intervention delivery to them to promote antibiotic stewardship for commercial poultry production including improved health-seeking behaviors, and improved health literacy on antibiotic transaction. More interactive development might benefit further modification of intervention using participatory methods to promote antibiotic stewardship among stakeholders.

Disclosure of Interest
None declared.

P63

Development and evaluation of an educational podcast format for medical students and young professionals on prudent antibiotic use

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P63

Introduction: Providing knowledge for prudent use of antibiotics in a guideline-orientated way is an important part of Antibiotic Stewardship. Podcasts are playing an increasing role in medical education.
Objectives: To develop and evaluate a podcast format for medical students and young professionals with practice-oriented information on antibiotic therapy.
Methods: The podcast concept was developed with direct involvement of medical students. The recordings were made via video conference in an interview format. Two medical students asked questions to a designated expert on a specific topic. Follow-up questions and summaries were provided by a physician moderator. Distribution took place via all common podcast platforms. Advertising took place via mailing lists, social media, posters and stickers. The evaluation was based on user data provided by the platforms and an anonymous questionnaire linked in the show notes.
Results: Between December 20, 2021 and December 13, 2022 19 episodes of *InfectEd: der Antibiotika-Podcast* were released. By March 9, 2023 a total of 38.829 streams had been recorded. On average, each episode was played 1859 times. The average runtime per episode was 65% (data from Apple Podcasts). The evaluation questionnaire was completed 128 times. 61.7% of respondents were female, 37.5% male. The majority of respondents were in their twenties and thirties (67.4%). 30.5% were medical students, 51.6% were physicians (half residents, half specialists). In German school grades (best grade = 1, worst = 6), the grade 1 was awarded 102 times. The average grade was 1.32. Grade assignment did not differ significantly between female and male respondents or between medical students and others. 111 respondents stated a knowledge gain.
Conclusion: The podcast format developed was well accepted by both medical students and physicians. It provides a large number of learners low-threshold access to current, guideline-compliant content and could be a useful supplement to textbooks, commercial platforms, and the local university curriculum.

Disclosure of Interest
None declared.

P64

Behavioural drivers of antibiotic prescription in Asian hospitals—a multi-centre qualitative study

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P64

Introduction: Antimicrobial Stewardship Programmes (ASPs) are advocated as strategic priorities for combating Antimicrobial Resistance (AMR). However, in Asia, where AMR burden is high, few hospitals have established ASPs.
Objectives: To describe antibiotic prescription behaviour in high-, middle- and low-income hospital settings to inform interventions to establish and improve ASPs.
Methods: We did in-depth interviews and ethnographies with physicians, surgeons, nurses, pharmacists, and management staff in three hospitals from Nepal, Singapore, and Thailand. Participants were recruited using purposive and snowball sampling. Data were analyzed using thematic analysis. Intercoder reliability was verified for one in three scripts to maintain consistency across researchers.
Results: A total of 196 interviews and 43 ethnographies were conducted. Most participants were concerned about AMR but remained skeptical of ASP alone without robust infection prevention and control and microbiology diagnostics. Across these very different resource settings, a common major theme which guided antibiotic prescribing behaviour was the local 'prescribing norm', shaped by both external authorities and internal personal experiences and beliefs. Tensions were identified between short-term, well defined individual patient outcomes versus long-term, poorly characterized, population-level effects of antibiotics. These contributed to differences in prescribing behaviour between physicians and surgeons, seniors and juniors and general wards and intensive care units.
Conclusion: Successful ASP to control AMR in different Asian settings needs concurrent enhancement of infection control measures and improvement in microbiology laboratories standards in addition to targeted engagement of clinical leaders.

Disclosure of Interest
None declared.

P65

Online education of antimicrobial usage: a pilot study of "student as teacher" co-design of case-based learning

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P65

Introduction: The WHO has implemented a global action plan to combat the increasing prevalence of multidrug-resistant organisms

(MDROs) since 2015, highlighting the importance of proper antimicrobial use education in the fight against MDROs. Integrating this knowledge is crucial, as it may be spread throughout different years of medical education. To address this, an online case-based learning (CBL) education program was designed using the "student as teacher" model.
Objectives: We aim to evaluate the performance of students and junior healthcare workers (HCWs) in prescribing antimicrobials for diagnosis, drug, dose, duration, and de-escalation (5D).
Methods: Students from the College of Medicine, National Taiwan University (NTU), and junior staff from National Taiwan University Hospital (NTUH) were invited to submit CBL drafts on antimicrobial usage in September 2021. Infectious disease specialists and pharmacologists revised the cases in October 2021. During Antibiotics Awareness Week (AAW) in November 2021, five CBL cases containing five multiple choice questions targeting the 5D were made available online for students and staff to participate in.
Results: Of the 98 participants, 22 completed all five cases. The correction rate for the 5D ability was 73.9%, 58.2%, 77.3%, 81.8%, and 72.7%, respectively, for diagnosis, drug, dose, duration, and de-escalation. As a result, five additional cases focusing on the ability to select the appropriate antimicrobial were developed and launched in May 2022.
Conclusion: We observed inadequate incentive and ability among students and young staff to create educational cases. However, through the online education platform, we identified the ability to choose the proper antimicrobial as a weak point. We must strengthen the rationale for selecting antimicrobials in both medical education and infection control education for HCWs in the future. This education program can provide real-world CBL cases to evaluate antibiotic prescribing abilities and reshape education direction in both school and hospital settings.

Disclosure of Interest
None declared.

P66

Innovating cost-effective approaches of antimicrobial stewardship among health workers in Uganda. how effective is the interactive mobile phone short message service (SMS) as a post-training assessment of knowledge retention?

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P66

Introduction: The Infectious Diseases Institute's (IDI) offers specialised courses in the management of infectious diseases for health workers in resource-limited settings. IDI since 2015 has been running the Antimicrobial stewardship course for health workers. After the course, IDI provided onsite follow-up visits to assess the knowledge retention of the alumni. Over the years, IDI strived to innovate more cost-effective follow-up strategies; and in January 2023 implemented the use of interactive mobile phone short message service (SMS) as an approach to perform its assessment. SMS was a viable option due to its low cost, user-friendly interface, and high coverage in Uganda (SMS coverage is approximately 65% compared to 18% internet coverage).
Objectives:—Assess the uptake of SMS as a follow up tool and examine post training knowlegde retention among alumni of the AMR course.
Methods: IDI piloted the SMS follow-up to a group of 81 clinicians who had attended a five-day course in Antimicrobial Stewardship. Six weeks after the course, the 81 alumni began receiving follow-up quizzes via SMS. The quizzes were in the form of multiple-choice questions and were disseminated over 13 weeks. Questions were based on content covered during the course. Alumni replied to the questions through a toll-free SMS platform that instantly provided feedback on whether the answer was correct or wrong. A toll-free phone line was also used to receive technical queries in relation to the SMS.
Results:

Completed post training SMS support	**86%**	**Correct SMS quiz responses**	**79%**
Did not complete post training SMS support	14%	Incorrect SMS quiz responses	21%

Conclusion:
The high percentage of responses and percentage of correct responses, shows that SMS was well recieved and is effective as a post-training follow-up approach to ensure knowledge retention.

Innovation of cost-efficient yet motivating approaches is essential for continuity of anti-microbial resistance knowledge dissemination programs within resource constrained communities.
IDI has scaled up the SMS follow up to all courses because it proved to be a cost effective and efficient approach for knowledge retention.

Disclosure of Interest
None declared.

P67

Perceptions of Tunisian medical residents towards antibiotic use and resistance

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P67

Introduction: Antimicrobiol resistance (AMR) has been recognized as a worldwide problem, in part related to inappropriate antibiotic prescribing.
Objectives: to assess perceptions of medical residents practicing in three hospitals in the central region of Tunisia regarding antibiotic prescription and AMR.
Methods: This study was a questionnaire-based observational cross-sectional study. It involved medical residents from various specialties who prescribed antibiotics at Sahloul Hospital, Farhat Hached Hospital in Sousse, and Ibn Jazzar Hospital in Kairouan during the period from June 1 to December 31st, 2022.
Results: Of the 373 respondents, 67.7% were males. The mean age was 28.09 ± 2.14 [25–38]. Overall, 239 (70.9%) participants declared that there had been no lectures about AM use within their departments during the previous year. The decision-making process of medical residents regarding antibiotic prescription is primarily influenced by senior physicians' opinions (95.8%) and infectious disease specialists (90.5%). A significant majority of participants (84.3%) strongly agreed or agreed that patients' demand for AMs contributes to their overuse in the community, but only 45.7% of participants did so for the hospital setting. Approximately 77% of participants declared that they were unaware of the AMs available in their hospital because of continuously changing formulations. The study findings revealed that over 90% of medical residents identified three factors as significant contributors to antibiotic resistance: excessive antibiotic prescribing, overuse of broad-spectrum antibiotics and self-medication. Moreover, 78% of participants reported a perceived lack of access to information on antibiotics.
Conclusion: Strategies such as infection prevention and control programs should also be implemented to reduce inappropriateuse

of antibiotics and the spread of nosocomial infection. An appropriate approach towards refining guideline adherence and a set-up for future investigation is required.

Disclosure of Interest
None declared.

P68

Knowledge of medical residents towards antibiotic resistance and appropriate prescribing

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P68

Introduction: Although well-defined principals of rational antimicrobials (AM) use are available, inappropriate prescribing patterns are reported worldwide. Accurate information on the usage of antimicrobials, including factors associated with and influencing their use, is valuable for improving the quality of prescription practice.
Objectives: To determine knowledge of medical residents about antibiotic use in three hospitals in the central region of Tunisia.
Methods: This study was a questionnaire-based observational cross-sectional study. It involved medical residents from various specialties who prescribed antibiotics at Sahloul Hospital, Farhat Hached Hospital in Sousse, and Ibn Jazzar Hospital in Kairouan during the period from June 1 to December 31st, 2022. Questionnaire included seven questions that assessed basic knowledge about the clinical indications, spectrum, administration and pharmacology of AMs.
Results: A total of 373 medical residents responded. The participants' theoretical knowledge was slightly below average (mean score of 4.3 ± 1.32 out of 7).
In the case of acute diarrhea, the majority of participants (83.7%) agreed that initiating antibiotic treatment was unnecessary. Additionally, 52.1% of participants agreed that there is no need to initiate antibiotics for upper respiratory tract infections. Around 40% of participants demonstrated knowledge of the appropriate indication to reduce antibiotic dosage in cases of renal impairment. Furthermore, 170 (50.4%) participants correctly answered that methicillin resistant Staphylococcus aureus (MRSA) is not susceptible to cephalosporins, the remaining participants (n = 167, 49.6%) incorrectly responded that it is susceptible to cefalotine, cefuroxime or ceftriaxone.
Conclusion: More targeted AM education strategy based on the findings of this study should be carried out to improve knowledge and attitude of doctors on antibiotic use and resistance.

Disclosure of Interest
None declared.

P69

Comparative analysis of national and hospital-based antibiograms for the year 2021: lessons learned and conclusions drawn

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P69

Introduction: The overall profile of antimicrobial susceptibility testing results of a specific microorganism against a battery of antimicrobial drugs is called an antibiogram. In vitro Antibiotic susceptibility testing (AST) assess the likelihood that a particular antimicrobial agent will treat an infection caused by a particular organism. An antibiogram created using Cumulative AST data can predict appropriate empiric therapy for use in a particular population before the availability of specific results on the patient's isolate to guide the choice of antibiotics for treatment.
Objectives: To compare the Kitale County hospital (County) antibiograms with the national antibiograms for specific organisms and to determine whether the National antibiogram can be used to predict the Hospital (County) antibiogram, allowing for extrapolation.
Methods: A retrospective analysis of available AST data was done to compare Cumulative AST data at Kitale County Hospital and National Antibiogram for the year 2021, for four organisms namely: *Staphylococcus aureus, Acinetobacter baumanii, Escherichia coli and Pseudomonas aeruginosa,* using Microsoft excel and Statistical Package for the Social Sciences (SPSS).
Results: Seventy one percent of staphylococcus aureus isolates in the national database were resistant to ampicillin compared to 78.6% at the county (N = 22)0.85% of Escherichia coli isolates in the national antibiogram were resistant to amikacin compared to 50% of Escherichia coli isolates (N = 16) at Kitale county hospital. 73% 0f Acinetobacter baumanii species in the national antibiogram were resistant to Piperacillin/tazobactam compared to 100% at the referral hospital. Pseudomonas aeruginosa isolates exhibited the least resistance to antibiotics with 0% resistance to amikacin, ceftazidime, gentamicin, imipenem and meropenem in comparison to 8%, 33%, 15%, 31% and 20% for the same organism nationally.
Conclusion: There are significant variations in the antibiotic susceptibility profile of organisms circulating in the hospital and vicinity compared with those from the rest of the country hence there is a need to also focus on creating localized county and hospital-based antibiograms to augment the steps so far achieved in creating a national antibiogram.

Disclosure of Interest
J. Godfrey Employee of: No conflict of interest, H. OGARO Employee of: no conflict of interest, W. MOHAMMED Employee of: no conflict of interest.

P70

Clinicians' interpretation thresholds in antibiograms for gram-negative rod infections: a survey and contingent valuation study of hospitalists

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P70

Introduction: Clinical guidelines suggest antibiograms are a key component when making empiric therapy decisions. However, little is known about how often clinicians use antibiograms and how they influence clinicians' empiric therapy decisions.
Objectives: We aimed to assess if there are important thresholds of antibiograms among hospitalists (clinicians who practice internal medicine in inpatient settings) when making empiric therapy decisions for Gram-negative rod (GNR) infections.
Methods: We surveyed hospitalists at seven healthcare systems in the United States using four scenarios: i) urinary tract infection (UTI) in an outpatient setting, ii) UTI in an inpatient setting, iii) GNR bloodstream infection (GNR-BSI) in a non-intensive care unit (ICU) setting, and iv) GNR-BSI in an ICU setting. Each scenario randomly assigned antibiogram susceptibility percentages and asked hospitalists if they felt comfortable selecting a hypothetical empiric therapy agent with the given susceptibility. Contingent valuation analyses using logistic regression estimated the association between the percentage susceptible to an antibiotic and willingness to prescribe it. Approximately 120 responses were needed to detect a threshold at a 7.5% increment with 80% power.

Results: 194 hospitalists responded (male: 48.7%; effective responses: 99.5%). Among effective responders, 146 (75.3%) were physicians, and 47 (24.7%) were nurse practitioners or physician assistants. Only 52 (26.9%) respondents indicated using antibiograms more than once a month. There was no difference in the mean antibiogram percentages in any categories between hospitalists who felt comfortable using offered antibiotics and those who did not (outpatient UTI: $p=0.43$; inpatient UTI: $p=0.83$; non-ICU BSI: $p=0.51$; ICU BSI: $p=0.94$). Contingent valuation analysis showed no evidence that specific antibiogram resistance rates influenced willingness to prescribe the offered antibiotic.
Conclusion: In this large survey-based discrete choice study, hospitalists utilized antibiograms infrequently, and there was no evidence that susceptibility percentages in antibiograms affect clinical decision-making when selecting empiric antibiotic therapy. Further studies are needed to assess other factors that influence empiric therapy decisions.

Disclosure of Interest
None declared.

P71
Qualitative evaluation of antibiotic usage in bloodstream infections: a nationwide retrospective multicenter study in Korea

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P71

Introduction: Antibiotic resistance threatens public health worldwide, and one of its main causes includes the inappropriate use of antibiotics.
Objectives: We conducted a qualitative assessment of antibiotic use for bloodstream infection in Korea.
Methods: Cases of positive blood cultures performed in inpatient and emergency departments in August 01 to September 30, 2021 were collected in 27 hospitals located throughout Korea. ID specialists in each hospital evaluated the appropriateness of empirical and definite antibiotics prescriptions, based on the clinical and microbiological information records including identified pathogen and its antibiogram. The antibiotics appropriateness was classified as optimal, adequate, suboptimal, or inadequate; optimal and adequate antibiotic use was defined as appropriate.
Results: Of total 3,887 bacteremia cases, contaminants accounted for 26.0%. Among 4,194 empirical antibiotics prescribed for 2,876 true bacteremia, the most frequently prescribed ones were 3rd generation cephalosporins (25.3%), beta-lactam/beta-lactamase inhibitors (20.8%), carbapenems (17.7%) and glycopeptides (12.3%). During the stage to convert from empiric to definite antibiotics, 11.1% (467/4,194) of inappropriate prescriptions were identified; 322 cases without de-escalation and 145 cases continuously prescribed with inappropriate empirical antibiotics. Of 3,833 definite antibiotic prescriptions, 1,013 (26.4%) were classified as inappropriate, because of improper de-escalation, allergy history, inappropriate dosage, and unnecessary long-term use.
Conclusion: Even in bloodstream infections with a clear microbiological diagnosis, inappropriate use of broad-spectrum antibiotics or longer treatment than recommended accounted for about 25%. Therefore, qualitative assessments are regularly warranted to identify areas that require active improvement efforts.

Disclosure of Interest
None declared.

P73
Antimicrobial resistance in Nepal: status, opportunities and challenges

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P73

Introduction: Antimicrobial Resistance (AMR) is a major public health challenge in Nepal due to indiscriminate, inadequate, irrational and inappropriate use of antimicrobials and practice of self-medications. AMR is increasing in Nepal due to overuse and misuse of antibiotics in humans, animals and the environment, easy access and available of antimicrobials, self-medications and less compliance to given doses of treatment.
Objectives: To identify the status, opportunities and challenges of Antimicrobial Resistance in Nepal.
Methods: Desk review was conducted. Different literatures, reports and policy documents related to Antimicrobial Resistance in Nepal were reviewed and descriptive analysis was conducted.
Results: Increase in AMR is an important public health problem in Nepal that impact on people, animals and the environment. It also has serious impact on the economy and development of the country.
National Health Policy of Nepal, 2019 aims to reduce AMR by developing and implementing necessary plan of action and strengthening surveillance and research and implementing preventive and control measures in coordination with various sectors. Nepal has adopted One Health Approach by integrating multiple sectors. Nepal has formalized multisector coordination and involved human and animal health, food safety and environment sector. Nepal has developed National Antimicrobial Resistance Containment Action Plan in 2016 as well as National Action Plan for Antimicrobial Resistance in 2021.
The challenges for containment of AMR includes limited financial and human resources, technical capacity, inconsistent political commitment and low awareness. There is lack of programmatic approach with focused interventions and limited availability of data for informing policy and decision making. Nepal has laws on prescription and sales of antimicrobials but there is a need to monitor the use and sales of antimicrobials.
Conclusion: There is a need to integrate AMR with wider sectors including health, WASH, food production and safety, agriculture, climate change, livestock, environment. Improving awareness and understanding on AMR and strengthening knowledge and evidence through research and surveillance is also important. Effective implementation of hygiene and infection prevention measures can also help reduce the problem of AMR in the country.

Disclosure of Interest
None declared.

Poster session: Antimicrobial resistance (surveillance)

P74
Evolution of the resistance profile of Klebsiella species to antibiotics over the last ten years at the Yaounde University Teaching Hospital, Cameroon

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P74

Introduction: Antibiotic resistance is a major public health problem worldwide. Indeed, it increases morbidity and mortality due to communicable diseases. In Cameroon, *Klebsiella spp.* are implicated in many cases of hospitalizations and many strains are resistant to antibiotics.
Objectives: This study aimed at studying the evolution of the resistance profile of *Klebsiella spp.* to antibiotics, and their resistance phenotypes at the Yaoundé University Teaching Hospital.
Methods: We carried out a retrospective and prospective study with an analytical aim, from January 2010 to December 2020. Antimicrobial Susceptibility Testing (AST) was performed on Mueller–Hinton agar according to the AST Committee of the French Society of Microbiology (CASFM 2021) making it possible to highlight the evolution of the resistance of *Klebsiella spp.* to antibiotics at the YUTH.
Results: During this study, we identified 589 strains of *Klebsiella spp. Klebsiella pneumoniae pneumoniae* was the most frequent sub-specie identified (64.69%). Blood and urine specimens were frequently encountered samples. The majority of the samples analyzed were from the ICU (21.22%), Paediatrics (14.60%), and Internal Medicine (12.56%). The *Klebsiella spp* showed a high resistance rate to beta-lactams (72%), phenolics (62.30%), and quinolones (60.41%). Over the years, we have observed a gradual decline in the rate of resistance to aminoglycosides: 87.80% in 2010 to 11.11% in 2020 with amikacin. The rate of resistance to quinolones increased dramatically: nalidixic acid, 57% in 2010 and 82% in 2020. As for fluoroquinolones, resistance to ciprofloxacin has decreased from 100% in 2012 to 71% in 2020. *Klebsiella spp.* showed good sensitivity to the piperacillin-tazobactam association, imipenem and nitrofurantoin.
Conclusion: The resistance of *Klebsiella spp.* to ATB evolved in an increasing way with a considerable decrease between 2014 and 2016, then it did not stop increasing until 2020.
Hygiene measures should be reinforced through the operational hospital hygiene committee.

Disclosure of Interest
None declared.

P75

Outbreak of multi-drug resistant Klebsiella pneumoniae in a Tunisian University Hospital

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P75

Introduction: Klebsiella pneumoniae is a gram-negative bacterium that has become a well-recognized cause of nosocomial infections. Hospital outbreaks due to multiresistant K. pneumoniae strains have been described throughout the world.
Objectives: to describe the occurrence of outbreak that were caused by KPC-producing *Klebsiella pneumoniae*, and toemphasize the implementes interventionsto contain the outbreak.
Methods: Following the alert given by the microbiology department, signaling the presence of four cases of positive cultures for Klebsiella Pneumoniae in in January 2022 in the intensive-care unit.; a team of the department of prevention and security of care made an investigation. A review of files was conducted to draw the synoptic table of cases.
Results: To limit the spread, immediate actions were taken, including isolating all patients and preventing their transfer to other units. Additionally, contact patients and healthcare staff underwent a fecal swab screening. The enforcement of standard precautions, such as hand hygiene and the use of protective equipment, was strengthened. By visiting the affected ward, a comprehensive list of cases was compiled, revealing that all patients had been intubated and had urinary and peripheral venous catheters. Furthermore, all patients were receiving multi-drug therapy. It was observed that the patients were not isolated and the nursing team had to share responsibilities due to staff shortage. Insufficient maintenance of the liquid soap dispensers was also noted.
The suspected cause of the outbreak was transmission through hands. Consequently, a crisis team was formed to implement control measures, which included emphasizing basic hygiene practices and educating the staff on both standard and additional precautions.
One month after implementing these interventions, no new cases have been reported.
Conclusion: implementation of those urgent measures enabled us to control this outbreak. Continuous monitoring in order to detect new cases earlier is crucial to minimize the dissemination of multi-drug resistant Klebsiella pneumonia.

Disclosure of Interest
None declared.

P77

Using surveillance quality indicators to identify barriers to data completion and opportunities for improving the laboratory performance & reporting protocol for robust AMR surveillance in Nigeria: a quantitative study

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P77

Introduction: Good quality data is essential in optimising containment strategies for antimicrobial resistance, a global public health threat estimated to cause 10 million deaths yearly and up-to 5% loss in GDP. The laboratory system play important roles in the collection of high quality data as well as ensuring validity, reliability and timeliness of data. However, in many low-medium income countries including Nigeria, the technical capacity of the laboratory for fulfilling these responsibilities is unknown. This paucity of information limits piloting of strategies to complement existing surveillance and planning improvement of subsequent laboratory iterations into the surveillance system. Alert to this problem, this study utilised surveillance quality indicators (SQIs) to assess 32 areas of laboratory functions relevant to surveillance to provide roadmap for improved surveillance data information gathering.
Objectives: To assess gaps, vulnerabilities and enablers of laboratory strengthening processes in the scope of technical capacity for clinical and public health functions.
Methods: A cross-sectional study design utilising structured questionnaire administered online via Qualtrics and reported in accordance with Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines. Data analysis involved descriptive and inferential statistics as well as bivariate and multivariate logistics to test predictive analysis of relationship between variables.
Results: A total of 302 laboratories completed the questionnaire, 107 (53.4%) government laboratories and 195 (64.6%) private sector laboratories. 18.2% reported excellent knowledge, 25.5% has excellent capacity, 7.3% are fully ready for surveillance, 12.3% are participating in some surveillance, and 1.0% record important microbiological data that correlates with epidemiological information.
Conclusion: The weakest and most vulnerable of all SQIs were items related to data recording followed by readiness. Though the performance of one indicator has influence on the other, this correlation provides a better visualisation of the enablers and critical focus areas for overall performance improvement since the weaknesses and strengths vary from one laboratory to another.

Disclosure of Interest
None declared.

P78

Detection of beta-lactamase encoding AMPC and CMY-1 resistant genes among clinical bacterial isolates in some selected tertiary hospitals in the north western zone of Nigeria

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P78

Abstract video clip description: dddd.
Introduction: Cephalosporins are antibiotics prescribed daily for a wide variety of infections in Nigerian hospitals. The production of AmpC β-lactamase enzymes by many *Enterobacteriaceae* is among the main mechanisms for the resistance to such class of antibiotics.
Objectives: To investigate the Antimicrobial resistant pattern of clinical bacterial isolaes to third generation Cephalosporin Antibiotics, prevalence of *bla* encoding AmpC producing bacterial isolates and Multi drug resistant bacteria. To detect the *bla* $AmpC_{CMY-1}$ resistant genes using molecular markers among clinical bacterial isolates collected from tertiary hospitals in the N/W Nigeria.
Methods: A total of 759 clinical bacterial isolates were collected from seven states and were screened Phenotypically for AmpC production using Disk Approximation test. Antibiogram was performed according to clinical and laboratory standard Institutes Guidelines. Eight (8) antibiotic discs were used against the isolates; ceftazidime, ceftriaxone, cefoxitin, cefpodoxime, levofloxacine, impenem, tygercycline and clostin. The positive isolates were screened for *bla*AmpC production genotypically, and the PCR products were sequence analyzed.
Results: Result of Antibiogram showed that, *Acinetobacter baumanii*, *Providencia sp* and *Serratia sp* showed 100% resistance to third generation cephalosporins as well as Lev, IMP. Moderate susceptibility was observed with CT and TGC. Prevalence of AmpC production among clinical bacterial isolates showed that *A. baumanii*, *Aeromonas sp*., *Providencia sp., Serratia sp* and *Citrobacter freundi* had highest prevalence of AmpC 100%. The trend in prevalence of AmpC production and MDR resistance among the states of N/W Nigeria is in order: Sokoto>Kaduna >Katsina>Kebbi > Kano>Jigawa>Zamfara, P-value < 0.005. The *a*llelic variants found were *bla* $AmpC_{CMY-1}$.
Conclusion: This study indicates that *bla* encoding AmpC production is spreading and prevalent among the clinical bacterial isolates in the northwest of Nigeria. The spread of these resisatant genes among bacteria is an issue of public health concern. Therefore, proper monitoring and surveillance for proper prevention and infection control may limit the further spread of isolates.

Disclosure of Interest
None declared.

P80

ESBL-producing enterobacteriaceae isolated from suppurations at the Centre Hospitalier Universitaire Départemental du Borgou

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Introduction: The global emergence and spread of extended-spectrum beta-lactamases (ESBLs) producing *Enterobacteriaceae* have been threatening the ability to treat an infection.
Objectives: The aim of this study was to determine the prevalence of ESBL-producing and multi-resistant enterobacteria (ESBL-E) isolated from suppurations at the Centre Hospitalier Universitaire Départemental du Borgou.
Methods: This was an analytical cross-sectional study. The study was spread over a 9-month period from June 2021 to February 2022 and included patients admitted to the Centre Hospitalier Universitaire Départemental du Borgou-Alibori (CHUD-BA). A total of 107 cases of suppuration were sampled. Bacterial isolation, identification and antibiotic susceptibility testing were performed using standard microbiological techniques, followed by molecular characterization for resistance genes.
Results: The results show that 48.26% of samples contained enterobacteria. Indeed, 22.43% of samples were contaminated with Escherichia coli strains, followed by Klebsiella pneumoniae (5.61%), Klebsiella ornithinolytica (4.67%), Klebsiella oxytoca (3.74%) and Enterobacter herogenes (1.87%). All strains showed 100% resistance to Ampicillin, Fosfomycin/Trometamol, Peperacillin, Sulfamethoxazole-trimethoprim, Ticarcillin and Tobramycin. Strains were 97.92% resistant to amoxicillin + clavulanic acid, 97.92% to cefuroxime and 91.67% to pefloxacin. The biofilm formation test revealed that 39.62% of gram-negative bacilli were biofilm-forming. However, no biofilm formation was observed with species such as Proteus vulgaris and Proteus mirabilis isolated in our study. Genes encoding ESBL production were detected. Thus, 28%, 8% and 34% of enterobacteria respectively possess the blaTEM, blaSHV and blaCTX-M resistance genes. 60% of Enterobacter Spp strains were blaCTX-M carriers. 40.91% of Escherichia coli strains were blaTEM carriers and 13.64% were blaSHV carriers.
Conclusion: Antibiotic resistance, which has become a real public health problem, can complicate the treatment of suppurations, hence the importance of rationalizing antibiotic use. Consequently, rigorous infection control strategies need to be implemented in hospitals across the country.

Disclosure of Interest
B. Boya: None declared, H. SINA: None declared, M. ALASSANE Conflict with: The authors declare there is no competing interests about the publication of this manuscript.

P81

Bacterial spectrum and antibiogram of clinical and environmental samples collected at Thika level five hospital

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Abstract video clip description: Periodic monitoring of antibiotic susceptibility patterns of bacteria in clinical settings is vital to ascertain the current trends as well as re-establishing empirical therapy. This study aimed to determine bacterial contaminants and their antimicrobial susceptibility patterns from medical equipment, inanimate surfaces and clinical samples isolated from Thika Level 5 hospital in Kenya. Three hundred and five samples were collected and comprised of urine (n = 77), pus swabs (n = 100), catheter swabs (n = 3), stool (n = 20) and environmental samples (n = 105). Bacterial identification and antimicrobial susceptibility testing was done on VITEK 2 and disc diffusion respectively.
Coagulase negative *Staphylococci* (28/160, 17.5%) were the most isolated species from patients followed by *E. coli* (22/160 13.8%) and *S. aureus* (22/160, 13.8%). The bed rail was the most contaminated surface with *S. aureus* at (6/42) 14.2%. The clinical sample that yielded the highest number of pathogens was pus (92/160). Trauma patients had the largest proportion of isolates (67/160, 41.8%). Bacteria recovered from this study demonstrated high levels of resistance especially enteric bacteria. Extended Spectrum Beta Lactamase phenotype was noted in 29/44 (65.9%) enteric isolates. Patients most at risk of colonization with multidrug resistant isolates were those who had undergone surgery and the renal patients. Although genetic confirmatory studies are needed, this study shows that there is an urgent need for actions that mitigate the spread of antibiotics resistant bacteria.]
Key words: Antibiotic resistance, antibiotic, bacterial pathogens, inpatients, nosocomial infections.

Disclosure of Interest
None declared.

P82

Epidemiology of bacterial resistance at the grand Magal of Touba in Senegal

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Introduction: The Grand Magal of Touba (GMT) was associated with risks of infection, but no study on the circulation of resistant bacteria has yet been conducted.
Objectives: The first objective of this study was to detect the presence of antibiotic resistant bacteria by taking two complementary approaches, namely the detection by qPCR of different resistance genes, and the isolation of resistant bacteria on specific culture media in pilgrims returning from the GMT between 2018 and 2021. The second objective was to establish the phenotypic profile of resistance to different antibiotics for each strain isolated by culture, by performing an antibiogram. Finally, we looked for possible correlations between the acquisition of resistance genes and different factors such as the demographic and medical characteristics of the participants, the preventive and therapeutic measure they followed, and their clinical symptoms.
Methods: qPCR was performed on rectal samples from GMT pilgrims between 2018 and 2021, before and after their participation in the gathering. Rectal samples between 2018 and 2021 were also cultured on specific media, and antibiotic susceptibility testing was performed.
Results: Forty-one of the 296 (13.8%) pilgrims had at least one gastrointestinal symptom and 91/290 (31.4%) acquired bacteria mostly *Escherichia coli*. A total of 54.7% pilgrims reported washing their hands more frequently than usual and 89.2% used soap. One hundred and five (36.2%) acquired at least one resistance gene, notably CTX-M A (21.0%), SHV (16.5%) and TEM (8.2%). The strains isolated by culture were mostly *E. coli*. These bacteria were found to be sensitive to carbapenems and resistant to amoxicillin and amoxicillin-clavulanic acid. The acquisition of EAEC was independently associated with CTX-M A and TEM acquisition.
Conclusion: Pilgrims presented a risk for acquisition of CTX-M A after the GMT. Surveillance of the prevalence of resistant bacteria and the occurrence of clinical infections among pilgrims are necessary in the future.

Disclosure of Interest
None declared.

P83

Persistent environmental pollution slowing down progress in the fight against antimicrobial resistance (AMR) in Nigeria

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Introduction: Fight against antimicrobial resistance (AMR) requires holistic approach from tripartite sectors of human, animal and environment. While significant progress is being made in human and animal sectors' fight against AMR, environment sector is yet to pick up, and not only that, also dragging the progress of other sectors back. The key issue remains persistent environmental degradation due to indiscriminate disposal of solid and water waste derivatives which are capable of holding and transmitting pathogens of clinical relevance.
Objectives: The study aimed at assessing the role of illegal waste disposal sites situated near residential areas in harboring and transmitting clinically relevant *Acinetobacter baumannii* and to assess the key human activities responsible for their transmission.
Methods: Samples of air at 1.5 m height above dumpsite and at distance of 2 m, waste water emanating directly from the dumpsite and at 5 m distance and solid wastes (diapers, plastics, and food waste) were collected. *A. baumannii* isolation and antimicrobial susceptibility testing were done using standard techniques. Whole genome sequence data generated were used to infer relatedness and transmission route.
Results: *A. baumannii* was detected in 20% (4/20) of air samples with the highest recovery (3/20, 15%) in the air above dumpsites. *A. baumannii* was also detected in 26.7% (7/30) and 30% (6/20) of solid wastes and wastewater samples, respectively. All the isolates are resistant to ampicillin, amoxicillin, ceftriaxone, kanamycin, gentamicin, erythromycin, and tigecycline and 53% resistant to fluoroquinolones. Eight have acquired resistance genes encoding aminoglycoside, tetracycline, and, sulphonamide resistance while 39 virulence genes that play role in increasing pathogenicity and transmission were acquired by all the isolates. MLST allelic profiles ST of 942 and 1050, 2058, which are not commonly reported in Nigeria, were recorded. Isolates from the dumpsite and 2 hospital isolates form a cluster with an SNPs number in the range of 85–100 suggesting a close relationship.
Conclusion: *A. baumannii* variants circulating in polluted environments are also found in hospitals, which suggests transmission in both directions.

Disclosure of Interest
None declared.

P84

Impact of hydrological cycles (flood and drought) on the quality of drinking water in the Amazon floating houses

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Introduction: Water is a source of life and an essential good to guarantee health. Although the consumption of good-quality water is recognized, there are irregularities in the public supply, compromising the safety of this resource in several Brazilian regions.
Objectives: To evaluate the quality of the floating houses consuming water, in the different hydrological cycles (flood and drought), in Codajás, Coari, and Tefé, Amazonas, Brazil.
Methods: Descriptive exploratory study analyzing the physical–chemical and microbiological parameters of consuming water of 44 floating houses in Codajás, Coari, and Tefé per hydrological cycle. Sociodemographic data, consumption, and storage of water habits were collected. Hydrological cycle information (rainfall rates, river level, flow) was collected from the data provided by the National Water Agency. Water samples were analyzed in both hydrological phases (flood and drought) for pH, temperature, dissolved oxygen, electrical conductivity, microbiological (presence of E. coli), antimicrobials sensitivity, and physicochemical parameters. FAPEAM PAINTER n.003/2020.
Results: Floating houses had a fixed location (79.5%) and between four and seven residents per household (47.7%). The drinking water predominantly originated from tubular/artesian wells (75% dry; 72.7% total) and was stored in PET bottles or buckets (90.9%). Most residents did not treat their water before consumption (63.6%). The organoleptic parameters color ($p = 0.008$), alkalinity ($p < 0.001$), and iron ($p < 0.001$) showed significant differences among cities. The parameters manganese ($p = 0.035$) and aluminum ($p < 0.001$) showed significant differences between the hydrological phases. *E. Coli* contamination was present in 86.36% of the drought season samples and 82.5% of the flood season, with no significant difference between the hydrological periods. *Enterococcus spp*., *Vibrio spp*., and *Salmonella spp*. were associated with contamination by *E. coli*. Several strains were resistant to the antimicrobials tested, mainly *Salmonella spp*., during the drought season.
Conclusion: This study observed samples contaminated with chemical compounds above the maximum values permitted, and contamination by microorganisms resistant to antimicrobials. Campaigns related to good practices in water consumption and storage are needed.

Disclosure of Interest
None declared.

P85

Long-term surveillance cultures for highly resistant micro-organisms from ostrich to oversight: ignorance is bliss, but knowledge is power

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Introduction: Screening cultures allows identification of patients with colonisation by HRMO at hospital admission and during the hospital stay by applying infection prevention measures to reduce the person-to-person spread. In addition to screening risk groups at admission, a new surveillance program was implemented, screening all patients for HRMO with a hospital stay over ten days.
Objectives: Identifying the carrier status of HRMO in long-term admitted patients to reduce the risk of intra-hospital transmission, personalise antibiotic therapy and eventually optimise prophylactic treatment.
Methods: Cultures were collected every ten days of hospitalisation until discharge using a rectal swab. These HRMOs were included in the surveillance culture routine: (1) Extended-Spectrum β-Lactamase-producing Enterobacterales (ESBL), (2) multidrug-resistant Gram-negative bacteria (MDR-GNB). (3) carbapenemase-producing Enterobacterales (CPE) and (4) vancomycin-resistant Enterococci (VRE).
Results: A total of 812 samples were included, of which 83 (10%) had a positive surveillance swab, and 55/83 (66%) of positive cultures were identified in the long-term admission screening. In addition, four contact tracing investigations were performed.
Table 1. Characteristics of the patients who underwent a surveillance culture in Deventer Hospital.

Parameter	N (%)
Total number of patients	645 (100)
Mean age (years)	
< 18	103 (16)
19–65	116 (18)
66–80	213 (33)
> 80	213 (33)
Sex, female	303 (47)
Surveillance samples collected	812 (100)
Number of cultures/% HRMO per ward	
Gynecology	2 (0)
Interne Medicine	188 (10)
Neurology/dermatology	196 (12)
Surgery	29 (14)
Neonatology	181 (9)
Pediatry	17 (18)
Orthopedics/traumatology	38 (24)
Pulmonology/cardiology	71 (4)
Intensive care	90 (8)
Total number of HRMO isolated	113 (100)
ESBL	91 (81)
MDR-GNB	17 (15)
CPE	3 (3)
VRE	2 (2)

Conclusion: Asymptomatic carriers were found in 84% of patients with HRMO, and 66% had already been hospitalised for ten days without proper infection prevention and control (IPC) measures. The discovery of carrier status enabled us to take the correct steps and minimise the risk of transmission between patients. In addition, outbreaks were promptly identified, and source and contact tracing investigation were limited as infection prevention measures and further actions were quickly implemented.

Disclosure of Interest
None declared.

P86

Trends in isolation and antimicrobial susceptibility of enteropathogenic bacteria in 2011–2019 at a Korean Tertiary Care Hospital compared with data in the preceding reports

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P86

Introduction: Environmental sanitation plays a significant role on the prevalence of enteropathogenic bacteria.
Objectives: This study aimed to determine the trends in the prevalence and antimicrobial resistance profiles of enteropathogenic bacteria from 2011 to 2019.
Methods: A retrospective analysis was performed using data from stool cultures of *Salmonella* spp., *Shigella* spp., *Plesiomonas shigelloides*, *Yersinia* spp., *Vibrio* spp., and *Campylobacter* spp. Samples were obtained between 2011 and 2019 from Severance Hospital. Antimicrobial susceptibility profile was determined using the disk diffusion method for nontyphoidal *Salmonella* (NTS) and *Campylobacter* spp., following the Clinical and Laboratory Standards Institute (CLSI) guidelines.
Results: The number of specimens obtained for stool culture increased significantly from 13,412 during the period of 1969–1978, to 48,476 over the past nine years (2011–2019), whereas the ratio of positive specimens decreased significantly from 1,732 (12.9%) to 449 (0.9%). The proportion of samples positive for *Salmonella* Typhi decreased from 472 (93.6%, 1969–1978) to 4 (1.5%, 2011–2019), whereas the proportion of NTS increased from 14 (2.8%, 1969–1978) to 261 (96.7%, 2011–2019). Among all the enteropathogenic bacteria isolated, *Shigella* spp. accounted for 60.0% (1,039) isolates from 1969 to 1978, but only 1.6% (7) from 2011 to 2019. *Campylobacter* was the second most prevalent enteropathogenic bacteria, accounting for 29.4% isolates (132). Among the NTS strains isolated from 2016 to 2019, their susceptibility rates to ampicillin and sulfamethoxazole-trimethoprim were 51.1% and 85.2%, respectively. Additionally, the susceptibility rate of *Campylobacter* to ciprofloxacin was 15.8%.
Conclusion: The prevalence of *Salmonella* Typhi and *Shigella* spp. significantly decreased, whereas those of NTS and *Campylobacter* spp. increased. Therefore, continuous monitoring of ciprofloxacin-resistant *Campylobacter* spp. is of vital importance.

Disclosure of Interest
None declared.

P87

Laboratory surveillance system for antimicrobial resistance in community settings and understanding the perception and determinants leading to antimicrobial (mis)use in rural settings in Odisha, India

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Introduction: Antimicrobial resistance (AMR) is one of the biggest global health threats in recent years mostly in low and middle-income countries which requires urgent research using multidisciplinary approach.
Objectives: To measure and assess the patterns of AMR among WHO priority bacterial pathogens using a surveillance network in rural communities.
To assess the knowledge, attitudes and practices regarding antimicrobial use and AMR.
To identify stakeholders and understand the perceptions and pathways of antibiotic use among them.
Methods: The study was carried out in rural setting of Odisha, which covers an area with a resident population of approximately 80,129. The study employed two consecutive approaches, active surveillance and a mixed method approach to find out different stakeholders and explore the factors which affect community antibiotic access using in depth interviews (IDIs) and focus group discussions (FGDs).
Results: During the study period, 2019 clinical specimens yielded 329 (16.29%) positive bacterial isolate, which includes 159 (43.56%) gram positive and 206 (56.43%) gram negative isolates. E. coli (125/2019; 6.19%) was the dominant gram-negative pathogen and Coagulase-ve Staphylococci (CoNS) (52/2019; 2.57%) was dominant among gram-positive pathogens. Most of the pathogens were multidrug resistant. More than 50% of the gram negative pathogens were ESBL producing. Highly fluoroquinolone resistant strains were found to have triple mutants with mutations in gyrA (S83L), gyrA (D87N) and parC (S80I). The study documented a low level of knowledge and a high level of practice on antimicrobial usage and AMR. The qualitative study generated information about multi stakeholders knowledge on Antibiotic use and misuse and awareness on one-health approach in managing antibiotic resistance. The findings highlight the need for one-health literacy and inter-departmental coordination among healthcare, veterinary, poultry, and fishery professionals to prevent zoonotic diseases and antibiotic resistance.
Conclusion: The findings are crucial for directing policy development, programme planning, in execution of antimicrobial use and AMR-related initiatives focusing the community-based awareness, education, and sensitization.

Disclosure of Interest
None declared.

P88

Burden of bacterial antimicrobial resistance in Nepal: a 2019 systematic analysis

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Introduction: Antimicrobial resistance (AMR) is a major public health problem in Nepal largely due to unregulated sale and prescription of antimicrobials. Previous studies conducted assessed the burden of AMR in limited scale mainly focusing the hospitals and thus estimating the magnitude of problem has been challenging. In order to address AMR at national level, estimating true burden of the problem is essential to make informed policy decisions.
Objectives: This study aims to provide a comprehensive estimate of AMR burden in Nepal.
Methods: This cross-sectional study utilized data from the Institute for Health Metrics and Evaluation's MICROBE (Measuring Infectious Causes and Resistance Outcomes for Burden Estimation) database. Quantitative analysis with 95% uncertainly intervals (UI) was conducted to determine the number of deaths and disability-adjusted life-years (DALYs) attributable to AMR in 2019.
Results: The study estimated a total of 29,617 (95% UI: 18,202–46905) deaths associated with bacterial AMR in 2019 including 6413 (95% UI: 3672–10,684) deaths attributable to bacterial AMR. Among syndromes, lower respiratory tract infections accounted for the highest burden with 8879 deaths (6336–12,356) followed by bloodstream infections (5967 deaths [3379–9963]). The seven leading pathogens associated with resistance (Klebsiella pneumoniae, Staphylococcus aureus, Escherichia coli, Pseudomonas aeruginosa, Streptococcus pneumoniae, Acinetobacter baumannii and Mycobacterium tuberculosis) were responsible for 5252 (3017–8784) deaths attributable to and 18,018 (12,206–26330) deaths associated with AMR. Methicillin resistance S aureus followed by multidrug resistance mycobacterium attributed to leading cause of death while Beta lactamase inhibitor resistant klebsiella pneumoniae followed by fluroquinolones resistant to S aureus predominated death associated with AMR. Total DALYs associated with AMR was 859,515 (564,248–1,290,496) while those attributed to AMR accounted for 230,685 (137,983–373,541).
Conclusion: The increased level of resistance for important pathogens along with high mortality and DALY, shows that AMR is a serious public health challenge in Nepal. The study highlights the urgent need for infection prevention and control measures to address the issue.

Disclosure of Interest
None declared.

P89

Impact of COVID-19 responses on antimicrobial resistance in a tertiary care hospital in Singapore

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Introduction: During the COVID-19 pandemic, infection prevention control (IPC) measures pivoted to focus on curbing the spread of COVID-19. Shortages of manpower, facilities and personal protective equipment may lead to unintended lapses of antimicrobial stewardship practices. Concerns of potential secondary bacterial infections in COVID cases may change antimicrobial utilization (AMU) patterns.
Objectives: This study looks at the impact of COVID-19 on antimicrobial resistance through the changes in incidence of multi-drug resistant organism (MDRO) infections and AMU levels in a tertiary care hospital in Singapore.
Methods: Data on dispensed medication, epidemiological surveillance and health services utilization were aggregated by month and normalized by patient days for the period of January 2018 to July 2021. Regression discontinuity analysis was conducted with the cut-off date as the government's disease outbreak response declaration on 7 February 2020.
Results: We had data on 917 MDRO patients before and 431 MDRO patients after the cut-off date. Median age and proportion of women were similar (67 vs 68 years old; 43.5% vs 40.9%, before and after the cut-off date respectively). The incidence of Carbapenem-resistant Enterobacterales decreased by 6.2% (95% CI 11.0% to 2.1%) during the COVID period as compared to before COVID. Incidence rates of Vancomycin-resistant *Enterococci*, Methicillin-resistant *Staphylococcus aureus*, multi-drug resistant *Klebsiella* and *Acinetobacter* were not significantly different. There was a decreasing trend of usage for Piperacillin and Tazobactam ($p < 0.001$), Levofloxacin ($p = 0.033$) and Meropenem/Imipenem ($p < 0.001$). Whilst Vancomycin ($p = 0.042$) and Linezolid ($p = 0.01$) saw sporadic increases in usage during the COVID period.
Conclusion: COVID-19 had limited impact on antimicrobial resistance in this tertiary care hospital in Singapore, possibly due to hospital staff maintaining a high level of IPC practices despite the high

stress environment of managing COVID. Generalizability of the findings to other healthcare institutions need to be determined.

Disclosure of Interest
None declared.

P90

Risk factors for acquisition of extremely drug resistant (XDR) gram-negative bacilli infections

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Introduction: Institution of effective antimicrobial stewardship in the era of extremely drug resistant Gram negative bacilli (XDR GNB) is a challenging task. Identification of risk factors for acquisition of extremely drug XDR GNB infection will allow more judicious use of the drugs of last resort.
Objectives: To identify risk factors for acquisition of XDR GNB to enable appropriate antimicrobial prescribing and promote antimicrobial stewardship.
Methods: In a retrospective case–control study spread over six months, in-patients infected with XDR GNB were identified. A detailed analysis of the patients demographic and clinical profile was carried out to identify potential risk factors for acquisition of XDR GNB through the electronic patient records (EPR) from the Health Information System (HIS). Statistical analysis was performed for assessing association of risk factors and acquisition of XDR-GNB infection. Patients infected with ESBLs were taken as controls. Analysis via Chi square test or Fisher's exact test, and presented as means (standard deviation) and will be analyzed with Independent samples t-test/ANOVA or Mann Whitney U/Kruskal Wallis test as appropriate.
Results: In this study, 20 XDR-GNB patients were identified. The factors assessed were age, gender, presenting complaint, ICU/general ward admission, bacterial etiology, comorbid conditions, surgery, indwelling devices, season, length of stay, prior antibiotic use in the last 90 days, prior hospitalization, CRP, and qSOFA. Significant association was found with prior use of meropenem ($p = 0.000124$), piperacillin-tazobactam ($p = 0.007$) and colistin ($p = 0.003$). Extremely significant association was observed with the length of hospital stay ($p = 0.000039$). Age, gender, in dwelling devices, central venous catheters, parenteral nutrition, surgery, presence of comorbid conditions, haemodialysis did not predict infection with XDR GNB.
Conclusion: After detailed analysis of over 25 potential risk factors, prior administration of meropenem, piperacillin tazobactam and colistin and length of hospital stay were strongly linked with acquisition of XDR GNB, justifying the use of the big guns in these situations.

Disclosure of Interest
None declared.

P92

A health system strengthening approach for sustainable AMR surveillance systems in low income countries

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Introduction: Sustainable AMR surveillance relies on the coordination of various elements within the health system. However, most AMR teams lack a systematic way to track progress in implementing their AMR plans and addressing gaps in the system.
Objectives: To track progress towards sustainable AMR systems.
Methods: A quantitative measurement system was used to track progress of pre-designated program milestones towards sustainable AMR surveillance. The tracker was adapted from a system used by the Institute for Healthcare Improvement to gauge progress in its improvement programs. Progress was tracked on a 5-stage scale ranging from planning (stage 1) through full implementation (stage 5). Three MOHs and six facilities in Ghana, Kenya and Uganda piloted the tracker as part of a Pfizer-sponsored program to assist low-income countries in developing sustainable AMR surveillance. System elements include sustainable funding, skilled personnel, adequate laboratory supplies, quality control and assurance, and appropriate use of surveillance data by institutions and clinicians. In a guided session, AMR teams set targets and self-assessed their progress in implementing activities required to advance to the next stage. Key informant interviews were conducted to identify enablers and barriers to achieving sustainable AMR systems.
Results: Progress towards sustainable AMR surveillance systems varied widely, from stage 1 to 2 for MOHs and stage 1 to 5 for facilities. Progress was most rapid for governance structures, laboratory personnel skill-building, timely feedback of susceptibility results and laboratory supply chain commodity forecasting. Major barriers to progress included insecure funding, unreliable supply chains, laboratory staff turnover, lack of data systems, mistrust within facilities and between MOHs and facilities, and limited evidence of utilization of laboratory results for antimicrobial stewardship and patient management.
Conclusion: This demonstration project offers important learnings for developing sustainable AMR systems. AMR surveillance and control initiatives remains fragmented. A coordinated patient-centered system, one health approach will be needed to accelerate progress in detecting and responding to morbidity, mortality, and cost of AMR in low-income countries.

Disclosure of Interest
None declared.

Poster session: Hand Hygiene 1: Compliance and improving it worldwide

P93

Hand hygiene compliance rate among healthcare professionals in St John Eye Hospital Group; five years retrospective study

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P93

Introduction: Hand hygiene is the most important intervention to reduce the risk of transmission of pathogens in health care and it's consider the first line in patient safety measurements. Compliance with hand hygiene guidelines has been shown to be an effective method of reducing infection.
Objectives: To analyze the routine hand hygiene compliance rate between health-care professionals, with focus on improving hand hygiene compliance rate.
Methods: A retrospective analysis of five years data on hand hygiene was done at St John Eye Hospital groups (Jerusalem, Gaza, Hebron and Anabta) from Jan.2018 to Dec.2022. We assessed hand hygiene (HH) compliance rate with the World Health Organization prescribed five moments of hand hygiene among healthcare profissionals. Three main groups of healthcare professionals; doctors, nurses and allied

health were enrolled in the study. Also, the following components were implemented as strategic plan to improve hand hygiene compliance: Infection control audit for monitoring practices and reminders to non-adherence, Quarterly full report regarding hand hygiene compliance rate, Distributed hand hygiene education material in all hospital visable area, Insured the availability of hand hygiene material in every department in the hospital.
Results: The observation was carried out in all St John eye hospital clinical units and departments. Of total162 healthcare professionals were observed for hand hygiene compliance; 50 (30.9%) were doctors, 82 (50.6%) nurses, and 30 (18.5%) allied health. The overall compliance rate was 88.7%, and its distribution among staff was a follows; doctors87.4%, nurses91.2%, and allied health87.9%. The highest compliance rate was found among nurses.
Conclusion: In our study the overall of a hand hygiene compliance rate 88.8% and it is considered a positive outcome, reflecting a commendable level of adherence to hand hygiene guidelines among the healthcare professionals. Also, it indicates that the majority of healthcare professionals are following the recommended hand hygiene practices, which are essential for reducing the transmission of infections. However, it's important to note that achieving a high compliance rate does not guarantee that all hand hygiene opportunities are being met. Further study is needed to explore the reasons for non-compliance.

Disclosure of Interest
None declared.

P94

Addressing the hand hygiene challenge in diverse healthcare settings of Brazil: from urban hospitals to remote jungle facilities

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P94

Introduction: Hand hygiene—HH is a crucial aspect of infection control.
Objectives: Which of the five moments of HH has the lowest adherence rate in Brazilian hospitals?
Methods: We conducted covert, random daily observations in both critical and non-critical care units, to assess HH compliance in 8 Brazilian hospitals (Jan-Mar/2023). HH rates were collected in the SACIH 3i system (https://nsp.sacihweb.com).
Results: We conducted observations on 4,662 HH opportunities across 8 hospitals in three months. HH adherence rate varied from 14 to 74% among hospitals. The first moment had the lowest adherence rate of 47%. HH compliance rates of physicians = 51%, nurses = 65%, nursing technicians = 62% (p-value < 0.001). There was difference in HH rate between private and public/philanthropic hospitals in Moment 1, Moment 2, and Moment 5.
Conclusion: HH adherence in Brazilian hospitals remains low at 47%. The first moment, before touching the patient, has the lowest adherence rate. Physicians have the lowest adherence rate, and private hospitals have better adherence than public/philanthropic hospitals.

Disclosure of Interest
None declared.

P95

Setting up continuous quality project to improve hand hygiene capacity in an intensive care unit in a private hospital in a low resource setting

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P95

Introduction: INTRODUCTION: IPC practices including hand hygiene impact quality of health care, patient safety, treatment outcomes, healthcare associated infections and contribute to the control of AMR. Uganda is implementing the National Action Plan for AMR. However, most of the efforts are towards support to public health facilities with minimal effort towards private health facilities, despite their role in Universal Health Care.
Objectives: 1. To assess the level of knowledge and attitude regarding the hand hygiene practises amongst health care workers in private health facilities.
2. To identify areas of gaps in their knowledge and attitude
Methods: Beginning 2022, we established an IPC program in a 10 bed ICU in a busy 50 bed inpatient private hospital in Uganda. Health workers working in the ICU were trained in hand hygiene and the WHO hand hygiene compliance tool was used to monitor compliance to hand hygiene over a period of 1 year.
Results: There was an overall 30% increase in hand hygiene compliance from 43% (532/1250) at baseline to 73% (786/1080) at end point. At baseline, highest compliance was after touching patient 58% (146/250) followed by after body fluids 54% (134/250) with lowest compliance observed after patient surrounding at 20% (50/250). At the end point, highest compliance was observed for before touching a patient 85% (184/216) followed by before procedure and after touching a patient at 73% (158/216) compliance each. There was an improvement in compliance after patient surrounding to 69% (148/216). We made over 7000 hand hygiene observations during the CQI project, cumulatively trained 25 health workers. Compliance was highest among nurses at 55% baseline and 76% end point versus 34% baseline and 62% endpoint for doctors respectively.
Conclusion: We demonstrate the feasibility of implementing hand hygiene and IPC programs in private health facilities and ICUs in low resource settings. Major challenges include low support from the national AMR program, limited financial resources in the budget of the hospital and lack of capacity by health workers to implement and monitor IPC programs.

Disclosure of Interest
None declared.

P96

The effects of the implementation of a continuous hand hygiene educational program among healthcare workers in a limited resource hospital in Barbados

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Introduction: Healthcare providers continue to be non-compliant with the protocols of effective hand-hygiene practice. Handwashing remains the simplest, most important, and cost-effective way of decreasing the spread of infections. Despite the act being simple and effective, compliance with guidelines is unsatisfactory.
Objectives: The purpose was to compare hand hygiene compliance among healthcare workers after the implementation of a mandatory yearly program and a continuous hand-hygiene educational program.

Methods: The study consisted of three phases. The compliance of hand hygiene was directly observed for twenty minutes after training with the initial program utilizing the WHO five moments checklist. In the second phase, continuous direct observations for twenty minutes of healthcare workers with the WHO checklist, taking the concept of opportunity, indication and techniques after continuous training, reinforcement of posters and pamphlets. The last phase was the comparison of both teaching modalities. Descriptive and analytical statistics were used.
Results: Before the introduction of the continuous training the hand hygiene compliance was 54.9%. This figure increased to 70.1% after the implementation of continuous training. There were no significant changes between the physicians before and after the implementation of the program.
Table 1: Comparison of hand-hygiene compliance utilized with the yearly training and the continuous training.

Hand Hygiene Compliance: total (%)

	Yearly Training	Continuous Training
Nurses	198/330 (60)	711/888 (80)
Physicians	68/148 (45.9)	300/592 (50.6)
Auxiliary	23/52 (44.2)	147/208 (70.6)
Allied Health	35/60 (58)	194/240 (80.8)
Total	324/590 (54.9)	1352/1928 (70.1)

Conclusion: Additional efforts are required to discover more effective innovative measures to improve hand hygiene among physicians. Despite better understanding of antimicrobial resistance and the burden of healthcare associated infections in hospitals and the opportunity for continuous education, this category of staff remains a cause for concern. A program designed to improve hand hygiene compliance among staff, successfully engaging them in monitoring and improving their own compliance is needed. Excellence in hand hygiene compliance leads to substantial healthcare associated infections reductions.

Disclosure of Interest
None declared.

P97

Coverage and use of improved sanitation facilities at household level after implementation of national sanitation campaign in Siha District, Kilimanjaro Region, Tanzania

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Introduction: Improved sanitation and hygiene practices coverage and use are still very low worldwide. In developing countries and sub-Saharan Africa, the situation is worse as one person in five has sanitation services. Tanzania, particularly Siha District before the implementation of the National Sanitation Campaign (NSC), had an estimated coverage of 21% and 15% for improved toilets and functional handwashing facilities, respectively, while 5.7% of households practiced open defecation.
Objectives: Therefore, this study intended to assess factors and changes brought about by the National Sanitation Campaign intervention and whether the households (HH) managed to sustain the improved sanitation facilities after two years since the intervention ended.
Methods: The study was conducted in Siha District, Kilimanjaro Region using a cross-sectional pre- and post-study design. Cluster sampling was used to select households from the four villages in the district. The quantitative approach was used in this study. The post-intervention data were collected using interviewing and observation methods to assess the coverage and use of improved sanitation facilities and factors for its sustainability. All objectives were analyzed using Statistical Package for Social Sciences version 21 (SPSS).
Results: The study revealed increased coverage of households with improved latrines and handwashing facilities. The HH with improved latrines increased from 21% to 36.3% and handwashing facilities increased from 15% to 15.9% after the intervention, respectively. Also, there was a decrease in open defecation practices from 5.7% to 3.9%. Income ($P < 0.001$) and education ($P < 0.003$) factors were statistically significant with the sustainability of improved sanitation facilities.
Conclusion: The sanitation campaign brought about the desired changes in improving household sanitation and hygiene practices. The Health and Environmental Village committee should provide more education on the benefits of construction and use of the improved toilets to reduce OD practices among household members in the setting.

Disclosure of Interest
None declared.

P98

Assessing hand hygiene compliance among healthcare workers in a Tunisian University Hospital

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P98

Introduction: Hand hygiene (HH) is considered to be the most effective strategy to successfully prevent health associated infections (HAI) and restrict highly transmissible diseases and epidemics.
Objectives: The current study aimed to measure HH compliance among healthcare workers (HCW) at a Tunisian University hospital.
Methods: We carried out a HH audit by direct observation among HCW working during morning shifts in 20 care units at Farhat Hached University hospital, Sousse in March–April 2023. The types of HH assessed were: Simple washing, antiseptic washing and Hydro-alcoholic friction. The HH procedure was considered correct if the pre-requisites were respected, the technique and duration were correct, and the product was adapted without recontamination. HH compliance and conformity rates were analyzed. The HH compliance rate was calculated by dividing the number of hand hygiene actions performed by the number of expected MH actions, while the HH conformity rate was calculated by dividing the number of conforming actions by the number of observed actions.
Results: A total of 306 HCW were audited with 612 healthcare situations observed, including: care on intact skin (47.4%), handling of intravenous devices (20.6%) and blood sampling (20.3%). Among the audited HCW: 28% were physicians, 42% were nurses and 27% were undergraduate nursing students. Hydro-alcoholic friction was the most observed HH technique (50%). HH pre-requisites were respected in 70% of cases. Incorrect procedures were mainly related to non-respect of HH steps (86.8%) and procedure duration (83.6%). The overall compliance rate was 47.43%. Pre and post-care compliance rates were 42.6% and 51.8% respectively, while the overall conformity rate was 20%. Nurses were the most compliant with HH (63.20%), physicians' compliance was about 30%. The most compliant departments were surgical resuscitation 96.4%, neonatology (85.9%), infectious diseases (83.0%) and pediatrics (72.5%).

Conclusion: The audit was considered to have changed staff perceptions of hand hygiene practice from a low priority to an essential part of daily practice.

Disclosure of Interest
None declared.

P99

Strategies for promoting hand hygiene compliance at the unit-level

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P99

Introduction: Hand hygiene is the most economical, effective and simple measure for prevention and control of hospital infection, but it is not possible to effectively promote hand hygiene only by staff of infection control department. West China Hospital formed a two-level structure involving hospital-level and unit-level to get unit-level involved to promote the implementation of the WHO multimodal hand hygiene improvement strategy since 2019. Hand hygiene compliance showed a upward trend.
Objectives: to form a two-level structure involving hospital-level and unit-level to promote the implementation of WHO multimodal hand hygiene improvement strategy.
Methods: Since August 2019, trained infection control link nurses in all clinical units have systematically carried out hand hygiene work in accordance with WHO multimodal hand hygiene improvement strategy. As for hand hygiene monitoring, infection control link nurses adopted mobile APP instead of paper forms to observe hand hygiene compliance covering day shift and night shift. Each infection control link nurse was required to observe 15, 10 opportunities per week for nurses and doctors, respectively. Infection control link nurse was also required to observe 5 opportunities per week for cleaning workers.
Results: From August 2019 to 2022, 57,255, 130,669, 128,808, 107,331 opportunities of hand hygiene were observed in total, and hand hygiene compliance were 86.9%, 90.4%, 90.9%, 92.6%, respectively, which showed a upward trend ($\chi2 = 1249.293$, $P < 0.001$);24,514, 52,732, 50,731, 32,576 opportunities for nurses were observed, and hand hygiene compliance were 90.1%,93.4%,93.6%,94.7%, respectively, which showed a upward trend ($\chi2 = 382.603$, $P < 0.001$); 15,698, 37,017, 38,067, 45,827 opportunities for doctors were observed, and hand hygiene compliance were 85.2%,89.2%,90.1%,92.8%, respectively, which showed a upward trend ($\chi2 = 766.75$, $P < 0.001$); 17,043, 40,920, 40,010, 28,928 opportunities for cleaning workers were observed, and hand hygiene compliance were 83.7%,87.8%,88.2%,90.0%, respectively, which showed a upward trend ($\chi2 = 327.06$, $P < 0.001$).
Conclusion: Strategies for promoting hand hygiene compliance at the unit-level is important, which can timely discover and feedback the problems in hand hygiene, thus promote the implementation of WHO multimodal hand hygiene improvement strategy.

Disclosure of Interest
None declared.

P100

Unleashing the power of hand hygiene enhancing multimodal strategies in an acute care emergency department

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P100

Introduction: Evidence supporting the effectiveness of hand hygiene (HH) in reducing hospital-acquired infections (HAIs) is limited, and causality remains unclear. However, studies indicate that healthcare worker HH compliance rates above 60% are associated with a low incidence of such infections. In response, an Infection Prevention team implemented a multimodal improvement strategy to increase and sustain HH compliance in the emergency department of an inner-city acute hospital.
Objectives: Reinforcing a Multimodal Hand Hygiene Strategy to Improve Compliance in an Acute Care Emergency Department.
Methods: A mixed-methods approach was employed to assess the current state of HH compliance. Consultations with healthcare workes, survey, focus group asisted in dentified key performance improvement actions. Direct observations was increased during different shifts. Also, the accessibility and visibility of HH supplies were improved. A standardized hand hygiene action plan was integrated into a multidisciplinary care delivery module system and integrated as a quality metric. The Infection Prevention team provided educational training and timely feedback to enhance a culture of safety and staff awareness.
Results: The implementation of the multimodal hand hygiene strategy from January 2023 to April 2023 resulted in a significant 26% increase in HH compliance rate within the Emergency Department. A total of 401 HH opportunities were observed, with compliance rates improving from 18% (24/131) to 44% (34/78) and showing an upward trend. Notably, during the implementation of the multimodal strategy, all contact-transmissible HAIs and device-associated infections had Standardized Infection Ratios (SIRs) below national benchmarks. The hospital exhibited a 66% better MRSA infection ratio and an 88% better CDI infection ratio compared to other hospitals nationwide.
Conclusion: Acute care emergency departments face inherent challenges in maintaining high hand hygiene compliance rates due to their busy nature. To address this, a multimodal HH strategy is crucial for fostering a safety culture and increasing staff awareness regarding the importance of HH compliance. Constant and active implementation of the multimodal strategy is necessary to sustain and further improveHH compliance rates in Emergency Departments, ultimately contributing to the prevention of hospital-acquired infections.

Disclosure of Interest
None declared.

P101

Hand hygiene compliance pursuant intervention in an emergency and trauma setting of a public tertiary healthcare facility

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P101

Introduction: The World Health Organisation (WHO) Multimodal Improvement Strategy was introduced to improve Hand Hygiene (HH) practices among health workers (HWs) as it is a cost-effective preventive measure for healthcare-associated infections. Healthcare-associated infections were common in the Emergency and Trauma Department (ETD) in hospital settings, and this can be linked to the need to treat many patients in a constrained and congested setting. In addition, the ETD frequently moves alcohol-based hand rub (ABHR) due to the regular rearranging of beds; and this unintentionally discouraged HWs from practising proper HH due to their failure to rapidly locate AHBR, especially when attending emergencies. Hence, in this study, automated ABHR dispensers were placed at fixed locations in ETD, and compliance rate was observed.
Objectives: To assess the effectiveness of fixed placement of the automated ABHR dispenser at the divided sections in ETD.
Methods: This was a cross-sectional study in ETD, Sarawak General Hospital (SGH), a university-affiliated, public tertiary-care hospital in Malaysia. Automated ABHR dispensers were placed at a fixed placement in ETD. A 12 week pre-and post-hand hygiene compliance (HHC) audit was conducted according to WHO's direct observation method.

Results: The pre- to post-HHC rate improved from 383/579 (66.14%) to 383/472 (81.14%), respectively. This study recorded a 15% increment in HHC post-intervention and showed the addition of automated ABHR dispensers at fixed locations successfully improved the HHC utilizing ABHR among HWs in emergency settings.
Conclusion: HH practise utilising ABHR was an efficient and effective method in the prevention of healthcare-associated infections. However, the type and placement of ABHR dispensers will affect the HHC. Hence, present findings suggest the utilisation of automated ABHR dispensers placed at a fixed placement, especially in emergency setting, is a good practise to encourage HHC among HWs.

Disclosure of Interest
None declared.

P102

Compliance with hand hygiene among healthcare workers in an outpatient clinic

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P102

Introduction: Hand hygiene (HH) is one of the cornerstones of preventing healthcare-associated infections. There is scarce literature investigating compliance with this practice in the outpatient setting.
Objectives: To evaluate compliance with HH among healthcare professionals in a Brazilian outpatient clinic.
Methods: Cross-sectional study, carried out from March to May 2023. To assess compliance with HH, we used a structured form based on the instrument proposed by the World Health Organization. All professionals who provided assistance at the service were evaluated, including three physiotherapists, five physicians, two nurses, and eight nursing technicians.
Results: 451 opportunities were observed, and the practice of HH was performed 73 times, with a compliance rate of 16.2%. As for the product used, in 57 opportunities (78%) water and liquid soap were used, and in 16 (22%) alcohol-based handrub was used. Table 1displays the sites where HH observations were carried out.
Table 1. Compliance with hand hygiene (HH) in different locations of the outpatient clinic.

Environment	Opportunities	HH actions	HH compliance (%)
Minor surgery room	87	19	21.8
Dressing room	150	29	19.3
Ostomy room	77	11	14.3
Physiotherapy room	37	4	10.8
Doctor's office	100	10	10.0
Total number of opportunities	451	73	16.2

Regarding the professional category, physicians had 144 opportunities to perform HH, which was done in 19 of them, with 13.2% compliance. Physical therapists had the lowest compliance with HH in the unit (10.8%), in 37 observed opportunities, HH was performed 4 times. Regarding the opportunities, there were 73 before contact with the patient, with 9 actions (12%), 58 before aseptic procedures, with 10 actions (17%), 33 after contact with fluids, with 7 actions (21%). 80 after contact with the patient with 21 actions (26%) and 207 after contact with surfaces with 26 actions (13%).

Conclusion: We identified that compliance with HH was very low in the outpatient study clinic, reinforcing the need for HH promotion to ensure patient safety in this setting.

Disclosure of Interest
None declared.

P103

Adherence to the 5 moments for hand hygiene among Portuguese ambulance workers—what influences compliance?

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P103

Introduction: Hand Hygiene (HH) has been widely regarded as an important strategy in infection control in different healthcare contexts, including pre-hospital care. Ambulance personnel is often a heterogenous group of healthcare workers (HCW), whose role tends to be overlooked in infection transmission. Assessing HH compliance among HCWs is essential to monitor adherence and design interventions to improve current practice.
Objectives: The aim of this study was to assess adherence to the 5 moments for HH among ambulance HCWs and identify determinants influencing hand hygiene compliance.
Methods: An anonymous survey was sent to ambulance personnel in Mainland Portugal from March to May 2023. In addition to adherence to each of the five HH moments, the survey also collected sociodemographic and professional experience information. All categories of HCW (nurses, emergency medical technicians [EMT], etc.) currently working in extra-hospital/ambulance care were included.
Results: In total, 191 individuals completed the survey. The majority of participants were male (58.6%) and aged 30–49 years old (70.7%). Most (53.1%) had not taken an IPC course in the last five years. Adherence to moment 4 (after touching a patient) was most frequently reported (92.6%), followed by moment 3 and 5 (after body fluid exposure/risk & after touching patient surroundings) [73.0%], moment 2 (before clean/aseptic procedures) [62.3%] and moment 1 (before touching a patient) [60.7%]. Compared with low-score participants (adherence to less than 3 moments out of 5), high-scoring participants (adherence to 3 or more moments) significantly reported more years on the job ($p=0.043$) and more ambulance work hours on a regular week ($p=0.004$). Adherence to the HH moments was higher if HCWs spent over 16 h per week doing ambulance work (adjusted Odds Ratio (aOR): 2.36, $p=0.008$).
Conclusion: Self-reported HH compliance rates were higher after rather than before patient contact. Compliance seemed to be influenced by working hours per week, potentially reflecting differences in EMT roles. Portuguese ambulance workers include several HCWs who only part-time (volunteer EMTs or firefighters). These findings suggest there is a need to promote HH programs among ambulance workers, as well as investigate the needs of EMT who have less permanent or intermittent periods of employment while targeting them for interventions.

Disclosure of Interest
None declared.

P104

Hand hygiene in the material and sterilization center: evaluating compliance and quality of techniques and proposing its essential moments

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P104

Introduction: Although studies have examined hand hygiene (HH) adherence in the Material and Sterilization Center (MSC), there is a notable gap in assessing the use of supplies and the quality of technique, as per the WHO guidelines.
Objectives: Analyze HH practices and technique quality in nursing professionals at the MSC, and propose the three essential moments for hand hygiene in MSC.
Methods: A cross-sectional, descriptive study was conducted at the MSC of a small, public university hospital in Juiz de Fora, Brazil. All nurses and nursing technicians involved in health product processing, wearing identification badges, were included. Data collection occurred between February 17 and May 24, 2023, through weekly on-site observations.
Results: Among the 364 observed hand hygiene (HH) moments in the MSC, nursing technicians accounted for 83%, while nurses accounted for 17%. The majority of participants were female (62%) and of white ethnicity (63%). Adherence was low, at 25% (95% CI 20.8%–29.7%), with only 2% (95% CI 0.9%–3.9%) correctly following WHO guidelines. Liquid soap was the most frequently used supply (58%). A statistically significant difference in hand hygiene was found between male (35%) and female (19%) nursing professionals ($p < 0.001$). We propose three essential moments for hand hygiene in the MSC: (1) Before handling processed healthcare products; (2) After handling non-processed healthcare products; and (3) After administrative activities. There was no significant difference in hand hygiene compliance between nurses (19%) and nursing technicians (24%; p-value = 0.284).
Conclusion: Nursing professionals demonstrated unsatisfactory hand hygiene adherence in the MSC and poor technique quality. Only three essential hand hygiene moments are sufficient for the MSC.

Disclosure of Interest
None declared.

P105

The non-adherence of healthcare workers (HCWS) to infection prevention practices in healthcare settings a cohort study in Uganda

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P105

Introduction: All in all the absence of effective treatment, the World Health Organization had recommended stringent infection prevention and control (IPC) measures against Covid-19. The non-adherence of healthcare workers (HCWs) to these measures had been reported as a major cause of infection in healthcare settings in Kampala-Uganda.
Objectives: To assess the level of self-reported adherence of HCWs to IPC measures during their social life and work time. The World Health Organization had recommended stringent infection prevention and control (IPC) measures against Covid-19. The non-adherence of healthcare workers (HCWs) to these measures had been reported as a major cause of infection in healthcare settings in Kampala-Uganda.
Methods: This cross-sectional study included 449 HCWs (311 females and 138 males) working at 5 major hospitals across different Ugandan Cities. A predesigned structured questionnaire about COVID-19 IPC measures was completed by trained interviewers.
Results: Washing hands before eating (98.2%), using soap for hand wash (97.9%), washing hands after returning home (96.6%), and wearing a face mask when going outside in public places (83.7%) were the commonest daily-life practices among the 449 studied HCWs, while the least common was social distancing (46.0%). Less than half of the studied HCWs were adherent to the proper duration of handwashing ($P < 0.01$). Only 5.9% of the studied HCWs usually wore full personal protective equipment (PPE) at work ($P = 0.051$). The highest percentages of HCWs working at outpatient clinics and laboratories (98.1% each) 'sometimes' used PPE ($P = 0.017$). There was a significant difference in self-reported adherence to wearing face masks at hospitals according to specialties ($P < 0.01$).
Conclusion: The majority of HCWs sometimes complied with wearing PPE (93.6%). HCWs were more adherent to wearing masks at hospitals (94.6%) compared to community settings (42.9%). Older age and female gender were significantly associated with self-reported adherence to some IPC measures. Hand hygiene training session emphasizing the proper duration of hand wash is mandatory.

Disclosure of Interest
None declared.

P106

Improving children's hand hygiene compliance

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):P106**

Introduction: Hands are considered the main vehicle of transmission of infections, but despite the various programs to encourage adherence to hand hygiene, there are failures regarding recommendations compliance.
Objectives: To evaluate the children's knowledge before and after an educational intervention concerning hand hygiene; to promote children's awareness for this subject.
Methods: As part of an action research project, an intervention was implemented in an inpatient pediatric service of a central hospital in the north of Portugal directed to hospitalized children aged 5 years or older. The intervention consisted of a Workshop held on May 5th with a scheduled activities based on the vicarious learning of Bandura's socio-cognitive theory: board games with questions alluding to hand hygiene, coloring pages, crosswords, game of differences and puzzles. It was also held the science table in which glitters of various colors were used to exemplify the microorganisms and experience cross-contamination with the glitters by the touch of the hands, as well as training of hand hygiene technique and evaluation of its effectiveness through ultraviolet light. It was also presented, with the collaboration of "Operation Red Nose", a song alluding to hand hygiene, with choreography. To evaluate the effectiveness of the intervention, a questionnaire was applied to the children before the intervention and after, containing statements that were intended to assess the degree of knowledge about hand hygiene, through a three-point scale (true, false and do not know).
Results: The study included 11 children, mostly male, aged between 5 and 18 years (M = 9.9), attending from preschool to secondary school. After applying the questionnaire before the intervention, a total of 60.2% of correct answers were obtained. After the intervention, the percentage of correct answers was 87.5%.
Conclusion: The intervention based on playful activities proved to be effective in the acquisition of knowledge about hand hygiene in children hospitalized in pediatrics. The involvement of the children in the different activities suggests that they have become aware of this subject.

Disclosure of Interest
None declared.

P107

Hand hygiene and infection prevention control in eastern Uganda: baseline analysis of Mikono study, a cluster randomized trial

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P107

Introduction: Hand hygiene, and infection prevention and control (IPC) are of great importance in health care particularly in resource limited setting. Little is known about the situation on hand hygiene and IPC across multiple facilities with different characteristics in Uganda.
Objectives: MIKONO study is a cluster randomized control trial (RCT) for WHO hand hygiene multimodal improvement strategy across 8 health facilities, covering 4 districts in eastern Uganda. The study was initiated in 2020 and is to complete in 2024. The aim of this presentation is to describe the situation on hand hygiene and IPC in these facilities during the baseline phase of MIKONO study.
Methods: MIKONO study was initiated in November 2020 at 8 facilities (1 regional referral hospital, 3 district hospitals, 1 private hospital, 2 health centers IV) across 4 districts (Mbale, Kumi, Tororo and Busia districts). Its baseline phase continued up to October 2021 through July 2022 depending on districts as it is a step-wedge cluster RCT. During the baseline phase, hand hygiene compliance by direct observation, Hand Hygiene Self-Assessment Framework (HHSAF), and IPC Assessment Framework (IPCAF), the standardized tools created by WHO, were assessed by locally trained research assistants and IPC focal points.
Results: The overall hand hygiene compliance across all 8 facilities was 24.7% during the baseline phase. The median scores of HHSAF and IPCAF were 172 (out of maximum 500) and 335 (out of maximum 800), both categorized as "Basic" level. When compared across districts, health facilities in Mbale district had higher HHSAF and IPCAF scores than the others.
Conclusion: The situation on hand hygiene and IPC in health facilities in eastern Uganda showed that both areas have room for improvement. MIKONO study plans to complete the intervention phase for implementation of WHO hand hygiene multimodal imporovement strategy in 2023, and the follow-up phase in 2024, therefore further advancement in hand hygiene and IPC is expected locally in eastern Uganda.

Disclosure of Interest
E. Nyawere Employee of: EN is an employee of Saraya Uganda which partially provides funding for MIKONO study., R. Ajok: None declared, C. Guitart: None declared, F. Owori: None declared, H. Saito Grant/Research support from: HS initiated MIKONO study, and receives research funds from Saraya Uganda., D. Pittet: None declared.

Poster session: Hand Hygiene 2: Multimodal interventions, train-the-trainers, electronic monitoring and research agenda

P108

A multimodal intervention to improve hand hygiene in Saudi Arabia

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P108

Introduction: Proper hand hygiene (HH) is considered the most effective measure to prevent pathogen transmission. Improving HH compliance and implementing sustainable interventions constitute major challenges in healthcare.
Objectives: To provide an overview of a successful HH program in a hospital in Saudi Arabia that improved HH compliance among healthcare workers (HCWs) and increased HH awareness in the community.
Methods: Beginning in 2020, we implemented a new multimodal intervention for HH improvement based on the World Health Organization (WHO) improvement strategy in all hospital departments. The intervention entailed systemic changes by implementing a policy review, adopting the WHO HH surveillance tool, introducing innovative HH training tools, setting goals for compliance, using eye-catching HH reminders, securing leadership support, providing performance feedback through storyboards with results of the observation and pictures, recognizing compliant HCWs, introducing an online tool for recording direct observations in all units, provision of monthly progress reports, creating a positive workplace culture to improve HH compliance and conducting massive HH awareness campaigns. During the study period from 2020 till 2022, the intervention was introduced in all in- and out-patient areas. Observers monitored the HCWs' compliance following the WHO-HH 5 Moments tool during random days per week. Hospital-wide HH observations were collected and analyzed. Z-test was used to compare the percentage change and a p-value less than 0.05 was considered significant. Community HH awareness activities included educational booths in the hospital premises and visits to schools, universities and public places.
Results: The overall HH rate increased from 65% in 2019 to 80% in 2022 (15% increase, P-value < 0.05) and has been maintained above that level till date. HH compliance increased by 11% for doctors 9% for nurses and 41% for the other HCW categories through ongoing education. Community campaigns covered 6,400 individuals.
Table 1: Hand Hygiene Compliance (Inpatient, Outpatient).

2019	2020	2021	2022
65%	77%	78%	80%

Conclusion: Our multimodal approaches focused on HH measurement, monitoring and education have been successful in improving HH compliance rates, resulting in a sustained HH improvement and increasing community awareness.

Disclosure of Interest
None declared.

P109

The multimodal strategy of the who for hand hygiene improvement in Sahloul University Hospital: Where are we in 2023?

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P109

Introduction: Hand hygiene is globally known as the most efficient action in prevention and control of infection (PCI). The multimodal strategy of the WHO for hand hygiene improvement was implemented in different settings all over the world. In Sahloul teaching hospital, this strategy was introduced since 2015.
Objectives: Within this framework we aimed to draw the dynamics of this implementation and to assess the impact in 2023.
Methods: It is about a research implementation of the multi-modal strategy of hand hygiene over 5 years 2019–2023. This period covers the Covid-19 Pandemic. Healthcare workers (doctors/nurses/technicians) practicing in different departments were randomly observed in various health care situations. The observation gird was a validated tool offered by the WHO multi-modal strategy for hand hygiene.
Results: The hand hygiene compliance has been steadily increasing since 2019, reaching its peak (53.2%) in 2021. And then decreased substantially in 2022 (32.4%). By the end of the covid-19 pandemic in 2023, this rate raised slightly to 37.4%. This trend coincides with the global availability rates of hand hygiene resources within the same period. Overall, the intensive care units (ICUs) had the highest hand hygiene compliance, followed by the medical services and surgical department came last. Nurses and

technicians showed better hand hygiene compliance compared to doctors.
Conclusion: These results are globally in line with the reported impact of covid-19 pandemic. Although better investment is required by all the stakeholders to guarantee more concrete and sustainable effect.

Disclosure of Interest
None declared.

P110

Reaching out to the region and beyond, as the first hand hygiene excellence award winner hospital from Japan

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Introduction: NHO Shimoshizu National Hospital has fully implemented the WHO multimodal hand hygiene improvement strategy (MMHHIS) since 2014, and became the first winner hospital of Asia Pacific Hand Hygiene Excellence Award from Japan in 2022. It is now widely promoting the stratgy as a model and leader hospital of the region, and the country.
Objectives: To present a model example of an adaptation of the WHO MMHHIS in a Japanese hospital, and the results of the promotions.
Methods: WHO MMHHIS was fully implemented throughout the hospital from April, 2014, including the five components, and the stepwise-approach. HHSAF was scored each year. WHO MMHHIS disseminating promotions were performed mainly through 3 channels; The Train-The-Trainers (TTT-) Japan network, The Infection Control Nurse Network of Chiba Prefecture, and the National Hospital Organization (NHO) network.
Results: The HHSAF scores, the alcohol based hand rub consumption, and compliance by direct observations has increased as shown in Table 1. 10 hospitals in Chiba prefecture have newly applied for the SAVE LIVES Clean Your Hands campaign, and has implemented the WHO HHMMIS. 15 hospitals from other regions in Japan that have attended the TTT training courses have also newly applied for the SAVE LIVES Clean Your Hands campaign since 2021. 45 NHO hospitals have received a one-day train-the-trainer introduction training course in 2022. 48 children attended a Hand Hygiene Class for Kids as one of the events for citizens at the annual assembly of The Japanese Association of Medical Sciences in April, 2023. These educational events were held with the cooperation of the TTT-Japan trainers from other institutions.
Table 1.

Fiscal year (apr to mar year + 1)	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**
WHO MMHHIS	Not implemented			Implemented							
HHSAF score	117.5	117.5	117.5	267.5	315	380	410	445	470	450	475
ABHR consumptions (L/PD)	4.38	4.07	4.27	10.45	17.65	22.916	29.70	34.41	36.70	37.64	39.63
Compliance by DO (%)	No data	No data	No data	51.00	70.90	70.60	69.00	68.20	78.00	65.67	76.91

MMHHIS multimodal hand hygiene improvement strategy, HHSAF hand hygiene self assessment framework, ABHR alcohol based hand rub, DO direct observations.
Conclusion: The WHO MMHHIS can be well adopted in Japan, and is now being disseminated by the HHEA winner hospital, working together with the TTT-Japan trainers from other institutions.

Disclosure of Interest
None declared.

P111

Impact of data-driven feedback intervention on hand hygiene compliance among healthcare workers

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Introduction: Achieving high hand hygiene compliance (HHC) among healthcare professionals is essential to prevent the spread of infections in hospitals.
Objectives: This study aims to assess the impact of a data-driven, feedback intervention utilizing an electronic hand hygiene monitoring system (EHMMS) on HHC among staff.
Methods: A pilot study was conducted over six weeks (Dec 2022–Jan 2023) in two medical/surgical wards at the Atlantic General Hospital using an EHMMS (Sani Nudge™). HHC data were collected via sensors on staff badges and patient beds. The study included a three-week baseline period followed by a three-week intervention period. During the intervention period, staff were exposed to team performance feedback based on the data from the system. The difference between the baseline and intervention period among different staff groups was assessed using a Student's t-test. *P*-values < 0.05 were considered statistically significant.
Results: The final analysis included 86 staff members (nurses, n = 49; support staff, n = 32; housekeeping, n = 5). The baseline HHC for all staff was 47%, which increased to 54% after receiving the team performance feedback [95% CI 3–10] ($p < 0.001$). Nurses had a baseline compliance of 48%, which increased to 55% during the intervention period [95% CI 2–13] ($p < 0.05$). For support staff, HHC increased from 46 to 56% during the intervention period [95% CI 4–16] ($p < 0.05$). Housekeeping had the most significant improvement in compliance—from 34 to 47% [95% CI 1–27] ($p < 0.05$). Finally, the HHC numbers matched those from the direct observations made by the IPC team, demonstrating the system's accuracy.
Conclusion: Team performance feedback led to a significant improvement in HHC across all staff groups. The data-driven approach equips hospitals with accurate, real-time compliance data and offers valuable insights into hygiene behaviors and development opportunities. Nevertheless, achieving substantial, lasting HHC improvement necessitates staff engagement and a transformative shift in organizational culture.

Disclosure of Interest
M. Mareckova Employee of: Konduto ApS, which has developed Sani NudgeTM, M. B. Hansen Employee of: Konduto ApS, which has developed Sani NudgeTM, H. Snyder: None declared.

P112

The power of feedback in improving hand hygiene compliance in an emergency department in king Abdullah Medical City: a multimodal intervention

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P112

Introduction: Hand hygiene is a fundamental component of infection prevention across all health care settings. The implementation of multimodal strategies to ensure good HH is thus recommended by the World Health Organization using such strategies to improve HH compliance is thus a key element in infection prevention and control programmes. Many barriers to performing correct HH techniques have been identified by staff in the emergency room, many of whom are very busy with patients. Some healthcare workers (HCWs) use gloves

as an alternative to good HH, while some staff claim that alcohol hand rubs cause skin irritation. a strong education programme for ER staff of all categories can help improve HH compliance more generally.
Objectives: The objective of this work was thus to assess the effect of a multimodal strategy in terms of improving HH compliance in an emergency department (ED) in a tertiary care hospital.
Methods: The first step was the creation of a multidisciplinary team consisting of an ER infection control representative, the director of infection control and environmental health, the ER head nurse, a link nurse from the ER, the director of the ED, and a representative from quality management. After the team was formed and roles assigned, it met each month to discuss progress, identify whether barriers occurred at any stage, and to begin to determine how best to deal with such barriers to increase compliance with HH.
Results: The overall compliance rate in the ER in February 2022 was 74%, while the average in other departments reached over 87%. A few months after the project began, the compliance rate had increased to 91% while some months later, it had reached 95%. During the project period, it was noted that the culture of the staff regarding HH techniques changed.
Conclusion: This study offers evidence of a significant improvement in HH compliance, suggesting that feedback provided to all HCWs in the ER is effective in promoting HH compliance, based on a comparison of the July and February figures. These findings illustrate the effectiveness of the intervention, which also enhanced HCWs' communication around patient safety. Providing feedback when noncompliance is observed thus appears to increase adherence with HH recommendations.

Disclosure of Interest
None declared.

P113

Innovation in hand hygiene auditing: the role of technology in health

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Introduction: Healthcare-associated infections (HAIs) are a worldwide challenge. Hand hygiene is a fundamental measure to prevent them (BRASIL, 2019).
Objectives: Monitoring about hand hygiene compliance using a technological tool, ensuring a pratical method to provide timely feedback and to reduce the workload of infection prevention and control professionals in health care service.
Methods: A partnership was established with a medical-hospital technology company to survey and capture adherence to hand hygiene. The developed HANDS Safe tool allows capturing adherence to hand hygiene, correct technique steps, recommended time and additional care in a practical, quick and interactive way to the digital platform, generating indicators and detailed reports by adherence periods, position, time, workplace and work shift, allowing immediate feedback on results after direct observation sessions.
Results: Using the tool, the estimated time to log into the platform is 15 to 20 s, to generate the report on the website about 30 s, to download the worksheet according to the required period is 30 s, to format the worksheet is 60 s with a total of 2 min and 20 s (140 s) to compile 150 observations. When performed manually using a spreadsheet, the average recording time for each observation was 27 s, generating a total of 6.
Monitoring about hand hygiene compliance using a technological tool, ensuring a pratical method to provide timely feedback and to reduce the workload of infection prevention and control professionals in health care service.
0.5 min (4050 s) compared to the method used above.
Conclusion: With the use of the HANDS Safe technology, the optimization of the daily routine of infection prevention and control professionals was about 96% of the workload/day. Contribute to the improvement of the technical indicator and provide timely feedback to strengthen the safety culture.

Disclosure of Interest
None declared.

P114

Results of electronic monitoring of hand hygiene performance in Dutch primary care

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P114

Introduction: One of the most important weapons for the reduction and prevention of healthcare-associated infections (HAI) is hand hygiene (HH). Covert direct observation of HH is difficult to realize in general practices (GP). The World Health Organization recognizes electronic monitoring as a form of measuring product use and estimating compliance. This is the first study to monitor HH performance electronically in Dutch GP offices.
Objectives: The main aim of this study was to evaluate HH compliance in GP offices.
Methods: An observational study was conducted at four Dutch GP offices between October 2019 and December 2021. We measured HH compliance using data on HH events (HHE) from alcohol-based hand rub (ABHR) dispensers with a built-in electronic counter. Daily HH opportunities were calculated according to the 'Five Moments for Hand Hygiene' based on the continuously documented activities using GP patient electronic dossier systems.
Results: 78% of healthcare workers (HCWs) were women (n = 28). The age of the HCWs ranged from 19 to 67 years (median 47). In total, hand hygiene was performed during 1786 (41%) of the estimated 4322 opportunities. HH compliance for the general practitioners, practice assistants and nurse practitioners was respectively 38%, 51% and 43%. The overall HH compliance within the same GP office was 42% pre-pandemic and rose to 56% since the pandemic. The overall mean volume of ABHR was 2.44 ml, varying per HHE between 1.91 to 2.55 ml. The mean volume of ABHR measured before and since the pandemic rose from 2.55 ml to 2.81 ml.
Conclusion: In Dutch GP offices, hand hygiene compliance among HCWs was found to be low (41%), with general practitioners having the lowest compliance and practice assistants showing the highest. Compliance has increased to 56% during the COVID pandemic. However, the mean volume of ABHR used per HHE remains below the recommended threshold of 3 ml. Targeted interventions and continuous monitoring are urgently needed to improve hand hygiene practices in healthcare settings.

Disclosure of Interest
None declared.

P115

Hand hygiene performance monitoring: implementation of mobile app in a Brazilian network of hospitals

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Introduction: The direct observation is considered the gold standard for monitoring of hand hygiene (HH), aiming at to improve compliance.
Objectives: To describe an experience of implementation of a mobile app for HH monitoring in a Brazilian network including 5 hospitals in Manaus and São Paulo.
Methods: This implementation was carried our as part of a non-research project entitled "Enhancing Infection Prevention and Control to Respond to Acute Respiratory Infection in Brazil (PREVIRAS-BR)". From January to May 2023 the app was used to record observation of timing and correct technique for HH in 3 intensive care units and 3 wards.
Results: Ten fellows were trained on the functionalities of the app to perform the data collection which was and overseen by a technical supervisor. The implementation facilitators identified were the possibility of collecting data off line during the observations; agility to record the HH moments, health workers categories and settings; graphics results and analysis available in real time; and possibility of simultaneous online supervision of data inputs. Barriers to implementation were the cost associated to app purchasing; the need of resources such as electronic device and some level of technological literacy by the users. During the observation period, the use of app enabled the alignment on compliance with the correct timing and the correct technique, allowing a quick analysis and feedback of the results. There was a need for improvement in the process of app data analysis, which was promptly adjusted by the app's developer. Based on the preliminary results, a new training with simulation of the opportune moments was conducted to align the fellows with the World Health Organization's recommendations on how to perform direct observations to monitor HH compliance.
Conclusion: The use of the app for direct observation of HH was perceived as time saving during the inputs, analysis, and feedback of data, which has facilitate timely interventions to improve the adherence of health workers to HH.

Disclosure of Interest
None declared.

P116

The combination of infection prevention measures comes with the prize of low compliance

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Introduction: In daily practice, the combination of infection prevention measures, such as hand hygiene (HH) and non-sterile glove (NSG) use is imperative. Proper application of these measures can reduce the contamination of hands of health care workers and hospital surfaces.
Objectives: We aimed (1) to assess the combined compliance of HH and NSG use among nurses and (2) to explore determinants that influence nurses' ability to combine both measures in their day-to-day care.
Methods: In a multi-methods study, we combined direct observations with semi-structured interviews. Topics and analysis of interviews were based on Flottorp's checklist of determinants of practice.
Results: In total, we observed 205 care episodes and interviewed ten nurses. Observations revealed a compliance rate of 11% in care episodes in which a single procedure was executed, versus 2% in care episodes in which multiple procedures were performed. Interview data covered determinants of six out of seven of the main checklist domains. We found that nurses' behavior is primarily influenced by their ability to organize and arrange their care in advance, their familiarity with and ability to operationalize infection prevention protocols, and their ability to integrate infection prevention measures into their care. The intention to apply and combine HH and NSG use is influenced by their risk assessment of cross-contamination, but most importantly by the urge to self-protect and often based on gut feeling. The execution of care is influenced by the urgency and the complexity of the care episode.
Conclusion: The combined compliance with HH and NSG measures by nurses is low and even lower in care episode that comprises of multiple procedures. The combined application is influenced by nurses' ability to operationalize infection prevention guidelines and the urgency and complexity of the care episode. The results underscore the need to support nurses in the combined application of HH and NSG. It is therefore essential to rethink the design of infection prevention protocols. Nurses are instructed in a fragmented way while in the day to day care HH and NSG use are highly intertwined. Infection prevention protocols should be operationalized, combined and translated into department or workflow specific instructions; these instructions should interfuse both measures seamlessly.

Disclosure of Interest
None declared.

P117

Who research agenda for hand hygiene in health care 2023–2030: a Delphi consensus-building study

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Introduction: Hand hygiene (HH) is at the core of infection prevention and control programmes and one of the most effective interventions for reducing health care-associated infections (HAIs). Gaps exist in achieving optimal HH improvement.
Objectives: To identify research gaps and priorities and develop a global research agenda that enhances understanding of hand hygiene behavior and the best approaches to improve HH to prevent HAIs and antimicrobial resistance (AMR).
Methods: An evidence-based list of research priorities, based on six core domains according to the WHO multimodal improvement strategy for HH, formed the foundational framework for expert discussions and an international Delphi consensus-building study. The WHO Technical Advisory Group (TAG) on HH research and external experts were invited to identify and score research priorities. Two online surveys were administered. Respondents rated the importance of items on a 5-point Likert scale considering three dimensions: impact, cost-effectiveness and feasibility.
Results: A total of 27 TAG members and 87 expert panel members participated, from 78 countries. During the consultative process, a total of 192 research priorities were identified. Through the Delphi surveys, consensus was reached on 178 HH research priorities that aligned with six core domains: (1) system change (44); (2) training and education (15); (3) evaluation and feedback (41); (4) reminders and communications (14); (5) safety climate/culture (31); and (6) impact of hand hygiene improvement on HAIs and AMR (33). The highest priority statements (21/178) seek to understand the barriers to and drivers of institutionalizing HH as a priority and the relationship between patient empowerment strategies and establishing a safety climate that values HH.
Conclusion: The consensus-building process resulted in the development of a WHO research agenda on HH. This agenda will be valuable for directing investments, guiding researchers in focusing their projects and funding proposals, informing policy-makers and implementers about cost-effective interventions.

Disclosure of Interest
None declared.

Poster session: Innovative approach in infection control

P118

Hospital information system for hospital-wide surveillance and management of healthcare-association infections and epidemics

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Abstract video clip description: ***Introduction*** The traditional manual check or lack of an integrated interface in hospital information system has caused delay in detection. Besides, streamline from database to quality indicators or demand/supply indicators may facilitate data-driven policy making timely.
Objective To optimize hospital-wide, infection prevention and control information (IPCIT) system for surveillance and management of HAI and EIO.
Methods A multidisciplinary working group stepwise integrated web-based technology to generate a information platform that automatically and periodically combines administrative, clinical and laboratory data into a single interface, facilitate IPC to survey HAI and EIO and respond accordingly and timely. Surveillance targets or systems include ARO with clustering and rule-based classification,
healthcare-associated bloodstream infections (HABIS) or healthcare-associated urinary tract infections (HAUTI), HCP health surveillance and report system. For visualization and facilitate decision making, we established COVID-19 demand and capacity dashboards, EIO data are presented with time- and space-oriented, and incorporated process control chart/thresholds. Furthermore, we established the Virtual Epidemic Clinics which was transformed rapidly during pandemic to provide 7–24, on-site, diagnostic and therapeutic services. This aims to mitigate the risk of intra-hospital spread of COVID-19.
Results: Implementing the IPCIT system to monitors 68 ARO saves eight person-hours per day and escalated the accuracy rate from 63 to 100%. IPCIT system detection and reference standards provided by ICP achieved high agreement with a kappa coefficient of 0.97 (95% CI 0.95–0.99) for HABSI and of 0.88 (95% CI 0.84–0.92) for HAUTI. We took only 16 min to prepared indicators for daily reports via COVID-19 dashboard and saving up to 8 person-hours per time. The Virtual Epidemic Clinic provided up to 8,849 services during the peak of the COVID-19 outbreak during May and June 2021.
Conclusion: Information technology facilitates IPC program to assure patient and HCP safety in the healthcare setting particularly n the context of COVID-19 pandemic.

Disclosure of Interest
None declared.

P119

Rapid deployment of an infection prevention and control response strategy to control the spread of Sudan virus disease in an urban setting, the Kampala metropolitan area, Uganda, 2022

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Introduction: On 21st October 2022, the Uganda Ministry of Health (MoH) confirmed the first case of the Sudan Virus Disease (SVD) outbreak in the Kampala Metropolitan Area (KMA). Twenty-one confirmed SVD cases were identified in KMA. KMA is an urban setting of more than 6 million people and was at significant risk of a sustained SVD outbreak with potential international spread. A coordinated multicomponent infection prevention and control (IPC) strategy was implemented to control the spread of SVD in KMA.
Objectives: To describe the rapid deployment of this strategy, its effect on IPC capacities, and the successful control of the SVD outbreak.
Methods: A multicomponent IPC strategy was deployed: (1) IPC pillar coordination: an IPC task force was convened with government, partners, and district focal persons (2) Ring IPC: intense and targeted IPC support was provided to healthcare facilities (HCF), and communities around each confirmed case (3) IPC in HCF: selected HCF were assessed for IPC readiness using a modified WHO form; mentorships and supplies were deployed.
Results: 7 district-level focal persons were designated.842 healthcare workers received formal training on IPC 3,700 of over 4,300 HCF were assessed for SVD IPC readiness. At baseline, the mean score was 48% and increased to 65% at follow-up ($p < 0.001$). 81 technical teams and 95 hygienists were trained to support ring IPC; 6 rings, including 57 HCFs, were activated. Challenges included low IPC capacity at HCFs, inadequate IPC supplies, and limited dedicated human resources for IPC.
Conclusion: The coordinated multicomponent response strategy rapidly improved response IPC capacities and contributed to SVD outbreak containment within 21 days in KMA. This response strategy could be adapted for use in future outbreaks of Ebola or other high-mortality, highly infectious diseases.

Disclosure of Interest
None declared.

P120

Quality improvement methodology—a core strategy for implementation of national action plan of infection prevention and control in western Norway Regional Health Authority

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P120

Introduction: In accordance with WHOs Global Action Plan on Antimicrobial Resistance the Norwegian Government launched a new National Action Plan on Infection Prevention and Control in 2019 with an aim to reduce healthcare associated infections (HAI) in Norway. According to the Norwegian Infection control Act, the four Regional Health Authorities are responsible to have a Regional Plan regarding infection control measures of these. The Western Norway Regional Health Authority merged the National Action Plan within the Regional Plan.
Objectives: Ensure and support the implementation of infection control measures from the regional action plan in hospitals in western Norway.
Methods: To ensure implementation of infection control measures in the Regional Plan in hospitals in Western Norway, we used Quality Improvement Methodology. A driver diagram was used as a structured chart focusing on the three levels of leadership commitment, competency and ensuring structures to enable the implementation of infection control measures referred to in the Plan. A risk assessment tool was developed to assess and highlight local risk areas in infection control and to prioritize local measures.
Results: The Regional Health Authority committed to the Plan through a board resolution. The hospitals in Western Norway are obligated to report regularly on measures in the Plan to the Regional Health Authority. An extended leadership commitment was achieved through leadership meetings and decisions in the local hospitals. Infection control

measures dealt with in the regional plan were presented and discussed during regional infection control meetings and workshops. The risk assessment tool was successfully used by the local hospitals to highlight risk areas and help prioritize infection control measures.
Conclusion: Legal acts and large-scale action plans are necessary, but not in itself sufficient to reduce healthcare associated infections. A systematic approach including leadership commitment, competency and structures are crucial to ensure implementation of infection control measures.

Disclosure of Interest
None declared.

P121
Role of artificial intelligence based solutions in reducing hospital acquired infection

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Introduction: The most frequent adverse events in healthcare and a major public health issue are healthcare-associated infections (HAIs). The development of HAI surveillance systems aimed at comprehending HAI risk factors, improving patient risk classification, identifying transmission channels, and prompt or real-time detection can be assisted by artificial intelligence (AI) and machine learning (ML).
Objectives: The current study's objective was to compile and synthesize the information that is currently accessible on the use of artificial intelligence and its effects on the management of HAIs. Further, we aimed to do a narrative review and incorporate the perspective of the infection control team to find out the potential of AI-based tools in HAIs detection; on Performance measurements, and to pool and critically evaluate the available evidence on the topic, outlining potential strengths and pitfalls and highlighting current knowledge gaps.
Methods: A narrative review on the use of AI in reducing HAI was conducted to obtain a broad perspective on the data and assimilate the vast data being generated on the same. Search strings included, "artificial intelligence", "hospital acquired infection" which were searched on Pubmed. Further a semi-structured questionnaire was developed for collecting the perspective of infection control team and given to 100 personnel of the team.
Results: The findings of our study are categorized into 6 thematic categories:

1. Early detection and diagnosis by using AI algorithms to identify patterns and detect potential infections early.
2. Predictive analytics through which hospitals can implement targeted infection control strategies.
3. Automated monitoring and surveillance using AI-powered systems.
4. Robotics and automation to reduce the risk of contamination and the spread of HAIs.
5. Decision support systems for personalized recommendations on antibiotic usage, isolation precautions, and other infection control measures.
6. Training and education using Virtual reality (VR) simulations for personalized feedback

Conclusion: While the acceptance of AI-based tools and their impact on research & healthcare quality improvement for infection control has improved, but yet surveillance objectives still need more work. Our study highlighted the need for solutions to validate the available evidence focusing on the development and testing of HAIs detection and prediction models.

Disclosure of Interest
None declared.

P122
Infection prevention and control innovation in digital care

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Introduction: The abstract outlines the development of an innovative Infection prevention and control (IPC) electronic module within an electronic healthcare record system (EHRS). The IPC and IT teams designed and built a bespoke module that incorporated IPC elements to improve patient and staff safety within the hospital.
Objectives: To design and intergrate IPC digital technology to improve the management and control of infections with real time data and communication to key stakeholders to increase IPC compliance and reduce infection risk.
Methods: The IPC team sought an opportunity to incorporate and standardise IPC management by utilising digitalization during the introduction of a new EHRS. The increasing demand in services and limited isolation facilities prompted the team to look at options to improve communication, bed flow, outbreak management and overall performance.
The module incorporated a holistic approach. IPC data was used to enhance digitalization at an organisational level to ensure oversight and trend identification, and not limited to clinical decision making at a patient level. The features interlinked and connected all aspects of patient pathways.
The aim was to reduce human errors and strengthen IPC capacity and capability. The IPCT incorporated the way an acute hospital manages infectious patients in open bays given the limited isolation capacity.
Results: Automated protocols reduce human errors by improving communication, reducing delays in isolation, streamlining patient flow, reducing transmission risks and improving the use of the limited resources appropriately.
The module enabled the IPC nurses to manage the COVID-19 pandemic more efficiently releasing time to focus on other priorities. Rapid policy changes associated with the pandemic were added to the module as the foundation was built, challenges associated with policy changes were reduced, enabling real time communication, facilitating compliance, minimising cancellation of treatment and aiding the continuation of services during a challenging time.
Conclusion: Digital health technology can facilitate the way IPC is managed in ways that are difficult to achieve manually. Utilizing digital transformation to improve IPC clinical decision making has a significant role to play in enhancing hospitals' operational decision-making, which can lead to improvements in quality and efficiency of care.

Disclosure of Interest
None declared.

P123
Machine learning models to predict healthcare-associated infections in surgical departments in a low-resource university hospital

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Introduction: Hospital-acquired infections (HAIs) are an important health concern, particularly in low-resource areas. Surveillance is the foundation for effective HAIs prevention and control. Artificial

Intelligence (AI) and machine learning (ML) might support the development of HAI surveillance algorithms aimed at understanding HAIs risk factors, improve patient risk stratification and prediction.
Objectives: The purpose of our study was to build a model for predicting HAIs among patients admitted in surgical area by adopting machine learning techniques.
Methods: it's a retrospective study on the 704 patients admitted in the surgical departments of Ibn Al Jazzar university hospital from 2010 to 2021. Data were retrieved from The NOSOKAIR Surveillance database. Predictors, including patients charcteristics, intrinsinc and extrinsic risk factors were used to predict the onset of HAI. Five machine learning algorithms, including XGBoost, k-nearest neighbors (KNN), support vector machine (SVM), SGD, and MLP, were utilized to build predictive models used in this study.
Results: 704 inpatients were included. The overall rate of infection was 4.5%. Among the five adopted machine learning algorithms, XGBoost exhibited the optimal predictive accuracy (93%) versus the remaining algorithms. The features with the greatest predictive value were age, sex, and length of surgery.
Conclusion: These results are encouraging, as they suggest good HAIs prediction performance using modern Machine Learning approaches. Our predictive model could be a useful tool for physicians treating patients in surgical settings.

Disclosure of Interest
None declared.

P124

Leadership is replaced by participation in pandemic preparedness: a rapid review of the existing evidence on recommended approaches in crises

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Introduction: Considering the passed pandemic and in anticipation of the next, preparedness has reached a higher priority societally, especially in the healthcare sector. The German Network for University Medicine (NUM) will in future be involved in pandemic preparedness through the PREPARED initiative. Leadership and participatory approaches should not be underestimated in their crucial impact on efficient pandemic preparedness and response.
Objectives: This rapid review examined the current evidence on leadership and participatory approaches within pandemic preparedness.
Methods: On April 20th, 2023 we carried out searches in the databases Medline via Pubmed, Web of Science and CINAHL in accordance with the PRISMA guidelines. The search was limited to German and English publications. RAYYAN was used to remove duplicates. Afterwards, abstract and full-text screening was performed by five reviewers. The data was then extracted and cross-checked.
Results: Of the 713 found records, 27 were included. Hierarchical leadership styles were reported to impact pandemic responses negatively (n = 7). They were identified as barriers even causing moral injuries through betrayal of trust or morally questionable decisions without clear leadership. Recommended were leadership styles, such as transformational, transactional, agile or servant leadership (n = 10). Regardless of the specific approach, supportive, clear, and visible leadership has been shown to have a positive influence on healthcare workers (n = 14). This led to a more participatory approach to pandemic preparedness (n = 15). The results further show that participatory approaches, shared decision-making or inclusive processes, had positive effects on health care workers or even on the consequences of the pandemic (n = 6).
Conclusion: Hierarchical leadership seems to be an unfit approach in a pandemic. Consequently, pandemic preparedness has to include development of leadership and organizational models focusing on participation. Needed is a paradigm shift where top down clarity is prioritized, in combination with bottom up decision making.

Disclosure of Interest
None declared.

P125

What is a "bundle", really? Compliance definitions and trial outcomes: results of the cluster-randomized controlled 'Wach'-trial on pre- and intraoperative measures to prevent surgical site infections

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Introduction: The Institute for Healthcare Improvement (IHI) has defined a "bundle" as follows: „A small set of evidence-based interventions…that, when implemented together, will result in significantly better outcomes than when implemented individually" (Resar et al. Using care bundles to improve health care quality. Cambridge: IHI; 2012. Available at www.ihi.org [last access: 17 June 2019]). It tied an "all-or-none"-measurement approach to this defintion, i.e. compliance with all(!) components of a bundle.
Objectives: To identify assumptions and pitfalls of this "bundle"-definition both theoretically and based on results of the WACH-trial (Surgical site infections and antibiotic use in surgery, German Clinical Trials Register ID: DRKS00015502).
Methods: WACH was a cluster-randomized controlled trial with parallel waiting control group. In six hospitals, compliance with evidence-based interventions to prevent surgical site infections was observed. Based on survey data, psychologically tailored workshops for the IPC teams were tested against „usual practice ". For present purposes, different definitions of pre- and postoperative bundle compliance were analysed.
Results: Based on fictitious data, it can be shown that comparisons of trial arms can lead to contradictory results depending of the definition of bundle-compliance in terms of all-or-none measurement vs. less strict variants. In the WACH-trial, this was not the case: Bundle-compliance defined as compliance with at least 8 of 10 pre- and intraoperative measures per operative procedure (median split) led to an increase of compliance from 33 to 72% after psychological tailoring, vs. a decrease from 57 to 47% after usual practice. This pattern was comparable to analyses based on the original bundle definition (10 of 10 measures), albeit on a distinctly different level (increase from 0 to 4% after intervention vs. decrease from 1 to 0% after „usual practice ").
Conclusion: Along the lines of sensitivity analyses, different definitions of bundle compliance, including the original, should be empiricized regarding their effects on conclusions of trials in IPC.

Disclosure of Interest
None declared.

P126

Changing the sepsis protocol through the PDSA quality tool in the emergency department at São Luiz Hospital, in Brazil. Impact assessment on sepsis identification and mortality

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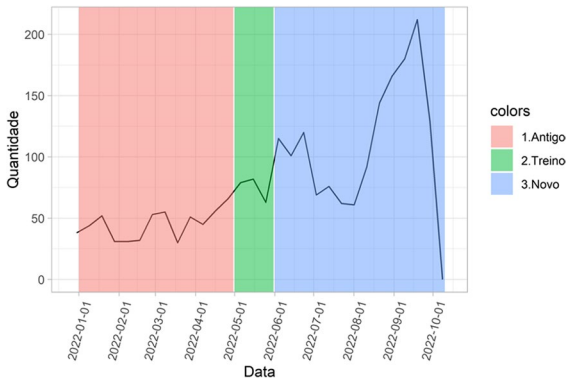
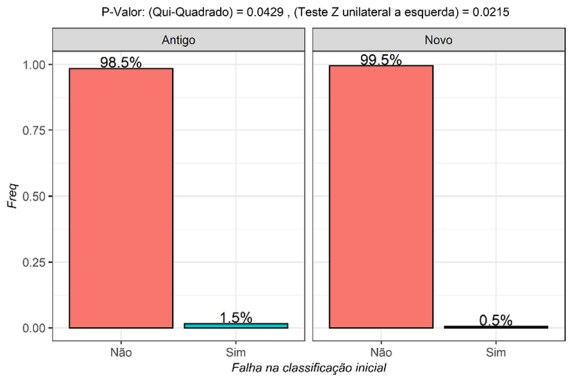
Introduction: Sepsis accounts for more than $20 million in annual healthcare costs in the US and is associated with 18 to 28% mortality. Epidemiological information on sepsis in developing countries is scarce, Brazil is no exception to this reality. From 2006 to 2015, the annual incidence of sepsis increased by 50.5% in our country. Emergency Services represent an important entry point for patients with sepsis/septic shock and early recognition of this disease is crucial in the management of these patients.
Objectives: Evaluate the impact on the identification of sepsis and mortality of a new protocol in the emergency room of a tertiary private hospital, in Brazil.
Methods: This is a retrospective observational cohort study of patients with sepsis treated at the adult Emergency Room of Hospital São Luiz Morumbi, in Brazil, from January 1 to September 30, 2022.
Results: A total of 2335 patients from January 1st to September 30th 2022 were included in this analysis. They were divided into 2 periods: one from January 1 to April 30, with 584 patients admitted under the old protocol, and other period from June 1 to September 30, with 1506 patients admitted under the new protocol.

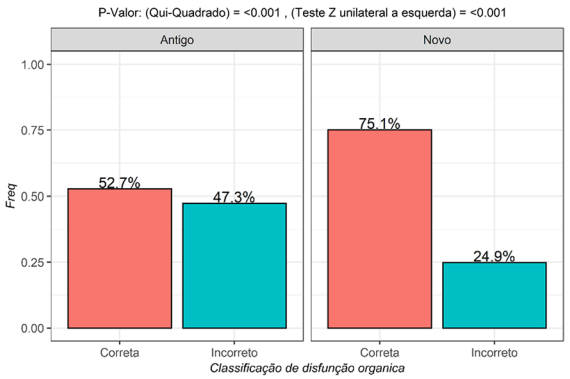
1. Evaluation of sepsis protocol during the 2 periods



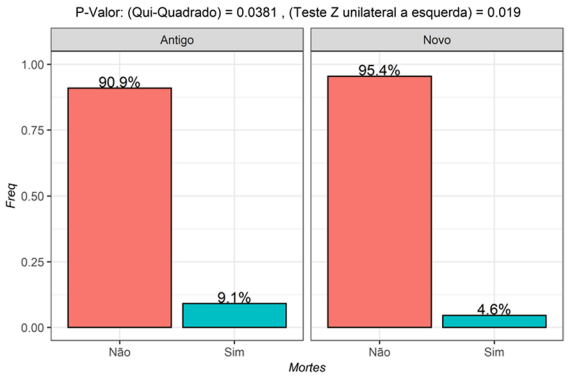
2. Evaluation of failure in the initial classification of sepsis when using the new protocol



3. Evaluation of identification of acute organ dysfunction when using the new protocol



4. Evaluation of mortality with the new protocol



Conclusion: The new protocol contributes to the identification of septic patients in the urgency and emergency service of a tertiary private hospital, favoring positive outcomes, by providing early recognition and, consequently, initial treatment.

Disclosure of Interest
None declared.

P127

The first outcome-based academy for certification in infection control (CIC) training in the middle east

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Introduction: Infection prevention and control (IPC) activities need to be managed by competent experts. The CIC designation is the gold standard that defines the IPC professional role and validates knowledge using standardized testing methods. There is a growing need for IPC certification worldwide, and evidence suggests patient outcomes are improved when IPC programs are led by certified IPC professionals.
Objectives: This abstract describes our journey in establishing the first outcome-based academy for CIC training in the Middle East that significantly impacts the IPC career in the region.

Methods: In 2017, we founded the CIC academy that offered preparatory courses for the online CIC exam. It followed an outcome-based strategy that included a three-month program comprising class-based training, online study groups, webinars, mock exams, and rewards. Applicants' study progress and outcomes data were prospectively collected, and descriptive statistics were computed.
Results: Between October 2017 and May 2023, we were able to triple the number of certified IPC professionals from 80 to 251. We had 382 enrolled applicants, and their overall passing rate for the online CIC exam was 66%. Our certified applicants were distributed as such: 71% females, 29% males, 67% ≤ 30 years, 31% between 31 and 50, 2% > 50, 51% with a bachelor's degree, 38% with a master's degree, 7% with a Ph.D. and 4% with diploma, 38% had 2 to < 5 years of experience in IPC, 29% between 5 and < 10 years, 19% with ≥ 10 years and 14% had < 2 years of IPC experience. The majority (78%) worked in acute care hospitals with ≥ 200 beds and in accredited centers (73%), 43% spent from 1 to ≤ 3 months in preparing for the CIC exam, 38% between 3 to < 6 months, 15% from 6 to 12 months and 4% spent > 12 months, 82% became certified as part of their self-development plan, whereas 18% reported that it was a job requirement.
Conclusion: The CIC Academy supports IPC professionals to achieve their CIC designation. The CIC credential has grown in volume, relevancy, and significance throughout the past 6 years. This CIC Academy is significantly impacting the IPC profession in our region by highlighting the value of certification, developing new IPC leaders, and creating networks that enable sharing of expertise and knowledge.

Disclosure of Interest
None declared.

P128

Formative research to design and develop appropriate strategies for the implementation of the who core components of infection prevention and control (IPC) in Malawi

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Introduction: Despite having IPC guidelines in Malawi, there is no context specific and locally adapted plan for implementing these guidelines.
Objectives: To co-design implementation and evaluation plans with stakeholders in preparation of subsequent implementation of multimodal improvement strategy for the Core Components of IPC.
Methods: An implementation research approach to design and develop appropriate strategies for the implementation of the WHO Core Components of IPC. The study was conducted in three acute care facilities with the target population including healthcare workers, patient guardians and other IPC stakeholders. The study comprised six methodological components: 1. Desk/documentary Review; 2. Qualitative Interviews; 3. Infection Prevention and Control Assessment Framework survey; 4. Participant Observation; 5. Focus Group Discussions and 6. Stakeholder Consultation and Design Workshops. Findings were triangulated across data sources, participants, and study sites to contribute towards the design of a successful implementation and evaluation of strategies to improve IPC practices and reduce HAIs.
Results: A co-designed multimodal improvement approach for IPC strategies was created, including who should undertake the strategies, potential champions for the strategies, where these strategies will target, length and duration of the strategies and how success will be measured. Findings from the formative phase were used to identify gaps that needed strengthening in IPC policies, guidelines and practices.
Conclusion: Overall, we demonstrate the tremendous value that formative research, founded on meaningful stakeholder engagement can play in informing in designing and evaluating implementation strategies tailored to local context for improved IPC practices. Our study revealed how the WHO Core Components of IPC can be adapted to Malawi, specifically what a multimodal improvement approach should focus on in the domains of training and education; quality improvement; community engagement; and tools for monitoring and feedback.

Disclosure of Interest
None declared.

P129

Rapid deployment of an infection prevention and control response strategy to control the spread of Sudan Ebola virus disease in an urban setting, the Kampala metropolitan area, Uganda, 2022

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P129

Introduction: From 20th September 2022 to11th January 2023, the Uganda Ministry of Health (MoH) and its partners responded to a Sudan Ebolavirus Disease (SUDV) outbreak. The Kampala Metropolitan Area (KMA), an urban setting of over 6 million people, was at high risk of a sustained outbreak with potential international spread. A coordinated Infection Prevention and Control (IPC) strategy was implemented to control spread of SUDV in the KMA.
Objectives: To describe the experience of rapid deployment of this strategy, its effect on IPC capacities, and the successful control of the SUDV outbreak within 21 days in KMA.
Methods: A 6-point strategy was deployed that included (1) IPC pillar coordination (2) Ring IPC (3) IPC in healthcare facilities (4) IPC training technical assistance for other response pillars (5) IPC in Ebola units (6) IPC in Communities.
Results: 21 cases were registered in KMA.812 healthcare workers received IPC training. 3,700 of over 4,300 were assessed for SUDV IPC readiness. At baseline, the mean score was 48% and improved to 65% at follow-up ($p < 0.001$). 81 technical teams and 95 hygienists were trained to support Ring IPC. 6 rings were activated which included 57 facilities. 30EMS teams were trained on IPC, and IPC support was provided to the international airport. The outbreak was contained within 21 days in KMA.
Conclusion: The coordinated IPC response strategy rapidly improved IPC capacities and contributed to outbreak containment within 21 days in KMA. Challenges included low IPC capacity at facilities, inadequate supplies, and limited dedicated human resources for IPC. Improvement of IPC for infectious disease outbreaks in urban settings requires speed and scale and should include coordinated response efforts.

Disclosure of Interest
None declared.

P130

Implementation of the IPC ring approach during the Uganda Sudan Ebola virus disease response at the epicentre

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Introduction: At the onset of an outbreak, immediate infection, prevention and control (IPC) measures and strategies are critically important in stopping the transmission. As part of the response, the IPC technical working group (TWG) adopted the World Health Organisation (WHO) ring approach to identify areas of predetermined risk whenever a case was identified to provide intensive and targeted IPC support.
Objectives: a) Leverage surveillance and epidemiological activities to guide response efforts and implement targeted IPC interventions. b) To rapidly interrupt EVD transmission at the source through multiple IPC interventions.
Methods: The IPC TWG identified places where a confirmed case sought treatment or stayed within a minimum perimeter of 500 m in urban areas and up to 1 km in rural areas. Supplies, decontamination teams, IEC materials and district IPC mentors were rapidly mobilised and deployed in less than 24 h. Within 48 h, the IPC WASH team provided an IPC WASH/hygiene kit to mapped sites and follow-up was scheduled after 72 h. Village Task Forces were engaged to raise awareness and demystify existing misinformation. In HCFs health education was provided by trained mentors who also ensured immediate setup up screening points, holding units and notification channels.
Results: 56 sites including HCFs (38) and community sites (18) were identified and comprehensively supported with the ring package. 2 cleaning and disinfection teams were trained and stationed in each of the 5 sub counties. 270 IPC kits were distributed to all sites in the rings. 25 IPC mentors were deployed to strengthen IPC capacity in all HCFs while 350 village teams traversed communities providing health education. There was marked reduction in the number of confirmed cases in the epicentre within the first 32 days.
Conclusion: The IPC ring approach is an instrumental strategy health ministries can adopt to rapidly provide targeted comprehensive support at the source to interrupt transmission. A collaborative effort across pillars and partners in the implementation of the ring approach is key through concerted efforts and information sharing.

Disclosure of Interest
None declared.

P131

Approach to rapidly improve screening and hand hygiene capacity in health facilities during the 2022 Sudan Ebola Virus Disease (SUDV) outbreak in Uganda

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P131

Introduction: During the 2022 Ebola Virus Disease (EVD) response in Uganda, MOH and implementing partners deployed an Infection prevention and control (IPC) response strategy, including improving screening and hand hygiene capacities in healthcare facilities (HF). We report the approach and experience improving screening and hand hygiene capacities at the facility level in the affected districts.
Objectives: a) To build capacity and rapidly establish areas for screening at health facilities in high-risk districts in Uganda. b) To improve hand hygiene adherence among health workers.
Methods: Health facilities in high-risk districts were mapped, and the national IPC strategy was deployed for close to 60 days. District IPC mentors were trained in crucial IPC aspects to cascade the training to health workers within their districts. They conducted onsite follow-up visits, distributed Hand hygiene stations, and established screening stations at HFs. IPC capacities were assessed using an MoH tool. A paired t-test was used to compare facility scores at baseline and follow-up.
Results: 61 mentors were trained in Masaka and supported strengthening hand hygiene and screening structures in 117 health facilities of Masaka, 23 mentors trained and cascaded IPC in 64 health facilities of Jinja, 112 were trained in Wakiso and strengthened capacities in 390 health facilities, 75 mentors trained in Kampala and supported 412 health facilities and 25 mentors trained in Mubende and reached 152 health facilities. Overall, screening stations were established at all health facility entries, and capacity across all levels of healthcare facilities significantly improved from 65.7% (SD = 7.0) at baseline to 85.05% (SD = 5.9) at the end of the outbreak. The hand hygiene practices improved from 75.3% (SD = 10.5) at baseline to 87.0% (SD = 4.3) after support across all public and privately-owned health facilities.
Conclusion: Rapid deployment of IPC support through mentorships and facility leadership engagements significantly improved hand hygiene and screening practices for early identification and management of EVD suspect cases in Uganda. This model can be considered for future response actions.

Disclosure of Interest
None declared.

P132

Use of information technology to assist in the management of a new notifiable disease in the hospitals: the experience from the epidemic of COVID-19

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Introduction: During the COVID-19 outbreak, Taiwan employed various information technologies. Initially, infectious disease notification relied on manual reporting by clinicians and transfer to center for disease control (CDC), Taiwan by infection control nurse (ICN) in the hospital. However, since the community COVID-19 outbreak in May 2022 in Taiwan, the National Health Insurance Administration (NHIA) actively use the positive results of COVID-19 tests from the hospital's laboratory and automatically converted into infectious disease notification records by CDC, Taiwan. In the National Taiwan University Hospital (NTUH), we use Robotic Process Automation (RPA) to coordinate the reporting system.
Objectives: We aim to demonstrate how the PRA system can aid on reporting and management COVID-19 patients in the NTUH.
Methods: The hospital information program sends the results of COVID-19 laboratory result to the NHIA hourly. The NHIA sends a text message every hour to inform the patient of the result, and at the same time, every 2 h, National Infectious Diseases Reporting System (NIDRS) of the CDC, Taiwan is established to report the case. Our hospital uses RPA for its infectious disease management system (IDMS).
RPA tasks involve the following: 1. Verifying reports from other hospitals through NIDRS, 2. Identifying the count of confirmed cases with multiple positives or superinfections, 3. Managing IDMS category notes notifications from this hospital and others, 4. Interchanging and completing NIDRS notifications. Establishing a data link between the hospital's epidemiological center dashboard and IDMS aids in allocating information and facilitating policy responses.

Results: In May 2022, we found that manual operations required 13.4 man-hours per day for handling notifications, while RPA only required 0.5 man-hours per day to ensure its normal operation.
Conclusion: Using information technology for infection control saves time, enhances precision, and empowers personnel to prevent the spread of epidemic diseases. It promotes bundled care and surveillance and education program, indirectly improving clinical care and patient safety.

Disclosure of Interest
None declared.

P133

Lessons learned on infection prevention and control (IPC) in a country wide cholera outbreak response in Malawi—2023

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Introduction: Malawi experienced Cholera outbreak since 3 March 2022 and by 25 May 2023, 58,765 cases and 1760 deaths were reported with over 140 Cholera Treatment Centres (CTCs) and Cholera Treatment Units (CTUs).
Objectives: To share lessons learned on IPC while responding to Cholera outbreak in Malawi.
Methods: Intra action review meetings with responders were conducted to document key lessons learned.
Results: STRENGTHS: Screening and isolation: screening at entrances of all healthcare facilities (HFs), quick isolation of suspected cases helped reduce risk of transmission of cholera and reduced disruption of essential health services. **Coordination and leadership**: All IPC stakeholders were under coordination and leadership of one IPC pillar leadership which helped mobilize appropriate resources and ensure quality control. **IPC structures at all levels of the health systems;** Including committees, teams and focal persons accelerated IPC interventions and monitoring. **Training of trainers:** helped us reach 3104 health workers in 3 months with a uniform IPC training package for different HW cadres. **Use of monitoring tools:** A daily IPC checklist supported monitoring and continuous improvement of IPC practices and quality control in all CTCs/CTUs. **Supportive supervision and mentorship:** Weekly IPC supportive supervision and mentorship sessions in CTCs/CTUs using a dedicated checklist helped in capacity building and continuous improvement. A**doptable training materials and SOPs:** made it faster for the country to develop training materials and SOPs for the context.
CHALLENGES: Surveillance of health care associated infections (HAI) of cholera: Was not done because of unavailability the surveillance tools. **Investigation of health worker (HW) infections: Was not** done due to lack of adapted tools, and human resource constraints hence no appropriate interventions were implemented.
Conclusion: CONCLUSION AND RECOMMENDATION: IPC interventions during cholera outbreaks require strong leadership, coordination, structures and monitoring tools. The surveillance of HAI and HW infection investigations needs to be considered as basic surveillance tools.

Disclosure of Interest
None declared.

P134

A novel breath-taking hood for COVID-19

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Introduction: Vaccines, therapies, and test kits are vital and effective in the fight against COVID-19. In addition to biomedical measures, engineering approaches are just as good, if not more effective and preventive, in helping combat COVID-19 because engineering measures can be applied immediately after the pandemic occurs, but biomedical devices take time to develop, not to mention the cost. From the occupational hygiene hierarchy control perspective, source control is the most effective method to eliminate emissions, followed by pathway and receptor control. New control methods/devices are under development that may change how WHO and national CDCs handle viral aerosols in the current and future pandemic.
Objectives: This study aims to develop a personal breath-taking hood (BTH) to capture exhaled aerosols without increasing breathing resistance.
Methods: The BTH consists of a transparent polycarbonate shield on a triangular curved groove connected by a flexible hose to a suction device. The design of the BTH is achieved through 3D printing technology. Structural parameters are optimized to improve their capture efficiency (CE). The experimental setup used to measure CE consisted of a test chamber, a head form connected to an aerosol generator, and a condensation particle counter located at the chamber's outlet.
Results: The optimum height, width, and thickness of the BTH groove are 3, 10, and 2 cm, respectively. Air mixing reducers, such as PU foam, reduce escaping aerosols. The 3-D transparent shield enables 99.5% capture efficiency and reduces required suction flow without measurable negative pressure. Notice that the suction flow of 40 L/min is only suitable for normal breathing.
Conclusion: Overall, the BTH is comfortable to wear and has high capture efficiency to prevent exhaled particles from contaminating the environment. The high respiratory flow requires increased suction flow to maintain high capture efficiency. Automatic feedback breath-responsive BTH is still in development.

Disclosure of Interest
None declared.

P135

Innovative application for the mitigation of airborne pathogens

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P135

Introduction: Transmission of respiratory diseases, such as tuberculosis, aspergillosis, and recently Coronavirus disease 2019 (COVID-19) pandemic threatened the lives of millions, causing thousands of deaths worldwide and highlighting the airborne transmission crucial role in the transmission of infections.
HEPA filters are the current industry standard. Nevertheless, they must be used with other air cleaning methods as they present a high-pressure drop to the airflow and consume fan power. In addition, they are expensive and must be frequently changed.
Objectives: Anew device presented for air cleaning was developed and evaluated for efficiency. The device uses Electrically Activated Water (EAW), which could be integrated into current Heating, Ventilation, and Air Conditioning (HVAC) systems.
Methods: A modified integrated air cooling portable unit was developed to accommodate the EAW-wicking system and the HEPA filter that can be used to mitigate airborne diseases. A known amount of *E. coli, Aspergillus* spp., and Newcastle virus were nebulized in a

contained space using an automatic nebulizer. The efficacy of the prototype and a combination of the developed prototype and HEPA filters were compared and assessed through different techniques. After each cleaning period, the bacteria were quantified by sampling into nutrient agar plates consuming Cascade Impactor. Newcastle virus was collected using an SKC aerosol sampler, and viral load reduction was determined using TCID50/ml and RT-qPCR, while antifungal activity was determined by inhibiting fungus growth.
Results: A preliminary lab air cleaning analysis demonstrated the significant efficiency of the novel prototype. The technology also showed efficacy in the simulated tertiary hospital and stadium environment.
Conclusion: In conclusion, towards the end of this project, we are working to build a certified commercial prototype at the TRL8 level to remove infectious pathogens. The application is novel and commercial and will have a global influence on infection control strategies in hospitals and indoor public locations by providing a safe, pathogens-free environment.

Disclosure of Interest
None declared.

P136

Sustaining a cost-effective evidence-based infection prevention & control (IPC) intervention in resource-limited settings: lessons from a project sustainability assessment in Sierra Leone

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Introduction: A sustainable Infection Control (IPC) program maintains its IPC interventions and their benefits over time. Hand hygiene for example is one critical IPC measure to be sustained. In 2019, Sierra Leone instituted local production of alcohol-based handrub (ABHR) as a cost-effective intervention for reliable, and affordable provision of hand hygiene products for use in healthcare facilities.
Objectives: To assess the sustainability capacity of the local ABHR production project to help guide efforts for long-term success.
Methods: The assessment was done using the Program Sustainability Assessment Tool (PSAT) developed by investigators at Washington University in St. Louis. The PSAT is a standardized tool that has 40 assessment items divided equally across 8 sustainability domains. All assessment items were scored on a scale of 1–7 by the national IPC team and stakeholders involved in the project. Data were entered into the online PSAT platform for analysis and summary reports. The overall capacity for sustainability was calculated using the average of the 8 domains and scores > 3.5 were considered as "strong" and scores < 3.5 as "weak".
Results: The overall result showed a weak sustainability capacity, with an average score of 3.0. Three domains had strong capacities while the remaining five have weak capacities.

Domain	Score	Comment
Environmental Support	5.4	Strong leadership support
Funding Stability	2.6	No sustained funding
Partnerships	4.2	Good collaboration and investment by external partners
Organizational Capacity	2.6	Project well integrated but limited internal operational support
Program Evaluation	1.2	No evaluation to provide evidence and inform future planning
Program Adaptation	3.8	Adaptations made to fit the prevailing situations
Communications	2.2	No comms plan to secure/maintain public support
Strategic Planning	2.2	No plan for current and future resource needs

Conclusion: Despite the weak sustainability capacity of the project, a supportive environment with strong leadership support may contribute to sustainability. Aside from funding stability, other sustainability domains can be crucial for the sustainable success of IPC interventions. Sustainability assessment and planning, therefore, should be considered an important component in IPC implementation.

Disclosure of Interest
None declared.

P137

The adult immunization board: a new platform to provide multidisciplinary guidelines for the implementation and optimization of adult immunization in Europe

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Introduction: Several organizations, including governments, (inter) national public health organizations, and vaccine manufacturers are currently considering how adult immunization (AI) can be further improved to increase health impact and promote a lifelong approach to vaccination. Despite many organizations thinking about ways to improve AI, there is currently no multidisciplinary discussion platform focusing on this topic at the European level. Therefore, a group of experts in the field of AI established the Adult Immunization Board (AIB).
Objectives: The AIB is established with the aim of contributing to the reduction of the impact of vaccine-preventable infections and diseases in European adults.
Methods: AIB works by organizing 2 meetings per year: (1) a technical meeting to discuss specific technical aspects on AI with subject-matter experts, and (2) a country meeting to discuss country-specific aspects of AI together with local experts. The focus audience of the AIB are policymakers, researchers, public health experts, and health care professionals.
Results: In November 2022, the AIB secretariat organized a **Kick-off meeting** with experts to establish the basic structure/functions of the Board, discuss the main objectives, and plan future meetings. The new platform was well received and endorsed as an appropriate and effective way to share information and exchange ideas and experiences across disciplines and borders.
In April 2023, the AIB organized its first **technical meeting** on "Assessing the health burden of vaccine-preventable infections in European Adults: challenges and opportunities". All meeting materials are published on our website (www.adultimmunizationboard.org) and a meeting report is currently being prepared for publication.
In December 2023, the **first AIB country meeting** is planned in Italy with local experts to learn about best practices and address aspects to improve.
Conclusion: The AIB is a platform that brings together the different key European stakeholders in adult immunization to effectively

contribute towards the implementation and optimization of adult immunization programs in Europe.

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P138

We are utilizing online interactive AMR case studies to address the inappropriate anti-biotic prescriptions by health workers. A look at the process, outcomes and lessons learned

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P138

Introduction: The infectious Diseases Institute (IDI) has been conducting online courses for health workers' (HWs) in anti-microbial stewardship since 2016. In 2019 through the onsite follow up visits, IDI realized that more cases of anti-microbial resistance (AMR) were reported. An assessment identified the health workers were given a lot of theoretical knowledge during the courses but less of real-life cases and experience. IDI started adopting real life cases of anti-microbial resistance from its research clinic to utilise for learning.
Objectives: To encourage AMR stewardship through real life interactive case studies.
Methods: In 2019, the IDI website was upgraded to open access and interactive format. This website hosts real life AMR interactive cases from the IDI clinic. The HWs log on, study the cases, complete the assessments and are rewarded CPD points and e-certificates. The AMR cases are identified by doctors during routine clinic days, are reviewed by a physician who compiles them into case write ups and provides funding for further investigations. The cases are then presented at the multi-disciplinary team meetings at IDI for review and approval. The eLearning team then make them interactive and motivating for learning by adding graphics, illustrations, animations and voice over recordings.

Results:

Number of cases uploaded onto the clinical website	32	Number of certificates downloaded	3,103

Conclusion: The uptake of the case studies has been good. One participant quoted "The visual effects and voice narrations mimic real patient interaction and have made learning less monotonous, I always look forward to more cases".

The interactive studies are very engaging and motivation for learning and have been adopted by health facility staff to conduct continuous Medical sessions at their sites.
At the start, all cases came from IDI but with time, the success of the online case studies attracted external case writers and reviewers and this added on the diversity of the cases.
Innovations in learning are essential for knowledge retention and health outcomes e.g. AMR reduction.
Certification and CPD points have motivated health workers to log onto the e-learning site, study and encourage the rest.
IDI intends to conduct case writing sessions so that even health workers of lower cadres can share cases from their contexts.

Disclosure of Interest
None declared.

Poster session: Surveillance and IPC indicators

P139

Causative organisms and antimicrobial resistance of healthcare-associated infections at 17 hospitals in the United Arab Emirates

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Introduction: Antimicrobial resistance is among the top ten global public health threats facing humanity as declared by the World Health Organization (WHO).
Objectives: The aim of this study was to determine the causative organisms and antimicrobial resistance (AMR) patterns of healthcare-associated infections (HAI) in the United Arab Emirates (UAE).
Methods: Qualified Infection Control professionals (ICPs) from 17 governmental hospitals conducted prospective surveillance for HAI [Central Line-associated Bloodstream Infection (CLABSI), Catheter-associated Urinary Tract Infections (CAUTI), Ventilator-associated events/pneumonia (VAE/VAP) and Surgical Site Infections (SSI)] between January and December 2022. ICP followed the HAI definitions of the Centers for Disease Control and Prevention's National Healthcare Safety Network (NHSN). Data were reported to the central Infection Prevention and Control committee for analysis.
Results: A total of 292 cases of HAI were identified and stratified as SSI (39%), CAUTI (33%), CLABSI (19%) and VAE/VAP (9%). The overall SSI rate among all specialties was 0.6% and the rates of CAUTI, CLABSI and VAE/VAP were 1.4, 1.7 and 0.6/1000 device-days, respectively. There were 275 microbial isolates identified in this study. These encompassed 199 (72%) gram-negative organisms, 60 (22%) gram-positive organisms and 16 (6%) fungi. The most common organisms isolated from all HAI cases were *Klebsiella pneumoniae* (28%) followed by *Escherichia coli* (17%) and *Pseudomonas aeruginosa* (12%). Multi-drug resistant organisms (MDRO) constituted 24% of all organisms, of which *Staphylococcus aureus* isolates had the highest resistance rate (42% MRSA) followed by *Escherichia coli* (40%) and *K. pneumoniae* (34%) isolates. Of the 77 isolates of *K. pneumoniae*, 15 (19%) were extensively drug-resistant (XDR).
Conclusion: The causative organisms and their susceptibility patterns assist in optimizing empirical antimicrobial therapy for each type of HAI. Antimicrobial stewardship programs and infection control practices in conjunction with active surveillance programs and microbiological profile are essential to reduce the burden of HAI and AMR.

Disclosure of Interest
None declared.

P140

Prevalence, risk factors, and antimicrobial resistance of endemic healthcare-associated infections in Africa: a systematic review and meta-analysis

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Introduction: The burden of healthcare-associated infections (HCAI) remains poorly described in Africa.

Objectives: This systematic review aimed to update what is known about the prevalence, risk factors, and aetiologic agents of endemic HCAI in Africa.
Methods: We comprehensively searched MEDLINE/PubMed, CINAHL, and Global Health databases for studies published in English and French describing HCAI in Africa from 1 January 2010 to 31 December 2022 for their eligibility. We extracted data on the prevalence of HCAI, risk factors, aetiologic agents, and associated antimicrobial resistance patterns. Estimates were reported using random-effects models with 95% confidence intervals and were subsequently stratified by HCAI type. This study was registered in PROSPERO (CRD42022374559) and followed the PRISMA guidelines.
Results: Ninety-two studies were included in the analysis. Thirty-tree (35·9%) studies used their own surveillance definitions or did not report the definitions used in diagnosing HCAI. The pooled prevalence for studies reporting bloodstream infections was 22% (95% CI 0.17–0.28, $I^2 = 98\%$, $p < 0.01$), 21% (95% CI 0.15–0.26, $I^2 = 97\%$, $p < 0{\cdot}01$) for urinary tract infections, 29% (95% CI 0.20–0.39, $I^2 = 98\%$, $p < 0{\cdot}01$) for pneumonia, and 19% (95% CI 0.16–0.23, $I^2 = 98\%$, $p = 0$) for surgical site infections. A total of 6463 isolates were reported. The most frequently isolated bacteria causing HCAI were *E. coli* (18·3%, n = 1182), *Staphylococcus aureus* (17·3%, n = 1118), *Klebsiella* spp (17·2%, n = 1115), *Pseudomonas* spp (10·3%, n = 671), and *Acinetobacter* spp (6·8%, n = 438). Bacteria exhibited high resistance to multiple antibiotics, with 70·3% (IQR: 50–100) Enterobacterales 3rd-generation cephalosporin resistant, 70·5% (IQR: 58·8–80·3) Methicillin Resistant *S. aureus*, and 55% (IQR: 27·3–81·3) *Pseudomonas* spp. resistant to all agents tested.
Conclusion: We describe a high prevalence of HCAI and of infections resistant to commonly available agents, however, there remains a paucity of data describing HCAI in Africa. There is a need to develop and validate sustainable HCAI definitions to support the implementation of routine surveillance and inform the design of appropriate IPC strategies to reduce HCAI and AMR burdens.

Disclosure of Interest
None declared.

P141

Prevalence and multidrug-resistant microorganism of hospital-acquired infections among patients in 13 general hospitals in Southwest China

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Introduction: The health human resources in southwest China is relatively insufficient compared with that in southeast China. Contemporary information about the types of infections, causative pathogens including multidrug-resistant microorganism (MDRO), as well as risk factors of patients with hospital-acquired infections (HAIs) can aid the development of policies for prevention and resource allocation.
Objectives: To provide information about the prevalence and the isolating rates of MDRO in different grades of hospitals in southwest China.
Methods: The investigation of by bed and case survey was performed on the day of June 24, 2021 among the inpatients in the 13 general hospitals. HAIs diagnoses are carried out by *Hospital Infection Diagnosis standard (2001)* published by China's Ministry of Health. Comparison of proportion and correlation analysis was evaluated by *Chi*-square test and logistic regression analysis.
Results: The point prevalence of HAIs in 13 hospitals was 3.27% (607/18767). The prevalence was higher in the upper first-class comprehensive hospitals (3.64%) than the middle first-class comprehensive hospitals (1.88%) and upper second-class comprehensive hospitals (0.64%, $P < 0.05$). The main infection site was lower respiratory tract, accounting for 51.86% of all the HAI, and one quarter of it was postoperative pneumonia. Followed by urinary (11.03%), surgical site infection (8.64%), bloodstream infection (6.56%) and skin and soft tissue infection (5.07%). Gram-negative bacilli were the main isolated pathogens. The isolating rates of MDRO was 13.34% in HAIs inpatients, the first three being Carbapenem-resistant *Acinetobacter baumannii*, Carbapenem-resistant *Klebsiella Pneumoniae* and other Carbapenem-resistant *Enterobacteriaceae*. Factors including gender (male), advanced age, underlying diseases (such as hematologic malignancy, diabetes, respiratory failure and renal insufficiency), use of immunosuppressants and hormones, coma and invasive operation were associated to HAIs ($P < 0.05$).
Conclusion: The disease burden caused by HAIs was higher in the upper first-class comprehensive hospitals, The isolating rate of Carbapenem-resistant organism is increasing recently, Targeted monitoring in high-risk patients should be strengthened.

Disclosure of Interest
None declared.

P142

The real prevalence of health-care associated infections in Armenia: results of first pilot PPS study—Armenia, 2022

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Introduction: Healthcare-associated infections (HAIs) are well known major public health threats to the safety of patients. In 2012 the Government of Armenia developed "Strategic Program of nosocomial infection prevention and control in Armenia on 2012–2016". In 2015 the first time in all hospitals of Armenia the HAI surveillance system was implemented. However, the rate of HAI, reported to the NCDCP of Armenia, remains low (about 0.7%).
Objectives: The Aim of this study was to estimate the prevalence of HAI in Armenian hospitals.
Methods: The first Pilot Point prevalence survey (PPS) of HAIs was performed in March 2022 in 2 selected hospitals. ECDC Protocol v.5.3 for a PPS of HAIs and antimicrobial use in European acute care hospitals was used. Data collection forms were filled in by hospital and national teams. Results were entered into HELICSWinNet computer database. Analysis was carried out using HELICSWinNet and MS Excel. Descriptive analysis was also performed.
Results: Out of 257 patients (all were 18 + y.o.), 16 patients with HAIs were identified in both hospitals. The prevalence of HAI was 6.2% (CI 3.3%-9.2%). HAI prevalence was highest for Intensive care (29.2%) and approximately the same for Surgery and Medicine units (3.9% and 3.3% respectively). The most frequently reported HAI types were Pneumonia (22.7%), Urinary tract infections (UTI) (22.7%), Bloodstream (BSI) and Catheter-related infections (together 22.7%), and Surgical site infections (SSI) (18.2%).
Out of 22 HAIs, in only 63.6% (n = 14) of them a microorganism has been isolated. The total number of microorganisms isolated was 6: 1 (16.7%) in the Enterobacteriaceae group, 1 (16.7%) in the Gram-Positive Bacilli group, 2 (33.3%) in the Gram-Negative Non Enterobacteriaceae group and 2 (33.3%) in the Gram-Positive Cocci group. Out of 14 cases, 5 (35.7%) microorganisms were isolated in Pneumonia, 3 (21.4%) in UTI, 3 (21.4%) in SSI and 2 (14.3%) in BSI.
Totally 11 (78.6%) of microorganisms were possible PDR: 9 Pseudomonas spp., 1 Pseudomonas aeruginosa and 1 Klebsiella pneumoniae.
Conclusion: This first Pilot PPS showed, that total HAI prevalence in 2 selected hospitals was about the same as in the EU: 6.2% vs 6.5%, but much higher than reported to NCDCP (0.7%). IPC programmes, based

on the WHO core components, in both hospitals should be strengthened for HAI prevention.

Disclosure of Interest
None declared.

P143

Point prevalence survey (PPS) of healthcare-associated infections (HAI) and antimicrobial use (AR) at the University Medical Center (UMC) corporate foundation in Kazakhstan

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Introduction: The World Health Organization (WHO) reports that in developed countries, 5–10% of hospitalized patients contract HAI, while in developing countries, the figure can reach up to 25%.
Objectives: The purpose of these studies is to monitor the prevalence of HAI and estimate the incidence of AR among hospitalized patients and to develop strategies to prevent and control HAI and AR in healthcare settings.
Methods: The study, conducted from April to May 2022, collected daily prospective patient data, including HAI case definition criteria, patient divisors, and information on antibacterial drug prescriptions. Data analysis, performed using descriptive statistics, involved a total of 1,676 patients, with specific analysis conducted on 425 UMC patients.
Results: The prevalence of HAI at UMC was found to be 5.4%, while the average prevalence across the four participating hospitals was 3.2%. The official data for HAI in the region for 2021 was reported as 0.67%. The most common types of HAI at UMC were bloodstream infections (30.4%), pneumonia (17.4%), and urinary tract infections (13.0%). Microbiological confirmation was obtained for only 26.1% of HAI cases at UMC.
Regarding AR, the overall prevalence of resistance at UMC was 36.6%. The highest prescription rates of antimicrobials were observed in the intensive care units (73.3%), surgery (48.3%), general medicine (32.1%), and obstetrics and gynecology (27.2%). Notably, a significant proportion of antibiotic prescriptions were for prophylactic purposes, with 47.9% for medical prophylaxis and 29.2% for surgical prophylaxis lasting more than one day. Treatment-related antimicrobial prescriptions accounted for 19.1% of cases, including 8.1% specifically for HAI treatment.
In terms of HAI prevention, UMC followed the WHO's hand hygiene methodology, with 70.6% of the recommended number of beds equipped with hand antiseptic dispensers.
Conclusion: In conclusion, the PPS conducted in UMC provided valuable insights into the burden of HAIs and AR, offering an accurate assessment based on international case definition standards. These findings contribute to the understanding of HAI and AR dynamics in the hospital and can guide the development of effective prevention and control strategies.

Disclosure of Interest
None declared.

P144

Assessment of healthcare-associated infections risk factors in a Tunisian University Hospital during the pre-COVID-19 era

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Introduction: Healthcare-associated infections (HAIs) are a major cause of morbidity as well as mortality among patients worldwide. In Tunisia, limited data exist in this regard in local healthcare facilities.
Objectives: We aimed to determine the prevalence of HAIs and to investigate its associated factors in a Tunisian University Hospital.
Methods: A cross-sectional study was conducted from October 28th to November 2nd 2019 among all hospitalized patients in The Taher Sfar Mahdia University Hospital. Data were collected by a trained staff from medical records. Binary logistic regression model was used to assess associated factors. SPSS software was used for data entry and statistical analysis.
Results: A total of 169 patients were sampled, with a mean age of 46.8 ± 22 and a sex ratio of 0.9. One-quarter of hospitalized patients had an infection, with 15.3% being HAIs. Patients diagnosed with HAIs were predominantly admitted at surgical departments (72%) and 22% of them were admitted in Intensive Care Units. "Diabetes", "Obesity", and "Hospitalization within the last year" were the most commonly found intrinsic risk factors (26%, 10% and 20.1% of patients respectively). After binary logistic regression, the identified related factors to HAIs were: Hospitalization more than 10 days, antibiotics taken during the last 3 months, as well as urinary catheterization (OR = 3.6 [1.03–12], $p = 0.04$; OR = 5.3 [1.4–21], $p = 0.01$ and OR = 17.8 [4–78], $p < 10^{-3}$ respectively).
Conclusion: Our study highlights the high prevalence of HAIs and the importance of implementing effective infection control measures and antibiotic stewardship programs in Tunisia.

Disclosure of Interest
None declared.

P145

Healthcare-associated infections in a Tunisian University Hospital: epidemiological findings pre and post COVID-19 pandemic

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Introduction: Healthcare-associated infections (HAIs) remain a major cause of morbidity and mortality worldwide. In Tunisia, limited epidemiological data on HAIs are available, and the impact of the COVID-19 pandemic on their prevalence and characteristics is yet to be fully explored.
Objectives: We aimed to compare the epidemiological findings of HAIs in a Tunisian university hospital before and after the COVID-19 pandemic.
Methods: Two six-day HAIs point-prevalence surveys were conducted at Mahdia University Hospital, in 2019 (October 28th to November 2nd) and 2022 (March 14th to March 19th). Data were collected from medical records of all hospitalized patients. Binary logistic regression model was used to assess related factors to HAIs. Statistical analysis was performed using SPSS software.
Results: In 2019 and 2022, 169 and 177 patients were respectively enrolled with a mean age of 46.8 ± 22 and 55.5 ± 19 years old, and a sex ratio of 0.9 and 1.1. About 15% and 11% had healthcare-associated infections (HAIs) in 2019 and 2022 respectively. One third of patients with HAIs were hospitalized in intensive care units in 2022, compared to 21% in 2022. In both surveys, diabetes was the leading intrinsic risk factor for HAIs (22.6% in 2019 and 26% in 2022). In 2019, the most prominent extrinsic risk factor for HAIs was intravenous catheterization (51.1%), while in 2022, having undergone surgery in the last month was the most prevalent (22.6%). In multivariate analysis, the two risk factors commonly and independently associated with HAIs were hospitalization of more than 10 days (OR = 3.6 [1.03–12], $p = 0.04$ in 2019 vs OR = 3.9 [1.4–11], $p = 0.008$ in 2022) and antibiotics taken

during the last three months (OR = 5.3 [1.4–21], p = 0.01 in 2019 vs OR = 4.6 [2–14], p = 0.006 in 2022).
Conclusion: Our study underscored a decreasing prevalence of HAIs in 2022, highlighting the importance of continued surveillance and targeted prevention efforts. Maintaining strict adherence to hygiene protocols even in the post-COVID era is also crucial in order to reduce HAIs impact and improve patient outcomes.

Disclosure of Interest
None declared.

P146

Risk factors of healthcare-associated infections in a Tunisian University Hospital: a cross-sectional study in 2022

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Introduction: Healthcare-associated infections (HAIs) represent a significant challenge for healthcare systems worldwide, exacerbated by the COVID-19 pandemic strain on healthcare resources. Despite the growing concern over HAIs in Tunisian healthcare facilities, research on the topic remains relatively scarce.
Objectives: We aimed to assess prevalence and associated factors to HAIs in Mahdia University Hospital.
Methods: A cross-sectional study was conducted from March 14th to 19th 2019 in Mahdia University Hospital. Data were collected from medical records of all hospitalized patients. Binary logistic regression model was used to assess HAIs associated factors. SPSS software was used for data entry and statistical analysis.
Results: A total of 177 patients were enrolled, with a mean age of 55.5 ± 19 years old and a sex ratio of 1.1. One-third of hospitalized patients had an infection, with 11.1% having HAIs. Over the third of these patients were admitted to Intensive Care Units vs 22.2% admitted to surgical departments. Binary logistic regression revealed that "Hospitalization lasting more than 10 days" and "Recent antibiotic use within the past three months" were independently associated with HAIs. Respective ORs were as follows: OR = 4.6 [1.5–14], p = 0.06; OR = 3.9 [1.4–10.7], p = 0.007. Being comatose increased the risk of HAI by 50 times (OR = 50.9 [5.3–490], p = 0.01).
Conclusion: Implementing intra-hospital hygiene recommendations is hence urgently crucial. Strict enforcement and potential sanctions may be necessary to ensure compliance and ensure better patient outcomes in Tunisian healthcare facilities.

Disclosure of Interest
None declared.

P147

Determinant factors of healthcare-associated infections in a university hospital: Tunisia, 2023

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Introduction: Due to the COVID-19 pandemic, infection prevention and control measures have gained significant attention worldwide, including intra-hospital hygiene. As healthcare facilities adapt to the new normal, the need to address healthcare-associated infections (HAIs) has become even more crucial in both developed and developing countries, including Tunisia.
Objectives: We aimed to assess prevalence and risk factors of HAIs in Taher safar—Mahdia University Hospital.
Methods: A six-day HAIs point-prevalence survey was conducted at Mahdia University Hospital in Tunisia from March 13th to 18th 2023. Data were collected exhaustively from medical records of all hospitalized patients. Binary logistic regression model was used to assess the associated factors. Statistical analysis was performed using SPSS software.
Results: A total of 308 patients were recruited, with a mean age of 48.9 ± 22 years old and a sex ratio of 1.7. The leading cause for hospitalization was respiratory illnesses (25.5%). One half of hospitalized patients had HAI (50.3%). Among those patients, 53% were admitted to Intensive Care Units and 18.7% were admitted to surgical ones. Acinetobacter was identified in nearly 10% of the isolated pathogens. Amoxicillin-Clavulanic Acid was the most frequently prescribed antibiotic for the treatment of HAIs (29.9%).
The most prevalent intrinsic risk factors were diabetes, hypertension, and cigarette smoking (24%, 20% and 19.7% respectively). In multivariate analysis, independently associated risk factors to HAIs were: recent surgery within the past 30 days (OR = 11 [2–59], p = 0.005), hospitalization in the past 12 months (OR = 8.2 [1.1–62], p = 0.04), orotracheal intubation (OR = 23.9 [3.3–169], p = 0.01), and tobacco consumption (OR = 6 [1.1–34], p = 0.04).
Conclusion: The high prevalence of HAIs in Taher Safar-Mahdia University Hospital is concerning, particularly among patients in ICU and surgical departments. Orotracheal intubation was identified as a significant independent risk factor. Therefore, the implementation of targeted prevention strategies based on these findings may reduce HAIs' prevalence, enhance healthcare quality, and lower healthcare costs.

Disclosure of Interest
None declared.

P148

Implication of COVID-19 pandemic on the prevalence of hospital-acquired infections in a tertiary hospital in Tunisia

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Introduction: Healthcare-associated infections (HAIs) remain a growing public health problem in terms of patient safety and economic burden. The reinforcement of infection prevention and control measures during the covid-19 pandemic seem to have a positive impact on the occurrence of HAIs.
Objectives: We aimed to evaluate long-term trends and risk factors of HAIs in the university hospital of Kairouan (Tunisia) from 2010 to 2021.
Methods: Successive point-prevalence surveys (PPS) were conducted annually from 2010 to 2021 to monitor the prevalence of HAIs at Ibn Al Jazzar university hospital in Kairouan (Tunisia). The surveys used the case definition criteria of the Centres for Disease Control (CDC) of Atlanta. Data on patient characteristics and active HAIs were collected.
Results: A total of 2098 inpatients were included; 143 HAIs were recorded in 533 patients, with an overall prevalence of 6.2%. Respiratory, urinary and bloodstream infections were the most common. Escherichia coli were the most common pathogens (46.3%). Significant changes in HAIs were observed over ten years. In a breakpoint

analysis to identify trends, a breakpoint in 2014 was founded. From 2010 to 2014, the HAI prevalence showed a statistically significant decline (-42%; $p < 0.001$) whereas from 2014 to 2021 a more gradual increase in HAI prevalence was found (+34.3%; $p < 0.001$). HAIs prevalence decreased from 9.8% in early 2020 to 6.4% late 2021. Multivariate analysis showed that undernutrition, neutropenia, surgical intervention, peripheral vascular catheter, length of stay > 7 days, and ICU ward type were the independent risk factors of HAIs.
Conclusion: This report provides an overview of the decline in the prevalence of hospital-acquired infections after the covid-19 pandemic. These data underscore the need to maintain conventional infection prevention and control practices and to strengthen the resilience of these programs in the control of healthcare-associated infections.

Disclosure of Interest
None declared.

P149

Bacteriological aspects of healthcare-associated infections: point-prevalence survey at university hospital of Angre, 2023

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P149

Introduction: The growing burden of Healthcare-associated infections (HAIs) which are driven by poor infection prevention and control (IPC) practices are among the drivers of antibiotic resistance. Multidrug-resistant pathogens are a common cause of HAIs.
Objectives: To determine the prevalence of HAIs and to assess antibiotic resistance rates from isolates.
Methods: A point-prevalence survey was conducted in the departments (medicine, surgery, paediatric, neonatology and intensive care unit) of University Hospital of Angre from 17 to 21 April 2023. Inpatients who had been in hospital for at least 48 h and were present on the day of the survey were included. The criteria for HAIs were based on simplified World Health Organization definitions. Data were analyzed using SPSS IBM software version 26. The significativity level was ≤ 0.05.
Results: Prevalence of HAIs was 23.63% (13/55). The mean age of patients was 30 years. This prevalence in neonatology and surgical department were 30.76%. The most common were surgical site infections (38.46%), bacteraemia (30.76%) and acquired pneumonia (23.07%). Enterobacteriaceae predominated with *Escherichia coli* (57.14%). Coagulase-negative Staphylococci (CNS) accounted for 28.57%. Enterobacteriaceae produced extended spectrum beta lactamase (E-ESBL) and carbapenemase in 50% and 33.33%. CNS was resistant to methicillin in 16.66%. The occurrence of HAIs was significantly associated with an invasive device ($p = 0.04$) and length of hospital stay ≥ 7 days ($p = 0.009$).
Conclusion: These data should be set local targets for reducing HAI and develop strategies for appropriate antibiotic use.

Disclosure of Interest
None declared.

P150

Excess mortality and length of stay related to bloodstream infections of carbapenem-resistant Klebsiella pneumoniae in Chinese hospitals

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Introduction: Carbapenem-resistant Klebsiella pneumoniae (CRKP) infection is a major public health threat in the world. However, the clinical outcome such as mortality and length of stay (LOS) is still debated.
Objectives: To estimate the excess mortality and LOS associated with CRKP BSI and resistance to carbapenems in K. pneumoniae.
Methods: A multicenter, parallel historical matched-cohort study was carried out in four large upper first-class general hospitals in three southern provinces of China from 2017 to 2018. Cohort 1 consisted of patients with CRKP BSI, and Cohort 2 consisted of patients with Carbapenem-sensitive Klebsiella Pneumoniae (CSKP) BSI. We selected controls without K. pneumoniae infections for each cohort at a ratio of 1:3, matched for risk-time, hospitalization diference no more than 1 month and same initial diagnosis using frst three digits of ICD-10 code. Fine and Gray model was used for competing event for motality, and generalized linear model was used to evaluate the impact of CRKP BSI on LOS.
Results: Cohort 1 consisted of 117 CRKP BSI patients and 331 controls, and Cohort 2 of 317 CSKP BSI patients and 900 controls. CRKP BSI patients had higher motality [adjusted hazzard ratio (aHR), 4.38] and longer LOS of 7 days compared with controls. CSKP BSI patients also had higher motality (aHR, 2.85) and longer LOS of 6 days. However, when the two cohorts were compared, resistance to carbapenems in K. pneumoniae showed no effect on motality (aHR = 1.54, P = 0.380) and LOS (ratio, 1.06, P = 0.426).
Conclusion: Regardless of whether the Klebsiella Pneumonia is resistant or sensitive in BSI patients, the prevention and control measures of HAI should be strengthened.

Disclosure of Interest
None declared.

P151

Piloting of IPC monitoring and evaluation system in four county referral hospitals in Kenya

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Introduction: Compliance with Infection Prevention and Control (IPC) standards is key in the delivery of safe and quality health care. In Kenya, the COVID19 pandemic highlighted the need to monitor and evaluate compliance with IPC standards. A monitoring and evaluation (M&E) system was developed and piloted in four counties in Kenya with an aim of collecting data on key IPC indicators.
Objectives: The objectives of the pilot were to determine the feasibility of having an M&E system for IPC, to test data collection tools and asses reporting of key indicators to the Kenya Health Information System (KHIS).
Methods: Through a consultative process key IPC indicators, hand hygiene compliance and incidence of post Caesarean section surgical site infections (SSI) were identified and data collection tools developed. Four county refferal hospitals were selected and M&E teams identified and trained. Data collection tools were distributed to the hospitals. Data was collected between July 2022 and December 2022 and uploaded to the KHIS from where it was analyzed for simple frequencies.
Results: All the four county referral hospitals reported on the IPC indicators. Data was received for both hand hygiene compliance and post-caesarean section SSI. The average hand hygiene compliance rate was 51.4% with compliance before contact with a patient being 41.4% and that after contact being 61.1%. Nurses had the highest compliance rate at 69% while medical doctors had 55% compliance. A total of 2,387 caesarean sections were reported with 99% of them being on emergency basis. A total of 43 (1.8%) SSI were reported during the period.
Conclusion: A M&E system is a practical way of obtaining data on compliance of IPC indicators. Adequate training, development of

simple tools and having a linkage to a health information system are prerequisites to reporting IPC indicators to the national data base. Robust data management capacities are vital for national and facility-based IPC programs to enable the use of data generated for decision making. Hand hygiene compliance remains low across all cadres. Surgical site infections are a challenge which can be mitigated through implementation of infection prevention and control measures. There is need to enhance IPC education and training, avail IPC commodities and institute behavior change approaches, especially on hand hygiene and compliance with surgical care bundles.

Disclosure of Interest
None declared.

Poster session: ICU-acquired infections: Risk, risk-factors and the role of sink contamination and waterless patient care

P152

Clinical and microbiological epidemiology of hospital-acquired and ventilator-associated pneumonia: prospective study in 12 European ICUS

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Introduction: Hospital-acquired (HAP) and ventilator-associated pneumonia (VAP) account for roughly a fifth of all hospital acquired infections (HAI). Most data on the clinical and microbiological epidemiology of these HAIs come from small single centre studies, which do not provide a comprehensive picture of incidence, aetiology, and outcomes.
Objectives: A prospective cohort study, HONEST-PREPS, was initiated to describe the incidence, microbiological aetiology, and clinical outcomes of HAP/VAP across 12 ICUs in six European countries (Albania, Croatia, Czech Republic, France, Romania, Serbia).
Methods: The study ran from May 2020 to April 2022. Adults with an ICU admission of at least 48 h, for whom death was not deemed imminent and who were committed to full treatment were eligible. HAP/VAP was defined according to FDA criteria. Microbiological results relied on routine practice. Cumulative incidence functions, considering competing events, were applied for incidence measures and ICU mortality.
Results: Overall, 2,165 patients were enrolled, of which 1,096 were under mechanical ventilation for at least 48 h, 106 developed HAP and 172 developed VAP. The cumulative incidence of HAP/VAP and VAP was 13.3% (95% CI 11.8%-14.7%) and 15.7% (95% CI 13.6%-17.9%), respectively. Of 278 HAP/VAP patients, 176 (63%) patients had at least one positive microbiological sample. Most HAP/VAP episodes were associated with *Staphylococcus aureus* (58/176) and *Acinetobacter* species (53/176), of which 14/51 tested (27.5%) were methicillin resistant, and 46/48 (95.8%) were carbapenem resistant, respectively. Cumulative incidence of ICU mortality was 45.7% (127/278, 95% CI 39.9%-51.5%) in the HAP/VAP population versus 23.1% (422/1853, 95% CI 21.2%-25.0%) in non-HAP/VAP patients. Estimates for hospital and 90-day mortality were similar.
Conclusion: Cumulative incidence of HAP/VAP is high, with large associated mortality rates. There was an unexpected predominance of *Acinetobacter* species, with high carbapenem resistance, indicating the importance of geographically diverse epidemiological studies. Better implementation of evidence-based preventive HAP/VAP strategies is warranted.

Disclosure of Interest
None declared.

P153

Factors for ventilator-associated events in an emergency intensive care unit

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Introduction: In 2013, the National Healthcare Safety Network (NHSN) published a surveillance guideline for Ventilator-Associated Events (VAE). Data and evidence have been accumulated in intensive care units; however, those from emergency critical care settings are still limited.
Objectives: The purpose of this study was to identify clinical factors for the development of VAE in such emergency units.
Methods: The study population consisted of all emergency patients aged 14 years and older admitted to the Emergency Intensive Care Unit (EICU) of Okayama University Hospital (Japan) who were managed under ventilators for at least 3 days from January 2017 to July 2018. We defined VAE based on the NHSN guideline and compared the background data of patients with and without VAE using the Mann–Whitney U test and Fisher exact test as appropriate. Cox proportional-hazards model was applied to estimate the hazard ratio and 95% confidence interval (CI).
Results: A total of 925 patients were admitted to the EICU. Of them, 208 (22.5%) were mechanically ventilated and 166 (17.9%) met the inclusion criteria for the VAE surveillance. Based on the surveillance definition, 19 (21 cases) were classified with VAE and 147 (156 cases) without VAE. Data for sex, age, trauma, burn, cardiopulmonary arrest, pleural effusion, atelectasis, hemodialysis, nutritional therapy, blood urea nitrogen, creatinine, brain natriuretic peptides, procalcitonin. Between the two groups were not significantly different. While, burn injuries were observed in 5/21 (23.8%) in patients with VAE and 7/156 (4.5%) in those without VAE ($p < 0.01$). Median [IQR] albumin level was 1.8 mg/dL [1.5–2.0] in patients with VAE and 2.1 mg/dL [1.8–2.5] in those without VAE ($p < 0.001$). Multivariate analysis was performed using the Cox proportional hazards model to examine the factors of VAE (pleural effusion, atelectasis, trauma and burn). The results were pleural effusion (HR: 3.59, 95% CI 1.10–11.66) and burn (HR: 5.34, 95% CI 1.38–20.64).
Conclusion: The high number of burn patients in the EICU suggests that low albumin may be a factor in VAE and that pleural effusion is a common factor in VAE.

Disclosure of Interest
None declared.

P154

Risk factors of healthcare associated infections (HAIS) in intensive care units: an incidence survey in a Tunisian Tertiary Hospital in 2021

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P154

Introduction: Healthcare-associated infection (HAI) is a major public health concern. Controlling this fatal scourge should begin with continuous monitoring of HAI frequency and its associated factors.
Objectives: The aim of this study was to determine independent factors of HAI in a Tunisian university hospital in 2021.

Methods: An observational prospective survey was conducted in the medical and surgical ICU of a tertiary hospital. All admitted to the ICU between August 1st and October 31st, 2021, were included. The onset of infection within 48 h of hospitalization was used to define HAI. Data collection was carried out using a synoptic grid based on the NosoTun sheet. Data extracted from medical records included diagnoses, laboratory results, microbiological data, and antibiotic use. Microbiologically-confirmed bacterial and fungal pathogens from clinical cultures were evaluated to characterize community- and healthcare-associated infections. Multivariate analysis by a binary logistic regression step by step descendent was performed to assess the Independent factors of HAI.
Results: Overall, 318 patients were included in the study. The mean age was 45.6 ± 26.8 years with extremes ranging from 1 month to 94 years. A male predominance was noted (n = 195; 61.3% VS n = 123; 38.7%).
Among them, 44 patients (13.8%) had at least one infection among the sites monitored and 69 infections were recorded, with an incidence of HAI equal to 21.7%.
Multivariate analysis of HAI gave these independent risk factors: Diabetes (OR = 3.97 [1.23–12.81], Central venous catheter (OR = 17.69 [2.74–113.94], urinary catheterism OR = 3.1 [4. 4–143.364], Orotracheal intubation (OR = 31.84 [5.17–196.07]); Bronchial Aspiration (OR = 16.4 [7.5–35.5]) and history of surgeryduring the month (OR 1.95; [1.03–3.76]).
Conclusion: Although aware of its limits, cross sectional study remains a simple research design suitable for HAI monitoring, feasible in our context of reduced resources. Device-associated infections, particularly in critically ill patients should be targeted when scheduling Incidence studies and when tailoring HAI prevention actions.

Disclosure of Interest
None declared.

P155

COVID-19 impact on multi-drug resistant organisms (MDRO) in intensive care units (ICU), in a tertiary care facility, in Saudi Arabia

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Introduction: The COVID-19 pandemic affected the healthcare system worldwide, which created new challenges for infection prevention and control in healthcare facilities.
Objectives: To assess the impact of COVID-19 on MDRO profile and its incidence in adult ICU, and to report risk factors observed in patients infected with these MDRO.
Methods: This was a retrospective, descriptive study conducted between May 2019–March 2023 in 60 adult ICU-beds, in tertiary hospital KSA. All MDRO were collected and included in our surveillance, using the CDC definitions. 591 MDRO and 11950550367patients days (PD) were recorded. We divided the study period to three phases: Pre-COVID-19 Era from May 2019-April 2020, COVID-19 Era from May 2020 to December 2021, and Post COVID-19 Era, from January 2022 to March 2023.
Results: During the study period, the mean incidence rate of MDRO was 6.97cases/1000 PD. This incidence was 8cases/1000 PD, 5.21 cases/1000 PD, and 7.71 cases/1000 PD during Pre-COVID-19, COVID-19 and Post COVID-19 Eras respectively. The Gram-Negative Bacteria (GNB) represented 78% of all isolates. Mostly were *Klebsiella pneumoniae* (216 cases), 35% of them were Carbapenems resistant, *Acinetobacter baumannii* (91cases) and *Pseudomonas aeruginosa* (74 cases). Many risk factors were noticed, the most frequent were receiving antibiotics within the last 90 days in 78%, indwelling devices in75% and prolonged hospital stay (> 5 days) in 67.3%
Conclusion: In our institution, MDRO rate was the lowest during the COVID-19 era, the profile of MDRO was not affected by COVID-19, and GNB continue to lead MDRO of our ICU patients.

Disclosure of Interest
None declared.

P156

Multidrug-resistant bacteria in the intensive care units at Ivoirian Tertiary Care Hospital, Abidjan

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P156

Introduction: Intensive care units in lower-middle income countries are suspected to constitute a special risk for patients of acquiring infection due to multiple antibiotic resistant organisms.
Objectives: The aim of this study was to find out the types of pathogens and to determine their antibiotic resistance.
Methods: This retrospective record-based cross-sectional study was conducted from january 2020 to june 2021 performed in medical biologic service in university hospital of Angre. Bacteriologic data concerned hospitalized patients. Susceptibility of Antimicrobial agents was tested on Vitek 2 Susceptibility cards.
Results: Among 173 samples, 86 were positive (49.71%). The positive blood isolate was the most prevalent infection site (67.44%) followed by urine isolates (13.95%), suppuration (5.81%) and pleurisy (5.81%). Gram-negative bacilli (61.62%) were the most common pathogens, with *Klebsiella pneumoniae* as the most frequently identified one with an incidence of 50% followed by Staphylococcus aureus (13.95%) and Pseudomonas aeruginosa (8.13%). Extended-spectrum beta-lactamase producing Enterobacteriaceae (ESBL-E) were isolated in 47.50%. Among the ESBL-producing isolates, imipenem was resistant in 5%. The Ceftazidime resistance was 42.85% for Pseudomonas aeruginosa. Methicillin-resistant Staphylococcus aureus (MRSA) found in 42.10% of Staphylococcus isolates. A cross resistance with ciprofloxacin, gentamycin and erythromycin were respectively in 50%, 37.5% and 50%. All strains were multidrug resistant (MDR) in 10.46%.
Conclusion: This local prevalence study will aid in establishing an effective antimicrobial stewardship to preserve the potentials of the current antimicrobial agents. In order to adequately implement antimicrobial stewardship as a tool to combat antimicrobial resistance in ICUs.

Disclosure of Interest
None declared.

P157

Prevalence and risk factors of patients colonized with carbapenemases producing enterobacteriaceae (CPE) in adult intensive care unit upon admission

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Introduction: Colonization withCarbapenemases Producing Enterobacteriaceae (CPE) is a risk factor for bacterial transference to subsequent endogenous CPE infectionswhich is associated with high rate of morbidity and mortality.
Objectives: This study aimed to determine the prevalence and risk factors of CPE colonization at admission in adult ICU at Prince Sultan Military Medical City (PSMMC).
Methods: It is a prospective study including all newly admitted patients in (PSMMC-ICUs) since the implementation of the routine screening for CPE in December 2022. Rectal swabs were collected upon admission and CPE were screened using molecular tests (CARBA-R). Demographic, medico-surgical history and clinical data were recorded and analyzed using SPSS 20.0. Risk factors were determined through Multivariate analysis with logistic regression. P value less than 0.05 was considered as statistically significant.
Results: These are preliminary results. A total of 201 patients (mean age 52.9 + / − 21.8 years; 51.2% are male) were included until May 23, 2023. The prevalence of CPE colonization was 21.4% (n = 43) and the most prevalent genes detected were OXA-48 (83.7%) and NDM, (48.8%). More than half of colonized patients (53.4%) presented only one gene and 39.5% were simultaneous positive to two genes. Independent risk factors associated with CPE colonization on admission were: history of ICU admission ($p = 0.039$), receiving antibiotic with the last 90 days before ICU admission ($p < 10^{-4}$), had gastrointestinal surgery within the last 12 months ($p = 0.022$) and patient with immunosuppressive disease or treatment on ICU admission ($p < 10^{-4}$).
Conclusion: This study revealed a high prevalence of CPE colonization in pre-admission ICU patients. Early detection of colonized patients and understanding their risk factors seems to be important either for infection control and ICU teams.

Disclosure of Interest
None declared.

P158

Risk factors of acquired carbapenem-resistant enterobacteriaceae infections in adult-intensive care unit (ICU)

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Introduction: Infections caused by Carbapenem-resistant *Enterobacteriaceae* (CRE) aresignificant threat to the world's health and associated with increased morbidity and mortality.
Objectives: This study aimed to determine the incidence rate and independent risk factors of acquiring CRE infection during ICU stay.
Methods: It is a prospective study including all newly admitted patients in adult ICU at Prince Sultan Military Medical city (PSMMC-ICUs) for more than 48 h, with no clinical infection with CRE at admission. All patients were screened by rectal swabs for Carbapenemases -Resistant *Enterobacteriaceae*, using molecular tests (CARBA-R) and monitored until ICU discharge for acquired infection with CRE. Demographic, medico-surgical history and clinical data were recorded and analyzed using SPSS 20.0. Multivariate analysis with logistic regression was performed to determine independent risk factors for CRE infection. *P* value less than 0.5 was considered as statistically significant.
Results: From December 2022 until May 23rd 2023, Two hundred and one patients were admitted to ICU, 35 patients acquired infection with CRE. The incidence rate was 17.4% and it was significantly higher among elderly patients aged ≥ 60 years ($P = 0.008$). Bloodstream infections with *Klebsiella Pneumonia*carbapenem resistant were the most frequent Clinical infection (25.7%). The mortality rate was significantly higher among infected patients compared to those none infected with CRE (48.6% versus 20.6%; $P = 0.001$).
Independent risk factors for CRE acquired infections are: invasive devices as; Nasogastric Tube, Central line and tracheostomy, with respective Odds ratios (OR) and confident intervals 95% (CI) 2.52 (91.04–6.12), 8.08 (3.37–19.35), 3.18 (1.03–9.76). Moreover, Diabetes and being colonized with CRE on admission were significantly associated with acquired CRE infections with OR = 2.86 CI (1.24–6.63) and OR = 3.15 CI (1.26–7.84); respectively.
Conclusion: our study highlighted that diabetes, devices and Carbapenemases Resistant*Enterobacteriaceae*colonization are the risk factors for developing CRE infections.

Disclosure of Interest
None declared.

P159

Bacterial meningitis associated with ventriculoperitoneal shunting: experience of the university hospital of Tizi-Ouzou

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Introduction: Nosocomial bacterial meningitis (NBM) on ventriculoperitoneal shunt (VPS) is one of the infections of concern by its frequency and by the nature of the bacteria involved.
Objectives: The aim of our study is to describe the epidemiological, clinical and evolutionary aspects of this meningitis in a neurosurgery department.
Methods: This is a prospective observational study over 6 years. We included all patients who presented with meningitis on VPS and whose bacterial nature is documented by CSF culture, VPS or blood culture.
Results: We diagnosed 28 episodes of NBM on VPS for 176 implementations of VPS for the same period, an incidence of 15.9%. Eleven patients are male. The age varies from 01 month to 74 years. The time to onset of meningitis in relation to the implantation of the VPS is in average of 34 days (05 to 276 days). Sixteen episodes occurred when the duration of surgery was greater than 90 min.
Fever is present in only 13 cases. Three clinical pictures predominate: neuromeningeal signs (17), digestive signs (10), isolated fever (07). The appearance of the CSF is cloudy (20) clear (06) hemorrhagic (02). Thirty bacteria were identified (including two coinfections): Klebsiella (09), Pseudomonas (07), Staphylococcus (05) *E. coli* (03), others (06). In addition to antibiotic treatment, VPS was replaced by the external ventricular shunt (16), by a VPS (06) or left in place (06). The average duration of delivery of the VPS is 45 days. The average hospital stay is 48 days. Four patients died.
Conclusion: VPS associated meningitis is common. Its diagnosis must be evoked whatever the clinical picture in the carrier of a VPS, and the temporary withdrawal of this one seems essential to us. The germs responsible are MDRBs.

Disclosure of Interest
None declared.

P160

Acinetobacter baumannii multi-drug resistant detection in intensive care unit environmental setting: evaluation of sanitation

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Introduction: *Acinetobacter baumannii* multi-drug resistant is considered a health care threath and is nowdays emerged as nosocomial pathogen. Hospital hygiene monitoring data would result in an implementation of hygiene standards and evaluated the sanitation procedures for *A. baumannii* eradication.
Objectives: We report the evaluation of the effectiveness of microbiological and sanitization procedures used in a intensive care unit after a colonized *A. baumannii* patient discharge.
Methods: Samples from selected surface of intensive care unit box housing an *A. baumannii* colonized patient were collected after discarge and sanitization procedure with chlorine 1400 ppm with FLOQSwabs with SRK® Hygiene Monitoring System (Copan, Italy).
25 samples has been streaked out on six culture media plates, namely Blood Agar, Nutrient Agar, MacConkey Agar, Mannitol-Salt Agar, ChromoIDVRE (BioMerieux), ChromoIDESBL (BioMerieux) using 100 µl of SRK diluent of swab within 4 h at room temperature. All plates were incubated at 37 °C for 24 h and then at room temperature for 72 h.
Microbial growths were evaluated and identified using Maldi-Tof mass spectrometry (VITEK-MS BioMerieux).
Samples from the same intensive care unit box were repeated after sanitization procedure with chlorine 5000 ppm.
The last procedure was repeated for all boxes.
Results: Three Samples out of 25, after sanitation with 1400 ppm chlorine showed the presence of *A. baumannii* MDR producing the carbapenemase bla_{OXA-23}. The still contaminated surfaces were monitor touch screen, bed rails.
After the sanitization with 5000 ppm chlorine no *A. baumannii* strains were found.
All intensive care unit boxes were cleaned with 5000 ppm chlorine procedure and all post sanitation samples never showed the presence of *A. baumanni* or others multi-drug resistant strains.
Conclusion: We underline the importance of the environment control for the trasmission of nosocomial infections; *the* absence of *A. baumannii* carbapenemase producing and other MDR strains after sanitization highlights the advantages of specific environmental sampling.
For *A. baumannii* we found that the use of 5000 ppm chlorine procedure is more efficient in the surfaces sanitation.

Disclosure of Interest
None declared.

P161

Contaminated sink trap in an intensive care unit as a source of local acquisition of carbapenemase producing enterobacteriaceae

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Introduction: Sinks can be potential reservoirs of nosocomial pathogens including multidrug-resistant enterobacteria, extended-spectrum beta-lactamase [ESBL] or carbapenemase-producing enterobacteriaceae [CPE]. To control the risk of Pseudomonas aeruginosa transmission from sinks and tap water to patients in our ICU, we introduced 'water-free' patient care and monitoring of the environment and patients for more than 10 years. Following the identification of a nosocomial case of S. marcescens-KPC in December 2022, we launched an investigation.
Objectives: To investigate CPE contamination of ICU patients and sink traps.
Methods: Sink traps from all ICU patient rooms were sampled for CPE detection in November 2022. Records of ICU patients with positive cultures of CPE from January 2021 to December 2022 were reviewed. For each CPE carrier, pathway in the unit was described. Environmental and patient strains were compared using whole genome sequencing.
Results: Of the 29 sink traps investigated, 8 were contaminated with CPE: 5 with S. marcescens KPC and one each with C. freundii OXA 48, K. pneumoniae KPC and K. oxytoca VIM/NDM. During the investigated period, 11 patients carried or were infected with CPE, two of them with S. marcescens-KPC. These two patients stayed in the same ICU room 18 months apart and it sink trap was contaminated with S. marcescens-KPC. Genotyping of patient and environmental isolates showed that they were genetically very close, suggesting a chain of transmission. The most likely hypothesis is that the first patient contaminated the sink trap which subsequently contaminated the second patient 18 months later. Corrective measures (changing traps and weekly bleach-disinfection) were implemented to remove this reservoir and prevent recontamination.
Conclusion: Our investigation shows that even with a water-free care strategy, sink traps remain a potential reservoir of nosocomial infections. These results support environmental surveillance and question the indication of systematic sink traps disinfection or even permanent removal in high-risk units.

Disclosure of Interest
None declared.

P162

Are interventions on sinks in the ICU effective to reduce risk of infection or colonization with gramnegative bacteria? A systematic review of the literature

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Introduction: Nosocomial infections are a major problem in intensive care units (ICU). The hospital water environment is a potential reservoir for gramnegative bacteria (GNB). It has been shown that contaminated sinks contribute to the spreading of GNB in outbreak and non-outbreak settings.
Objectives: We aim to investigate the role of sinks as a risk factor for infection and colonization with GNB in the ICU in non-outbreak settings.
Methods: We performed a systematic review on the effectiveness of interventions on sinks in ICU in non-outbreak settings. The review has been registered at PROSPERO (CRD42022336366). We searched Medline via PubMed and Embase via Ovid and ClinicalTrials.gov without language or date restrictions. Studies of any design were included if they described an intervention on the water outlets in patient rooms and presented data about nosocomial infection or colonization rates. We excluded studies reporting outbreaks or focusing on *Legionella* species.
Results: We identified 7,039 search results, 4,404 after deduplication. Screening of title and abstract resulted in 51 articles eligible for full text screening. 11 articles were included in the final analyses. Investigated interventions included sink removal (n = 3), water filters (n = 5), sink trap heating and vibration devices (n = 3), new tap devices (n = 2) and hopper covers (n = 1). Six studies reported *Pseudomonas aeruginosa* infection or colonization as primary outcome. 10 out of 11 of the included studies reported effectiveness of the implemented measures in reducing nosocomial colonization or infection with GNB, but there was a big heterogeneity among studies with moderate to low quality of evidence.
Conclusion: Few studies investigate the association of sinks in patient rooms with health-associated acquisition of GNB in non-outbreak settings. Heterogeneity in study design, and low quality of evidence make it difficult to evaluate single measures. Prospective trials are needed to further investigate the question if removing sinks from patient rooms can reduce the endemic rate of nosocomial infection in the ICU.

Disclosure of Interest
None declared.

P163

Handwashing sink contamination and carbapenem-resistant *Acinetobacter baumannii* infection in the intensive care unit: a prospective multicenter study

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Introduction: Handwashing sinks form an important component of infection control systems and are common in hospitals, including the intensive care unit (ICU). At least one handwashing sink should be present for every 2 ICU beds according to the guidelines of the Ministry of Health, China. Previous studies have identified that handwashing sinks can become contaminated by carbapenem-resistant *Acinetobacter baumannii* (CRAB) during the period of outbreak. While what is the level of sinks contamination and whether the contaminated sinks were the source of patients infections or outbreak have not been well understood as those single-center studies.
Objectives: The extent to which handwashing sinks are contaminated by CRAB and to what degree contaminated sinks are associated with CRAB hospital infections remain largely unknown. To address these questions, we conducted a prospective multicenter study in ICUs in China.
Methods: We performed a prospective multicenter study in 16 intensive care units (ICUs) (9 general and 7 neonatal) at 11 hospitals. All sinks at these locations were sampled to screen CRAB. All CRAB clinical isolates recovered between 2 weeks before and 3 months after sampling in ICUs with CRAB-positive sinks or other participating ICUs at the same hospital were collected. Whole-genome sequencing of all isolates was performed. Isolates of the same sequence type (ST) were assigned to clones by calling single-nucleotide polymorphisms.
Results: Among 158 sinks sampled,16 CRAB isolates were recovered from 16 sinks in 5 ICUs, corresponding to a 10.1% CRAB contamination rate. Twenty-seven clinical isolates were collected. The 43 CRAB isolates belonged to 2 STs, including ST2 (n = 42,36 had both $bla_{\text{OXA-23}}$ and $bla_{\text{OXA-66}}$, 5 only had $bla_{\text{OXA-23}}$, 1 had both $bla_{\text{NDM-1}}$ and $bla_{\text{OXA-98}}$) and ST203 (n = 1, had both $bla_{\text{OXA-23}}$ and $bla_{\text{OXA-66}}$). Three clones (clone 2c in ICU 1G, clone 2a in ICU 4G, clone 2i in ICU 3G) of ST2 CRAB sink isolates were likely to be the source of patients infections or outbreak.
Conclusion: Contaminated handwashing sink was likely to be important source of CRAB in our local settings. To use the sink restrictly for handwashing and to clean or disinfect sink daily were of great importance.

Disclosure of Interest
None declared.

P164

Impact of multifaceted interventions including waterless patient care on endemic serratia marcescens in an intensive care unit (ICU)

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Introduction: Attaining long-term control of nosocomial *S. marcescens* reservoirs is challenging. Our ICU faced endemic spread of nosocomial *S. marcescens*, with regular clusters.
Objectives: We aimed to investigate an aquatic reservoir, risk factors for *S. marcescens* acquisition, and effectiveness of multifaceted interventions to control endemic *S. marcescens*.
Methods: Patient and environmental samples were performed between 2017 and 2018. Genomic relatedness was assessed by cgMLST on 49 *S. marcescens* isolates between 2015 and 2017. Interventions included audits (August 2017–July 2021), behavioral interventions (February–March 2018) with educational rounds and procedures, and sink removal (September 2020), due to a concomitant VIM-producing *P. aeruginosa* outbreak. We performed a case–control study to assess risk factors for *S. marcescens* acquisition, and interrupted time-series analyses using multivariate Poisson regression models including 290 positive patients over 11 years to assess the impact of the main interventions on *S. marcescens* incidence.
Results: Within a pre-existing endemic situation (incidence, 3.9 cases per 1′000 patient-days), we observed in 2017 a polyclonal outbreak of multi-susceptible *S. marcescens* (*n* = 16 patients), with an environmental strain clustering with 8 patients (15 single-nucleotide variants). The audits identified architectural flaws in sinks and their surroundings (e.g., proximity to washer-disinfectors in confined spaces). Compared to 70 controls, 14 cases were associated with a mechanical ventilation > 48 h (OR 39.9 [95% CI 1.4–1′107.8]), coinciding with a predominance of respiratory samples (77.6%). Neither the behavioral intervention nor sink removal had a statistically significant effect on *S. marcescens* rates (IRR 1.3 [95% CI 0.1–16.3] and 9.1 [95% CI 0.1–1′616.8]). Similar results were obtained when including patients detected ≥ 5 days after ICU admission with a prior negative test (n = 68).
Conclusion: We failed to control endemic and epidemic occurrence of *S. marcescens* in our ICU, despite intensive efforts and interventions targeting the aquatic reservoir. This highlights the need to further explore hidden reservoirs and alternative transmission routes (e.g. long-term intubated patients).

Disclosure of Interest
None declared.

P165

Collateral damages of a waterless intensive care unit

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Introduction: Since 2019, waterless patient care was implemented in the intensive care unit (ICU) following a *Pseudomonas aeruginosa* VIM outbreak linked to environmental water sources. On January 18th 2023, *larvae* were observed at the entrance of a pipe dedicated to dialysis effluents evacuation.
Objectives: To investigate the origin of larval contamination in sewage pipes of a waterless ICU.
Methods: As part of the ICU waterless strategy, most of the sinks were sealed off precluding liquid flow in sewage pipes. For renal replacement therapy, a system comprising an auto-effluent drain has been implemented since 2021. The dialysis effluent is eliminated in the sewage pipes via a removable wall installation.
The solutions to eliminate the *larvae* were limited. A thermal disinfection at 130/150 °C was not possible because of the risk of damage to the pipes. A chemical disinfection with bleach was ineffective due to the difficulty of application on all pipe's walls. The day after the detection of *larvae*, we implemented a thermal disinfection with water at 60 °C for 30 min together with a chemical disinfection.
Results: Five days after the procedure, *larvae* were observed in evacuation pipes of 2 other boxes and 2 weeks later in the index box. A second thermal disinfection was done together with a chemical disinfection with a chlorine dioxide-based solution and mechanical action. Since January 30th, the thermal disinfection procedure was systematically applied to the pipes after each patient discharge and planned for the annual technical inspections of the pipes of all 12 ICU boxes. We did not observe any *larvae* after a 5-months follow-up period.
Conclusion: Waterless patient care may disrupt the waste-water evacuation by limiting the flow in some sewage pipes. The presence of *larvae* may be explained by the stagnation of residual liquids from the effluents in the siphons and their retrograde migration from downstream pipes. The systematic application of a thermal and chemical disinfection procedure after the pipes use was effective in controlling larval contamination.

Disclosure of Interest
None declared.

Poster session: Infection prevention and control in low- & middle-economy countries

P166

Comprehensive global health approach through design science and participatory action research for addressing AMR-related silos in low-resources settings

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Introduction: Sociocultural cognitive constructs influence infection control teams' actors (ICT) for Antibiotic Stewardship (ABS) through positive behavioural change in the antibiotherapy prescription. COVID-19 deepened the Antibiotic Resistance (AMR) problem, showing serious vulnerabilities in health systems resilience.
ICT through digital healthcare services promote positive change, specially in participatory and collaborative work settings.
Objectives: The study aimed at understanding the factors that really influence HP's perceptions, actions, and behaviour, interacting with AR control, in less-resources settings, evaluating the option of a digital ABS.
Methods: A Design Science and Participatory Action Research approach established a 6-step ABS multidisciplinary process in 2 tertiary hospitals of Cape Verde (CV; 2018–2021).
Ethnographic study was performed. ICT narratives from ward observation (n = 2), interviews (n = 10), work meetings (n = 2) were categorized and clustered for correlated pairs (Pearson (p) dendrogram, by word and theme similarity).
Social and cultural constructs for behaviour change were identified and analysed in order to inform a Multimodal Ecological Model in Global Digital Health addressing AMR from local to global scales, with conditioning factors for positive behaviour change towards a digital ABS, in CV.
Results: The model MEM@GlobalAMR integrates sociocultural constructs ($p > 0.88$), distributed throughout dimensional waves representing professional's social interaction, work nature and context, from individual to global health levels.

> *"If you go to the hospital with hepatitis, you die! (...) Here this is cured with tea and prayers". "Emergency room, intensive care (...) we're in no condition! There's no way!"*

Cultural constructs (Hofstede, 2010) were related to social constructs (Pittet, 2004) in a Matrix for main factors of convergence and divergence among participants.
Education, communication and support network are pillars for sustainability.
Conclusion: Unconscious and conscious actions, concerns, decisions, and organizational factors informed the model for intervention. Teamwork is the path to understand the problem and build the MEM@GlobalAMR for digital ABS, contributing to a first National Program for Patient Safety.

Disclosure of Interest
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P167

The challenges of mounting a successful infection prevention and control programme in health care facilities in conflict and limited resource settings in northern Ethiopia 2021–2023

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Introduction: Northern Ethiopia has experienced many challenges as a resource-limited setting affected by humanitarian crisis from 2020 to 2023, disrupting essential health service delivery including the implementation of Infection Prevention and Control (IPC) interventions in health care facilities (HCFs).
Objectives: To highlight the significant challenges faced in mounting a successful IPC emergency response within HCFs in Northern Ethiopia.
Methods: In collaboration with the regional health bureaus, a rapid IPC assessment was conducted in May 2022 using the WHO African Regional Office IPC scorecard tool in Tigray, Amhara and Afar regions. Additionally, documentation review was conducted. Advocacy was made to partners and stakeholders to fill gaps identified.
Results: 70%, 43% and 37% of the HCFs do not have IPC functioning programme respectively in Tigray, Amhara and Afar regions during the conflict.
The Tigray Regional Health Bureau reported that 72% of health centers and 80% of hospitals have been destroyed by the armed conflict as of February 2022. 49.4% of HCFs were damaged and looted in Amhara region and 28% in Afar region.
The conflict led to the displacement or resignation of healthcare personnel, initiating new challenges associated with staff shortages and creating a knowledge gap in IPC practices. According to OCHA (Feb 2022), 50% of health workers were not present in HCFs in Tigray region.
During the conflict, 27% of health workers were trained on IPC in Afar, 23% in Amhara and 0% Tigray region. However, 344/20000 (1.72%) health workers were trained on IPC in Tigray region following the peace agreement signed in November 2022.
Conclusion: Addressing the IPC challenges faced in Northern Ethiopia requires a comprehensive approach that combines emergency response with long-term investments in healthcare infrastructure and health workforce. It is essential to strengthen Northern Ethiopian healthcare system to be able to respond to all types of public health emergencies.

Disclosure of Interest
None declared.

P168

Knowledge, perception and practice of infection prevention and control in health care facilities in Nigeria

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Introduction: Patients and health workers are continually at risk of avoidable infections in the patient care continuum. The covid-19 pandemic highlighted the extent at which infections can be cross-transmitted within healthcare settings and underscored the importance of infection prevention and control as a key strategy for preparedness and building capacity for response. Yet, there is limited evidence to show how the covid-19 pandemic impacted on IPC practices in healthcare settings in Nigeria.
Objectives: To examine the impact of the Covid-19 pandemic on healthcare workers knowledge, perception and compliance with IPC practices in healthcare facilities in Nigeria.
Methods: A web-based cross-sectional was conducted between August-December, 2021 in Nigeria among 414 health workers selected through stratified random sampling. Data were collected using pretested self-administered questionnaire. Data were entered into Microsoft Excel and exported to SPSS version 28.0 for analysis. Data was analysed using chi-square to test the association between the variables and multinomial logistic regression analysis was used to identify possible factors associated with knowledge and practice of IPC.
Findings were presented using odd ratios with their 95% confidence interval, statistical significance was declared if p-values were less than 0.05.
Results: There was statistically significant association between the impact of Covid-19 on the respondents' perception, knowledge and compliance to IPC measures/practice ($p = < 0.0001$, $p < 0.05$). The positive correlation between IPC knowledge score and practice, was strongest during the lockdown, before the roll-out of vaccine ($r = 0.873$, $p = < 0.0001$) and ($r = 0.721$, $p = < 0.0001$) after the roll-out of covid-19 vaccine, with the weakest scores recorded before the Covid-19 pandemic era ($r = 0.338$, $p = 0.0001$). Positive predictors of knowledge and practice of IPC include: recent training on IPC, nursing profession, working in tertiary hospitals and working within specialised units.
Conclusion: The Covid-19 pandemic resulted in higher perception of IPC with significant improvement demonstrated in knowledge and compliance to practice of IPC measures. The highest level of compliance was reported during the lockdown, declining slightly after the roll-out of the Covid-19 vaccine, which indirectly questions the sustainability of IPC behaviour.

Disclosure of Interest
None declared.

P169

A review of isolation challenges in a resource constraint setting at the Queen Elizabeth Hospital (QEH) Barbados (2017–2022)

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Introduction: Isolation precautions are important elements & reduces spread of highly infectious disease especially in LMIC countries or high-income countries with low resources. Barbados' IPC program has developed since a significant outbreak in 2015 of CRKP. For small countries with low resource capacity the ability for isolation of all elements of additional precautions can be challenging. Barbados' average bed capacity is 400 with a non-COVID-19 isolation capacity of 11 rooms for a 300 000 population. The average length of stay was 30 days. There is limited rapid diagnostic capacity in country.
Objectives: To highlight the challenges associated with additional precautions for isolation in limited resource settings.
Methods: The IPC department uses both active & passive mechanisms to identify patients requiring isolation at QEH. The microbiology, PHL & the IPC team collaborates in identifying WHO priority organisms for isolation. The department does daily rounds in the lab to confirm & and verify reported cases. The surveillance nurse from MOH also monitors & identifies community cases that require isolation e.g. TB, or other highly infectious diseases. The process of documenting capacity started in 2017 using a standard Datasheet.
Results: The most common additional precaution is contact precautions. The most common reason for isolation in the study was causes related to non-*C. diff* diarrheal causes (Table 1). CRKP whether colonisation or infection accounted for 26–40% of the overall isolation capacity for the study period. Diarrhea at admission or on hospital admission took an average of 1 week for identification of a pathogen. On most occasions the cause for the diarrhea was unestablished diagnostically or clinically.
Table 1; Common reasons for isolation.

	2017	2018	2019	2020	2021	2022
CRKP	37	49	21	40	27	52
C.diff + ve	6	15	6	6	10	3
TB + ve	7	7	0	3	2	5
Diarrhoea	57	61	61	48	66	28
MDR *A. baumanii*	5	2	2	0	0	0
MDR P. *aeruginosa*	1	1	5	1	0	0

Conclusion: Countries with limited isolation capacity are often challenged. The identity of C. diff after 2018 by Gene-Xpert has been helpful. This study highlights the need for a global look at introduction of rapid diagnostic technology in the setting of diarrheal illness in LMIC and the need for sustaining IPC programs in the control of diseases spread by contact in low resource settings.

Disclosure of Interest
None declared.

P170

Efforts and initiations for infection prevention and control in Nepal

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P170

Introduction: Infection Prevention and Control (IPC) is a practical and evidence-based approach to prevent patients and health workers from avoidable infections harms caused by Healthcare Associated Infections (HCAIs) and antimicrobial resistance. Effective IPC is necessary to achieve effective quality health care delivery.
Objectives: To discuss the current situation and implementation of activities related to IPC in Nepal.
Methods: Desk review was conducted. Different literatures, reports and policy documents related to IPC in Nepal were reviewed and descriptive analysis was conducted.
Results: Nepal is on its way to finalize its first national guidelines on IPC. A two day National Symposium on IPC was held in Kathmandu on 30–31 July 2022 to gather feedback on the draft of the first national guidelines on IPC, which was organized by Nursing and Social Security Division of Department of Health Services. The guideline focuses on bringing uniformity and improving standards of IPC practices throughout the country as well as decreasing the burden of HCAIs among health care workers, patients, caretakers, visitors, and those involved in the practice of IPC measures. An action plan has been prepared for the endorsement and implementation of the guidelines that emphasize preparing appropriate IPC programs, frameworks and strategies for implementation of the program, proper allocation of budget and resources, capacity building of health workers and monitoring and evaluation of programs.

Nursing and Social Security Division is taking lead in activities related to IPC in the country. This division has developed and implemented a training package on IPC based on blended learning approach with the aim of preparing certified infection control nurses. The training package is of 3 months duration with 6 weeks online module (one module per week) and 6 weeks of clinical posting based on face to face learning.
Conclusion: Nepal needs to finalize, endorse and implement the guidelines as soon as possible throughout the country. There is a need to prepare national IPC programs and implement it based on needs and priorities by considering human resources, budget availability, logistics and supplies and development of necessary infrastructures. The effective implementation of IPC programs could be a major breakthrough for preventing health care associated infections in the country.

Disclosure of Interest
None declared.

P172

The association of microbiologic profile and clinical outcomes among admitted covid-19 patients with primary bacterial co-infection in a tertiary hospital in the Philippines: a retrospective study

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Introduction: Bacterial co-infections have been reported in COVID-19 patients leading to less favorable outcomes. Most studies reported overall co-infection rates not distinguishing between primary and later co-infections. Discerning concomitant bacterial sepsis can be difficult, therefore, treating patients empirically with antimicrobials is not unreasonable. Rizal Medical Center, a tertiary hospital in the Philippines, catered to COVID-19 patients since the start of February 2020 and reported its first COVID-19 case on 14 March 2020. The hospital was able to record 2,504 confirmed cases as of May 2022.
Objectives: This study aims to determine and evaluate the association of the microbiologic profile with clinical outcomes of admitted COVID-19 patients with primary bacterial co-infection.
Methods: This retrospective cross-sectional study was conducted at Rizal Medical Center. Patients with final diagnoses of COVID-19 Infection from March 1, 2020, to January 31, 2022, were reviewed. A total of 362 patients were included, identified through an assigned case code, and categorized based on severity. Patient demographic characteristics, clinical profiles, and outcomes were noted. The collected sputum, urine, and blood for culture were used for the analysis. Patients with cultures studies unavailable, not done, or taken > 48 h after ER admission were excluded. Statistical analyses were carried out using MedCalc Statistical Software and Microsoft Excel 2022.
Results: Overall, the prevalence of primary bacterial co-infection in COVID-19 is 8.6%. There was no significant difference between patients with primary bacterial co-infection and none in terms of vital signs upon emergency room presentation, disease severity, hospital duration, risk of development of secondary infection, and mortality outcomes.
Conclusion: Concluding that community-acquired bacterial co-infection in COVID-19 is infrequent. Despite the low frequency of co-infection, empiric antibiotic administration was high. Overall, 77.8% of the co-infected patients who eventually died were infected with gram-negative organisms which also showed significant antimicrobial resistance.

Disclosure of Interest
None declared.

P173

"NO ONE IS SAFE, UNTIL EVERYONE IS SAFE"—The Malaysian red crescent response to COVID-19 vaccination for refugees, asylum seekers and migrants in Malaysia

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Introduction: Refugees, asylum seekers and migrants generally experience poor access to healthcare due to suboptimal health-seeking behaviour, logistic issues and fear of detention and deportation. During the recent pandemic, as part of inclusion of these vulnerable populations in the COVID-19 vaccination policy, the Malaysian Red Crescent (MRC) was given mandate by the Malaysian government to conduct outreach vaccination programmes.
Objectives: To describe the profile of COVID-19 vaccine recipients from MRC's outreach for refugees, asylum seekers and migrants.
Methods: MRC conducted a total of 291 days of outreach over 20 months (September 2021 to April 2023). Data was collated at the end of each event to provide overall statistics.
Results: MRC collaborated with 36 partners, including community-based and non-governmental organisations to deliver 48 572 doses of COVID-19 vaccines over 20 months. 45 546 (93.8%) doses were administered to recipients ≥ 12 years old while the remaining 3 026 (6.2%) doses were given to children aged 5–11 years old. Vaccine recipients were from 41 countries with a majority of them from Myanmar (23 701 doses, 48.8%) and Indonesia (9 928 doses, 20.4%). A total of 19 867 (40.9%) doses were first dose, 13 672 (28.1%) were administered as second dose and 15 033 (31.0%) were booster doses (third and fourth doses). The outreach programme involved 465 Malaysian volunteers and 386 volunteers from refugee, asylum seeker and migrant communities. The vaccine outreach provided opportunity to engage and build trust with community representatives, empower community volunteers to participate in the outreach and develop capacity among medical and non-medical volunteers. MRC continued community engagement with these underserved populations by providing regular health screenings, mental health and psychosocial support, health awareness workshops and community training in health.
Conclusion: The COVID-19 vaccination programme for refugees, asylum seekers and migrants undertaken by MRC allowed for more health intervention programmes and potentially stronger emergency response in the future.

Disclosure of Interest
None declared.

P174

Strategies in increasing the case finding and infection prevention and control of tuberculosis in Indonesia Redcross Bogor Hospital after COVID19 pandemic

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Introduction: Abstract: Tuberculosis continous to be a global health threat. Indonesia is the 3rd country which has the highest number of tuberculosis in the world. However, the number of tuberculosis was significantly decrease during the COVID19 pandemic. Globally, The cumulative fall in the TB incidence rate was 13.5% between 2015 and 2020. Increases in the number of people not detected and thus not treated for TB result in increases in the number of deaths caused by TB.

Objectives: Aims: This report aims to describe the strategy in increasing cases finding of Tuberculosis patients and infection prevention and control (IPC) among patients and healthworkers in Indonesian RedCross Bogor Hospital.
Methods: Method: This is a descriptive study. We collected the number of tuberculosis cases before, during and after COVID 19 pandemic and all the strategies of IPC activities related to tuberculosis in Indonesian RedCross Bogor Hospital.
Result: The number of tuberculosis patients before COVID19 pandemic in 2019 was 792 cases. While during COVID19 pandemic it was a significantly decrease to 190 cases (in 2020) and 579 cases (in 2021). The IPC Commitee arrange some strategies such as; (1) Triage of people with TB sign and symptom; including scrining the high-risk population; (2) Isolation of infectious TB patients; we provided the standard respiratory isolation emergency room, ICU, inpatient and outpatient care, (3) Standard diagnostic examination; provided our standard gene xpert and conventional microscopic smear, radiological and patological examination, (4) Provide adequate protective personal equipment (PPE) and annual scrining for the healthworker; (5) Give standard TB treatment, ensure the availability of anti-TB drugs; evaluate the treatment progress regularly; (6) Continous TB education, training and counseling program to patients and family, healthworker and the community. In first quarter of 2023, the number of TB patients was 273 cases (increase 426,5% than 2020 and 14,1% than 2021 in the same quarter), while there is no report of tuberculosis cases ih healthworker.
Conclusion: These strategies have been significantly increase the number of tuberculosis case finding in post pandemic era, while there is no report of tuberculosis cases ih healthworker. Regular monitoring and evaluation were needed to maintain this implementation optimally.

Disclosure of Interest
None declared.

P175

Ebola virus disease: knowledge, attitude and prevention practices—the case of Uganda

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Introduction: Ebola virus disease (EVD) is a severe haemorrhagic disease caused by the Ebola Virus. A single spillover event into the human population was responsible for the initial DRC outbreak. The disease is transmitted through infected body fluid, EVD has a high fatality rate. Uganda has experienced multiple Ebola outbreaks.
To address the need for renewed engagement between the government and citizens regarding Ebola prevention, this study aimed to assess the knowledge, attitudes, and preventive practices towards Ebola virus disease in different regions of Uganda.
Objectives: To determine the level of knowledge, attitude and prevention practices towards Ebola Virus in the different regions of Uganda.
Methods: This study employed a descriptive community-based cross-sectional design with a quantitative approach conducted in Mbale, Lira and Mbarara cities from eastern, northern and Western Uganda respectively. participants were randomly interviewed to assess their knowledge, attitude and preventive measures towards Ebola virus disease.
Data was collected using electronic forms. and analysed with Stata 15.
Results: The study enrolled 737 participants from Mbale City, Eastern Uganda, (118, 16%), Mbarara City, Western Uganda (380, 51.6%) and Lira City North Eastern Uganda (239, 32.4%).
The majority of the participants had heard of Ebola mainly through social media OR = 9.8 (2.2, 43.5), ***P*** = 0.003 and Television OR = 4.0 (1.6, 10.1), ***P*** = 0.004; OR = 8.6 (4.0, 18.4.5), ***P*** = 0.001 and 2.1 (1.4, 3.3), ***P*** = 0.001 respectively 69% had knowledge about the Spread, Signs and symptoms and prevention of Ebola Medical personnel were most knowledgeable about how to approach a suspect of Ebola, OR = 8.6 (2.4, 30.4), P = 0.001.
Conclusion: Urban communities are more knowledgeable with better attitudes towards pandemic outbreaks, though varies from region to region. Public perceptions, community engagement and social media may be useful tools in mapping knowledge and awareness strategies for diseases outbreaks.

Disclosure of Interest
None declared.

P176

Health literacy for AMR—insights from limited resource setting

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Introduction: A recent article by Murray et al.(2022) published in Lancet attributes AMR as one of the leading cause of death in the world with highest burden in low resource setting. India carries one of the largest burdens of drug-resistant pathogens worldwide and is among the highest consumers of antibiotics. With fewer research on the awareness about antimicrobial resistance (AMR) in communities and increasing antibiotic consumption, it is imperative to understand the health literacy (HL) needs for AMR in the low resource setting.
Objectives: As emphasized by one of the five objectives in the Global action plan for AMR (WHO, 2015), the current study endeavours to understand what constitutes "effective communication and education" under the health literacy framework. Thus, it can be hypothesized that the challenge of AMR can be addressed with health literacy at the community level.
Methods: The methodology involves qualitative research through in-depth interviews (n = 31) of individuals living in the villages around the Primary Health Centre (PHC) (empirical site). In the interviews the health-seeking practices are observed and through thematic analysis they were analysed as described by Braun & Clark (2006).
Results: The findings were divided into two categories—the first part shares the overview of the health-seeking journey in the community—the meaning of health & the 'doctor' in the community.
The second part present the six-health literacy needs based on the health seeking practices in the community, which are as follows;

i. Making medical concepts comprehensible.
ii. Creating awareness of risky behaviour and its consequences.
iii. Guidance in choosing the appropriate pathway of care iv. Enabling the flow of information from a source that is highly trusted.
v. Strengthening support for community organizations to encourage conversation.
vi. Addressing the needs of marginalized groups to reduce health information inequities.

Conclusion: As presented in the findings the challenges of health literacy for antimicrobial resistance in the community is affected by political, social and cultural challenges. This situation correlates to the integrated conceptual model of health literacy presented by Sørensen et al. (2012). The findings suggest that the challenges of AMR are the problem of interconnectedness between individual behaviour, social,

economical and political determinants therefore need to bridge the gap through appropiate policy changes.

Disclosure of Interest
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P177

A rare case of hospital acquired pneumonia with parapneumonic effusion caused by Bacillus clausii—a case report

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Abstract video clip description: Bacillus clausii is a commonly known gram-positive bacilli that is commonly used as a prebiotic. This bacteria is usually non-pathogenic and is used to treat patients with acute diarrhea or irritable bowel syndrome.
This report discusses a 94 year old male, known hypothyroid, with a initially presenting with a 3 week history of persistent cough eventually transferred to our institution after 2 weeks of antibiotic treatment without resolution where cultures of pleural fluid done showing Bacillus clausii.
Due to his symptoms, they prompted consult in their initial institution, managed as community acquired pneumonia, and was started on Piperacillin Tazobactam and shifted to Meropenem due to progression of symptoms. He was then transferred to our institution after 2 weeks where initial workup done showed normocytic hypochromic anemia with leukocytosis, non-thyroidal illness, elevated troponin I and NTproBNP, with chest-xray findings showing bilateral pleural effusion hence was managed instead as hospital acquired pneumonia and scheduled for a thoracentesis. Pleural fluid studies were performed with a pleural fluid culture done showing Bacillus clausii sensitive to Ciprofloxacin, Gentamicin, Linezolid, and Vancomycin and resistant to Clindamycin, Penicillin, and Tetracycline. Biopsy of the pleura was also done only showing reactive mesothelial cells with no malignant transformation promoting the initiation of targeted therapy with Linezolid. During the course of his admission, the patient's condition further deteriorated where further elevation of high sensitive troponin I and NTproBNP where a coronary angiogram was done showing severe stenosis of the proximal to mid left anterior descending artery and eventual percutaneous intervention was done. Despite his initial improvement with use of antiplatelets and cardiac rehabilitation, further deterioration was noted 1 month post procedure hence was transferred to the ICU and eventually succumbed to his disease.
This study discusses the first case of Bacillus clausii as a cause of parapneumonic effusion in the Philippines. Due caution should be practiced by clinicians when this bacterium has been isolated in sterile areas despite adequate and prompt antibiotic treatment.
Note: The author has obtained consent from patient to publish this abstract.

Disclosure of Interest
None declared.

P178

Cost analysis of surgical site infection; patient with multidrug-resistant organisms post-Caesarian surgery in Western Kenya

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P178

Introduction: The cost of healthcare services is a major global concern, especially in resource-limited setups and economic burden to populations. A female aged 20 years was admitted to a female surgical ward six days post-emergency CS due to post-CS-SSI for 49 days. The patient was complaining of a wet incision oozing pus. The patient was put under hospital care where treatment, laboratory, and radiological investigations were conducted.
Objectives: To assess the cost of care, treatment and management for caesarean section multi-drug resistant organism surgical site infection.
Methods: A case study review using direct actual and valid cost estimates of the patient from hospital and medical data.
Results: This patient was infected with methicillin-resistant *Staphylococcus aureus* (MRSA) resistant to 19 microbial agents, other investigations were a full haemogram, blood slide for malarial parasites, hemoglobin estimation, and ultrasound were carried out. Five different antimicrobial agents oral and intravenous, and two sets of painkillers were prescribed and administered and the wound was cleaned and dressed daily using a pack. Direct nursing care hours were calculated using PPD (Patient Per Day) covering three shifts of 24 h was 1.333. Direct actual and validly estimated cost Admission fee Ksh 200/-, Pharmaceuticals Ksh 78,000/-, non-pharmaceutical Ksh 4,900/-, nursing care ksh4,900/-, laboratory investigations 2,200, blood transfusion Ksh 6500/–, ultrasound 1500/–, daily hospital bed cost Ksh 9800/– totaling to Ksh 108,000/–.
Conclusion: The direct costs associated with CS-SSI due to MDRO was a significant burden to both the hospital and the client, Institutionalization of modalities to eliminate SSI are vital. More studies are needed to establish CS-SSI indirect cost and comparative direct costs across different health facility types.

Disclosure of Interest
H. Ogaro Employee of: The authors declare that, they have no financial, political, religious, intellectual or personal relationship that may have inappropriately influenced them in writing this article. This research received NO grant and OR funding, E. KWEYU: None declared, G. SANDE: None declared.

Poster session: Occupational health

P179

Integrating information technology and smart management for occupation safety during the COVID-19 pandemic

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Introduction: Timely identification of COVID-19 cases among healthcare personnel (HCP) is crucial for preventing intra-hospital spread during community outbreaks. We implemented a hospital-wide health monitoring/reporting system (HMRS) integrated with work restrictions.
Objectives: Evaluate the effectiveness of integrating information technology and smart management for HCP HMRS at a 2600-bed teaching hospital.
Methods: Retrospective analysis of HMRS data from Jan. 2020 to Mar. 2023. Web-based unit-level HMRS was updated in Jan. 2020 to include COVID-19 symptoms. The REDCap individual-level reporting system, implemented in Sep. 2021, automatically sent daily email notifications to HCP at 7 am. HCP responded via computers or mobile devices regarding

symptoms and/or SARS Cov-2 testing. Unit coordinators were immediately notified of positive results.
Results: During the study, the hospital performed 980,790 SARS Cov-2 tests, confirming 33,215 cases among patients, individuals, and HCP. Of 13,398 monitored HCP (including outsourcing personnel), 4,903 were confirmed cases (36.6%). A total of 6,915 incidents were reported through HMRS. Daily numbers varied due to community and hospital outbreaks.

	2020/1/1 ~ 2021/5/17	2021/5/18 ~ 2021/9/6	2021/9/7 ~ 2022/5/26	2022/5/27 ~ 2023/3/19
HCP surveillance				
Monitoring/ reporting system	A, B	A, B	A, B, C	A, B, C
Total HCP no	12,921	13,611	10,175	13,398
Confirmed cases (%)	0 (0)	31 (0.2)	1,170 (11.5)	3,702 (27.6)
Median (IQR) per day	1 (0,2)	1 (0,3)	52 (7,91)	19 (12,30)
Hospital wide surveillance				
Total inpatients no	147,763	21,671	73,103	82,181
Median (IQR) per day	6 (2,16)	6 (3,12)	3 (1,11)	43 (25,70)
Confirmed cases (%)	45 (0.03)	545 (2.7)	8,039 (11.8)	24,586 (40.4)

A. Notifiable disease reporting system; B. Web-based unit-level HMRS; C. Individual-level REDCap HMRS.
Conclusion: Integrating information technology and smart management facilitate timely identification of sick HCP and intervention at unit level and hospital level to secure occupation safety.

Disclosure of Interest
None declared.

P180

A six-year review and analysis of sharp injuries in an acute care hospital in Singapore

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P180

Introduction: Sharp injuries are frequent occurrences in healthcare settings. According to World Health Organisation, more than 2 million occupational exposures to sharp injuries (SIs) occur among 35 million healthcare workers (HCWs) annually.
Objectives: We aim to report a six-year incidence and trend of SIs in Changi General Hospital (CGH). We also analysed and compared the rates and type of exposure among HCWs from 2017–2019 (pre-pandemic) and 2020–2022 (pandemic).
Methods: A retrospective analysis of a six-year surveillance on self-reported SIs in Changi General Hospital, a 1000 bed acute care hospital, was conducted. The occupational groups, the type of sharps and the incident activity involved were reviewed. The blood-borne pathogen status of the identified source patients was studied.
Results: A total of 515 SIs was reported from 2017 to 2022. The range of SIs was 30.7–38.5 per 1,000 HCWs per year (2017–2019) and a decreasing trend 27.4–25.5 per 1,000 HCWs per year (2020–2022). Among the occupational groups, doctors reported the highest number of SIs (307, 59.6%), followed by nurses (159, 30.9%) and other allied health professionals (36, 7.0%). There was an increasing proportion of doctors reporting SIs from 2017 to 2019 (pre-pandemic era) and a decline from 2020 to 2022 (pandemic era).
The majority of SIs were caused by solid sharps (247, 48.0%) and hollow-bore needles (225, 43.7%). Source patients were identified in 474 SIs. From the known sources, 67 were seropositive; 24 for HBV, 37 for HCV and 6 for HIV. No seroconversion occurred. 228 (44.3%) SIs were sustained during surgical procedures, 95 (18.4%) during blood taking and 52 (10.1%) during injection administration. 34.4% of SIs among doctors occurred during surgical procedures in OT with 71.4% of SIs occurring among junior surgical doctors.
Conclusion: The overall incidence of SIs has decreased during the pandemic period due to a reduction in elective surgical procedures. OT suturing training workshops including lecture on strategies for preventing sharps injuries in the operating theatre, targeted at surgical residents during the past 3 years, could have contributed to the fall in the incidence of SIs in our hospital.

Disclosure of Interest
None declared.

P181

A cluster of acute respiratory infection among healthcare workers in a MRSA-cohort ward in Singapore in the time of COVID-19

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Introduction: Community COVID-19 measures were stepped down in Singapore from 13 Feb, 2023, however mask-wearing was still required for healthcare settings. 15 staff developed acute respiratory infection (ARI) symptoms at a MRSA-cohort ward between 13 to 21 Mar, 2023.
Objectives: To investigate an ARI cluster among the healthcare workers.
Methods: All symptomatic staff self-administered SARS-CoV-2 Antigen Rapid Tests (ART). Six were positive for COVID-19 and the remaining 9 were negative. ART tests were done for all the patients and the remaining staff without ARI in the ward. A line listing with activity mapping was done for the COVID-19 positive staff. Influenza vaccination records were reviewed. Symptomatic Staff who were ART negative were tested for respiratory viral pathogens using a commercial real-time multiplex polymerase chain reaction (PCR) kit (BioFire® FilmArray® Respiratory 2.1 Panel). Infection control measures such as terminal cleaning and Ultraviolet-C cleaning for all the staff area were enhanced on 20 Mar, 2023. Staff hygiene and illness reporting procedures were reinforced.
Results: In addition to the six who tested ART positive, other pathogens were detected including Coronavirus OC43 (1), Parainfluenza Virus type 3 (1), Parainfluenza Virus type 4 (1) and Human Rhinovirus/ Enterovirus (2). Four of the staff had no pathogens identified. There was only one incident of a "mask-off" meal at the staff pantry. There was no new cases in healthcare workers within a week. The vaccination rate for influenza was only about 43% among the staff but no influenza cases were identified.
Conclusion: Healthcare workers remain vulnerable to clusters of acute respiratory infections. Infection prevention teams need to work closely with occupational health to ensure rapid identification and control measures to prevent the spread of respiratory infections among staff and patients.

Disclosure of Interest
None declared.

P182

Drop-out rate for hepatitis b vaccination among healthcare workers at Kitale County Hospital

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Introduction: Globally, the annual Hepatitis B (Hep B) infections among healthcare workers (HCWs) are 5.9% corresponding to 66,000 infections. These infections can be prevented through vaccination with a complete three dose schedule of Hep B vaccine. This study aimed to determine the dropout rates from Hep B vaccination among healthcare workers at Kitale County Hospital (KCH).
Objectives: TO determine the drop out rates from Hepatitis B vaccination among healthcare workers at Kitale County Hospital (KCH).
Methods: A prospective study of all the HCWs who were enrolled for Hep B vaccination during the active vaccination phase was done. Those eligible for enrollment were all HCWs who had a negative anti-Hep B serology test. Dropout rate was determined for dose 2 or 3 and the denominator was all those who received dose 1.
Results: The total HCWs enrolled were 157. The number eligible for vaccination was 154 (98.1%). The drop-out rate for dose 2 was 24.3%, while for dose 3 were 57.1%.
Conclusion: Dropout rate for dose 3 was high. There is need for further study on the factors associated with this drop out for specific interventions to be implemented. Further assessment need to be done to determine the total number of HCWs vaccinated against Hep B at KCH.

Disclosure of Interest
None declared.

P183

Targeted interventions to improve awareness and compliance with anti HBS titre monitoring among healthcare workers: a study in a tertiary care hospital in India

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P183

Introduction: Compliance with anti HBs titre monitoring among healthcare workers (HCWs) is crucial for preventing the transmission of hepatitis B in healthcare facilities. At our tertiary care hospital in India, anti HBs titre monitoring was found to be suboptimal, and interventions were needed to improve compliance.
Objectives: The objectives of this study were to implement targeted interventions to improve compliance with anti HBs titre monitoring among HCWs at the hospital, and to assess the effectiveness of these interventions.
Methods: A total of 749 HCWs were included in the study, with 33.9% (235) nurses, 16.0%(111) administrative staff, 23.2%(161) support and maintenance staff, 10.2% (71) medical doctors, 15.4% (107) paramedical staff, 5.8%(40) medical students, and 3.5% (24) other students. Two HCWs were nonresponders, and 3.47% (26) had a titre less than 10 mIU/ml and were receiving a second round of vaccination. Of the remaining 723 HCWs, 36. 2% (271) had a titre more than 10 mIU/ml, and 452 HCWs had not confirmed their status prior to the intervention. The study was conducted in a phased manner, with interventions developed and implemented to improve compliance with testing. Batch testing at a nominal rate was done, with individualized follow-up by the infection control team and human resource department. Staff were educated about post-exposure management and prophylaxis annually and during induction.
Results: Post-intervention, among the 452 HCWs who had not confirmed their status, titre checking was completed in 345 HCWs. Of these, 326 HCWs had a titre more than 10 mIU/ml. Among the 19 HCWs who had a titre less than 10 mIU/ml, review was done for immunization records and partial immunization history, if any. Based on this, immunization was taken up on a case-by-case basis. Preemployment anti HBs titre is now a mandatory check in our institution and all staff vaccination is monitored by the infection control team.
Conclusion: Targeted interventions, including staff education and administrative follow-up, can improve compliance with anti HBs titre monitoring among HCWs. Such interventions are crucial for preventing the transmission of hepatitis B and ensuring the safety of HCWs and patients.

Disclosure of Interest
None declared.

P186

MPOX infections among health workers from global surveillance data, January 2022–May 2023

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Introduction: During the 2022–2023 mpox multi-country outbreak, cases were also reported among health workers (HWs). Most were infected in the community, but healthcare settings can also represent an infection risk factor for mpox through contact with cases, their samples, or fomites.
Objectives: Here, we describe mpox cases among HWs, focusing on healthcare-acquired infections.
Methods: We analyzed data from the mpox global surveillance system collected between 1 January 2022 to 17 May 2023, on cases reported as HWs. We describe the demographic and clinical characteristics of these HWs, infection transmission routes, and exposure settings.
Results: Among reported mpox cases with available information, 4.6% (1307/28,354) from 29 countries, were HWs. Of these 93% (1 171/1 261) were male, and the median age was 33 years (IQR: 29–40 years); 76% (583/771) self-identified as men who have sex with men (MSM). Most HWs reported acquiring mpox through sexual transmission (65%; 228/350), 18.5% (65/350) from non-sexual person-to-person contact, 12% (41/350) as a hospital-acquired infection (HAI), 3% (11/350) from contact with contaminated material and 1.4% (5/350) other types of contact with no details.
Among cases reporting HAI, 76% (31/41) were male, and the median age was 33 years (IQR: 30–40 years); 39% (14/36) self-identified as MSM, 35% (8/23) were living with HIV, 20% (3/15) were immunocompromised and none had any other concurrent sexually transmitted infection. All cases reported symptoms of rash and fever. Only one was hospitalized among the 10 cases with available information and no deaths or admission to Intensive Care Unit were reported among HWs with HAI. Most HAI occurred between July and December 2022, during the global peak of cases.
Conclusion: Globally, a relatively small number of HWs acquired mpox through occupational exposure. Their demographic and clinical characteristics were similar to the overall reported cases. All mpox cases among HWs are avoidable. All health workers should receive adequate training on mpox occupational risk factors and protective measures, and those expected to be at risk should be offered preventive mpox vaccination following an individual risk–benefit analysis.

Disclosure of Interest
None declared.

Poster session: Environmental hygiene: Literature reviews and multimodal interventions

P187

Environmental protection measures and infection prevention/ control measures thought together in hospitals

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Introduction: Hospitals are being increasingly encouraged to adopt ecological practices to reduce their impact on the environment. Many of the current environmental protection (EP) measures in hospitals cover fields that are relevant to infection prevention/control (IPC). However, it is unclear to what extent EP measures undertaken in hospitals have taken an IPC perspective into account.
Objectives: This rapid review aims to give an overview of studies that consider the interaction of EP and IPC endpoints in hospitals.
Methods: The databases Pubmed and Web of Science were searched on 14.04.2023 with no time limit. Abstracts were screened and papers were selected by 3 independent reviewers using predefined inclusion and exclusion criteria.
Results: 1.050 records were found, thereof 37 met the inclusion criteria. Among the excluded were many papers discussing EP measures potentially impacting IPC without considering this. The included papers can be divided into three categories. **A**: Both endpoints are measured in an interventional or modeling study (e.g. Life Cycle Assessment and microbiological evaluation); **B**: One endpoint is measured, while the other is assumed (e.g. compliance with hygiene guidelines leads automatically to hygienic safety or turned off devices use less energy); **C**: Both endpoints are considered but not measured (e.g. independent literature is cited on both). 6 papers were classified into category A, 16 into category B and 15 into category C.
Conclusion: Only a few scientific publications concurrently address both IPC and EP endpoints, even less actually test these endpoints. Given the actual climate change crisis and increasing need for hospitals to reduce their environmental impact, there is an urgent need to establish a comprehensive data driven knowledge base on the efficacy and safety of EP practices in healthcare settings. We propose to create an evaluation matrix to assess IPC measures in hospitals with regard to their environmental impact and to their modifiability from an IPC view. This will enable healthcare professionals and policymakers to make informed decisions about implementing EP measures while maintaining high levels of IPC, ultimately contributing to a more sustainable healthcare system.

Disclosure of Interest
None declared.

P188

Environmental hygiene for hospital infection prevention and control in Bangladesh: gaps in cleaning staff, knowledge, practices, and training

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Introduction: Environmental cleaning staff are critical to the hospital infection prevention and control (IPC) program. In Bangladesh, cleaning staff are often tasked with direct patient-care activities, yet they are frequently overlooked for IPC training and education.
Objectives: This study examined the existing IPC knowledge, practices, and training among cleaning staff in Bangladeshi hospitals.
Methods: Between July 2022 and February 2023, a cross-sectional study was conducted among 293 cleaning staff at eight tertiary care hospitals across Bangladesh. Study participants included 25% randomly selected staff from each hospital who were responsible for environmental cleaning and waste management. Using a semi-structured questionnaire, face-to-face interviews were conducted to collect data related to environmental hygiene knowledge, practices, and training.
Results: The mean age of participants was 36.6 years (SD 10.1), and the majority (65.6%, 195/293) were contract workers. One-fifth (21%) of the respondents had attended basic IPC training in the past two years, but none received any waste management and environmental hygiene training. Only one-third (33.8%) of the cleaners mentioned taking precautions during waste management and environmental cleaning. Less than half (46%) of the respondents reported performing hand hygiene before patient contact, (38.2%) after contact with the patient's body fluids, and 47% after contact with the patient's surroundings. Although 60% of cleaning staff knew that hospitals were required to have four different color waste bins for waste segregation, only 15% of respondents correctly identified specific color-based bins for waste disposal. Only 8% of respondents knew the appropriate ratio for mixing a cleaning agent with water for environmental cleaning. One-third (30%) of the staff reported to disinfected high-touch hospital areas weekly.
Conclusion: This study identified limited IPC training among cleaning staff as well as poor knowledge and standard practices of IPC and environmental hygiene in Bangladeshi hospitals. Interventions that target increasing knowledge, implementing environmental hygiene guidelines, along with routine monitoring and feedback, should be initiated to increase the skill level of cleaning staff for hospital IPC management.

Disclosure of Interest
None declared.

P189

Translation into Spanish, cultural adaptation and comprehensiveness of the "Healthcare Environmental Hygiene Self-Assessment Framework (HEHSAF)" survey tool

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Introduction: Proper environmental hygiene of the patient's surroundings is of utmost importance to avoid healthcare-associated infections and is a pillar of IPC. An earlier version of the HEHSAF tool was used in a pilot study, conducted by Clean Hospitals in 2022, in 51 healthcare facilities in 35 countries. The HEHSAF is a validated tool in English consisting of 39 questions.
Objectives: (1) Translate into Spanish the HEHSAF English version (2) Culturally adapt the translation of the HEHSAF into Spanish (3) Evaluate the comprehensiveness of the Spanish version.
Methods: Five sequential phases were conducted: (1) Authorisation by the authors (2) Direct translation by an expert (3) Synthesis of translations by expert IPC nurses with a high level of English (4) Consolidation by a group of IPC experts from different Spanish-speaking countries (5) Test of the comprehensiveness. Variables are described as frequencies and percentages. The comprehensiveness was evaluated using a Liker scale-type questionnaire for each question with the possibility of making comments on the text comprehension. The

expert group agreed that it was fully comprehensible if the scale score was ≥ 8 for each question. **Results:** The translation was carried out by an IPC expert, the synthesis of translations and the subsequent revisions of the text by the expert group. A total of 107 comments were made; 23 (21.5%) were accepted and included as minor changes. The results of the comprehension test showed that only one out of 84 questions (1.2%) presented difficulties.
Conclusion: The Spanish translated version of the HEHSAF is ready for use, culturally adapted and with a high level of comprehension for users. The language adaptation facilitates its application in Spanish-speaking countries. To increase the global applicability of the tool, Clean Hospitals will make available the Spanish version of the HEHSAF through its website (cleanhospitals.com).

Disclosure of Interest
None declared.

P190

The role of improving environment cleaning in infection control and prevention at Cho Ray Hospital, Vietnam

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Introduction: Hospital-acquired infections (HAI) are a leading challenge in healthcare facilities around the world. Cho Ray hospital (CRH) has implemented multiple quality improvement programs in infection control to decrease HAI. However, despite successful implementation of prevention bundles, the rate of HAI is still high compared to developed countries. In Vietnam, the COVID-19 pandemic has helped increase awareness of the importance of environment cleaning (EC) for HAI prevention.
Objectives: This study aims to determine the impact of applying a systematic approach to improve the quality of EC at CRH.
Methods: Interventional study wherein the EC program improvement toolkit developed by US CDC was adapted and piloted from April to November 2022 in CRH's Department of Internal Cardiology. The toolkit describes a 5-step quality improvement process. The impact of the interventions was evaluated for a one-month period pre- and 6 months post-intervention using process measures, including visual observation of cleanliness, staff compliance rate with defined protocols and indirect observation of thoroughness of cleaning.
Results: The visual cleanliness degree increased from 71 to 93% ($p = 0.016$); environmental cleaning staff compliance rate increased from 85 to 90% ($p < 0001$); and medical equipment cleaning staff compliance rate increased from 71 to 88% ($p = 0.011$). The average fluorescent cleaning rate increased from 36 to 84% ($p = 0.023$) and A3 score decreased from 4391 to 1204 relative light units ($p = 0.033$). Microbiological culture detecting selected pathogenic bacteria significantly decreased on the surfaces of the hospital environment and medical equipment ($p = 0.002$; OR 7.71). Finally, total HAI rate decreased from 3.76% to 2.55% ($p = 0.022$) compared to before intervention.
Conclusion: Implementation of a standardized EC toolkit led to improvements in both cleaning practice and cleanliness of the patient care environment. Modest reductions in the HAI rate were noted during the intervention period.

Disclosure of Interest
None declared.

P191

Long-term impact of a comprehensive hospital cleaning task force on healthcare-associated infections and multidrug-resistant microorganism colonization in patients

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Introduction: The hospital environment's role in infection prevention and control has gained renewed importance.
Objectives: To assess the impact of hospital environmental interventions on improving healthcare environmental hygiene and ultimately reducing patient colonization with multidrug-resistant microorganisms (MDROs) and other epidemiologically significant pathogens.
Methods: In 2019, a multidisciplinary environmental organization committee was formed, including representatives from the hospital board, hospitality, occupational health and safety, and pharmacy. This committee launched a dedicated weekly task force to focus on cleaning and integrated surface disinfection throughout the hospital, encompassing all units, including the intensive care units. Regular rounds were conducted by the task force to ensure comprehensive environmental hygiene. The study was conducted at a public institution in Belo Horizonte, Brazil, which has a capacity of 420 beds. The incidence density per 1,000 patient-days was calculated to assess the time trend of nine MDROs across the entire hospital. The MDROs included in the analysis were MRSA, carbapenem-resistant Acinetobacter sp, carbapenem-resistant Enterobacteriaceae, VRE, ESBL-producing Gram-negative bacilli, KPC-producing Gram-negative bacilli, Pseudomonas aeruginosa, Serratia sp, and NDM-producing Gram-negative bacilli.
Results: Over the course of four years (2019–2022) of implementing the weekly cleaning task force, we observed a sustained downward trend in the monthly and six-month moving average incidence rates of seven out of the nine MDROs assessed.

MDRO	Mean rate (#per 1,000 Pt-days)		
	Jan/21-Jun/22	Jul-Dez/22	p-value
MRSA	1.8	1.2	0.011
KPC Acinetobacter	3.3	1.3	0.002
KPC Enterobacteriaceae	3.9	1.4	0.047
VRE	1.0	0.8	0.708
ESBL-producing Gram-negative bacilli	2.3	1.7	0.167
KPC-producing Gram-negative bacilli	2.3	1.2	0.004
Pseudomonas aeruginosa	1.3	0.4	0.001
Serratia sp	0.7	0.1	0.001
NDM	0.2	0.0	0.001

Conclusion: Long-term implementation of a dedicated and extensive hospital cleaning task force has resulted in a consistent reduction in MDRO occurrences, demonstrating the effectiveness of this approach.

Disclosure of Interest
None declared.

P192

Factors influencing the survival of pathogens in the hospital: basis for the assessment of the nosocomial infection risk

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Introduction: The survival of pathogens is an important criterion to assess the risk of nosocomial transmissions, infections, outbreaks and thus for infection prevention/control.
Objectives: The aim of this review is to refine the knowledge on this issue with regards to influencing environmental factors.
Methods: To update and expand the evidence, a systematic literature search (Pubmed, Web of Science; 26.01.2023) according to PRISMA guidelines was conducted. Abstract/full-text screening and data extraction was done by four reviewers on a four-eye-principle using predefined in- and exclusion criteria.
Results: A total of 172 publications were included. Factors influencing the survival of pathogens in the environment were: (a) microbiological test conditions: The origin of the pathogen, initial inoculum, desiccation, relative humidity and temperature during storage, re-cultivation conditions and stage of cultivability are all influential; (b) surface material: Survival on copper is shorter than on other materials due to its oligodynamic effect, survival on porous surfaces is longer; (c) relative humidity (RH): Gram-positive bacteria tolerate dry conditions better than Gram-negative bacteria due to their cell wall. Enveloped viruses retain their replicate capacity longer with low RH unlike non-enveloped viruses; (d) temperature: Temperatures > 24 °C seem to reduce the survival of bacteria in the air. The viral genome is sensitive to higher surrounding temperature; (e) lighting: Especially sunlight decreases the survival of e.g. SARS-CoV-2; (f) protein, fecal and urine load: Desiccation in protein-containing media prolongs survival proven for different bacteria and yeast; (g) biofilm: formation prolongs bacterial survival.
Conclusion: There is a lack of good clinical epidemiological evidence for transmission scenarios. Considering all influencing factors, data generated under laboratory conditions can only provide a rough orientation on the pathogen tenacity.

Disclosure of Interest
None declared.

P193

The birth of a dream: a long step for authorisation, a big step for (Romanian) humanity

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Introduction: Romanian legislation for cleaning, disinfection and sterilisation was changed 3 times during the last 20 years, far too slow for the progression of technique and knowledge in the field.
Objectives: Thus, in 2018, an enthusiast group of 6 colleagues and friends decided to create a new version, adapted to the newest international recommendations. This was all done during their private time, mostly during the evenings and nights.
Methods: Once the final form was devised, the proposal was sent by email, post or hand delivered during 2018–2020 to 3 different Ministers of Health. Finally, pre pandemic, in 2020, the first response consisted of a 2 days meeting with the experts from the National Public Health Institute, during which all the articles were analysed and decided for the next version (the second). During the pandemic, even though the period was mostly concentrated on infection prevention and control legislation, all the requests were frozen for 1 year. In 2021, under the 4th Ministers of Health the discussions were relaunched, and, in collaboration with the National Institute's experts, the 3rd version was completed. One day before the publication in the Official Monitor (meaning the Day − 1 of its life), the Minister of Health was dismissed, so everything was blocked. It took 2 more Ministers of Health before, in the end, the order was published and adopted, late 2021.
Results: Considering the clarity, the evidence-based recommendations, the adoption of new and modern management and surveillance technique, this order represents a Holly Book or an Ariadne's file for all the healthcare practitioners in Romania, providing clear paths and standardisation for the infection prevention and control activity and an accurate system for monitoring, audit and immediate feed-back and action.
Conclusion: The final beneficiaries are the patients, whose intra-hospital safety, prevention of nosocomial infections and thus the decrease of antimicrobial resistance risk and antibiotic consumption leads to a higher level of medical care quality, leading to lower morbidity and lives saved.

Disclosure of Interest
None declared.

Poster session: Environmental hygiene: Surfaces and monitoring

P194

Incidence and risk factors for clostridioides difficile nosocomial infection

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Introduction: Clostridioides difficile (C. difficile) infection (CDI) is one of the most common healthcare-associated (HA) infection and it is associated with increasing morbidity and mortality. Outbreaks associated with this infection are very common and very difficult to control. To prevent it is important to know what risk factors are associated with these outbreaks.
Objectives: The aim of the study was to understand the risk factors (RFs) for HA CDI patients and the main differences in patients, in a hospital centre in Portugal. The principal factors related to healthcare and outcomes associated with HA CDI were investigate.
Methods: A retrospective study was conducted including patients diagnosed with HA CDI from 1 january 2013 to 31 december 2022 in a a hospital in northern Portugal. Demographic and clinical data and RFs like antibiotic use, underlying malignancy, chemotherapy, proton-pump inhibitors—PPI—use, was collected.
Results: During 10-year period, 127 patients was diagnosed with HA–CDI. 53.54% (n = 68) were female and 46.46% (n = 59) male. Most of cases, 77% (n = 99) were elderly people, over the age of 60. 81.75% (n = 104) e 87% (n = 107) received antibiotics and PPI, respectively. 14.9% (n = 19) had underlying malignancy and 9.44% (n = 12) doing chemoterapy. 2021 was the year with the highest incidence, followed by the year 2022. The mortality rate was about 20%. 2022 was the year with greatest mortality rate 25%. Diabetes were present in 31% of patients. The hospital length of stay (LOS) was 34 days. Infections occur, on average, on the 13th day after hospitalization. 17% of patients was taken surgery during hospitalization.

Conclusion: The incidence of HA CDI increased in the latest years. Antibiotics and PPI are widely used. Diabetes is also an important RF for patient whit HA CDI. The LOS of patient with HA CDI is very high, compared with average delay in hospital. The mortality was also very high in this kind of patients.

Disclosure of Interest
None declared.

P195

Using the commercial wipe to kill the clostridium difficile on environmental surface

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Introduction: Clostridium difficile is an important pathogen in Healthcare facilities. Due to its characteristic, it's hard to kill through traditional methods. According to the command of WHO, using 1000 ppm bleach can kill this pathogen but have to clean the environment before disinfection. And that's the problem in clinical, many cleaning staff didn't clean enough. Thanks to the commercial wipe presented, claims one step could finish clean and disinfection.
Objectives: In this study, we want to check if the commercial wipe could kill C.difficile or not. And we want to check the reaction time of these commercial wipes. Otherwise, we compare two new methods to detect C.difficile in the environment. Traditionally, we have to culture C.difficile in an anaerobic incubator, but in this study, we used a new broth to detect it. And we also use the POCT qPCR method to detect whether C.difficile is present or not.
Methods: Because of the different environmental situations, we use the bovine serum to simulate the environment in clinical. We added the bovine serum into C.difficile buffer. Then smeared it on the surface until it dries. Then we used the commercial wipe on the surface at different times. Finally, we used the swab to collect the sample and then did the culture and POCT qPCR.
Results: In this study, we found that commercial wipes can kill the C.difficile after 45-s interaction in the simulated environment. The log reduction was 5.4, 5.6, and 5.7. Otherwise, we found the traditional culture could not let all C.difficile grow due to the transport processing. Accidentally, we found these new methods also can be a good tool to detect C.diffiile present or not. The culture without an anaerobic incubator can let C.difficile grow after 48 h. And the POCT qPCR can quickly detect and both the sensitivity and specificity were 100%
Conclusion: According to our findings, we suggest all commercial wipes show be tested in different spaces due to different cleaning staff used. And the new method can be used in clinical to detect whether C.difficient is present or not.

Disclosure of Interest
None declared.

P196

Formulation of an essential oil-based disinfectant with antibacterial and antifungal properties

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Introduction: Contamination of indoor environments and associated health risks remain of little concern in developing countries. Yet some of these environments such as the Central Library of the University of Yaoundé I and the Library of the French Institute of Cameroon receive a large number of people, subject to microbial contamination.
Objectives: The purpose of this study was to formulate an essential oil-based disinfectant that is effective against microbial contaminants in libraries.
Methods: Essential oils from the pericarps of Citrus sinensis, the leaves of Cymbopogon citratus, the flower buds of Eugenia caryophylla, the leaves of Mentha sp cf piperita, the flowers of Cananga odorata and the leaves of Eucalyptus globulus were obtained by hydrodistillation and analysed by Gas Chromatography and Gas Chromatography/Mass Spectrometry. Antimicrobial activity of these essential oils were evaluated by aromatogram, microatmosphere and microdilution methods on microorganisms isolated at library's premises (2,3). The detection of some cellular targets of the essential oils were evaluated by Spectrophotometry (4). The disinfectant has been formulated and their disinfecting powers have been determined.
Results: The most common bacteria in both libraries belonged to the genera Bacillus, Staphylococcus and Pseudomonas. In general, essential oils showed better activity in the gas phase. All the essential oils showed a lytic effect on the wall and the plasma membrane of the tested bacteria resulting in the release of the genetic material. The disinfectant based on the most active essential oil showed a good disinfecting activity with a log reduction of 100% on all microorganisms tested from 10 min of contact time.
Conclusion: All of these results allow us to consider the use of essential oils in the disinfection of library premises.

Disclosure of Interest
None declared.

P197

Effectiveness of antimicrobial sprays applied on frequently touched surfaces

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Introduction: During the SARS-CoV-2 pandemic, we experienced a sudden increase in the range of antimicrobial surface treatment solutions, promising that treated surfaces can continuously decontaminate themselves. In crowded or high-risk areas, this could be aa key intervention n infection prevention. A wide range of surface treatment sprays are available with different compositions. Manufacturers claim a log4-log6 reduction for a long time (at least for a month, but in the case of some sprays for more than a year) in laboratory settings.
Objectives: This study aimed to measure the effectiveness and applicability of antimicrobial spray surface treatment in real-life settings.
Methods: At the university campus, electric door openers were treated with antimicrobial sprays. From each door opener, microbial samples were collected by contact plates. Colony forming units (CFU) were counted after 24 h of incubation (37 °C). In parallel, ATP tests were carried out at another part of the door opener by swabbing.
Results: 20 door openers were involved in the study. Five uniform groups were created (each containing 4 door openers) based on the baseline values, measured before surface treatment; one for each spray and one remained untreated, as a control. The same measurements were repeated 7–9 days after surface treatment. Results summarized in Table 1 show little or no effect on both the colony count and ATP test results—none of the applied sprays reached even log1 reduction.
Table 1: CFU and RLU values measured on the door openers before treatment (baseline), and 7–9 days after spraying, and the calculated log reduction. Values are presented as average ± standard error.

	Colony count (CFU)			ATP test (RLU)		
	Baseline	**Treated**	**Log_{10} reduction**	**Baseline**	**Treated**	**Log_{10} reduction**
Control	361 ± 69	297 ± 68	0.1	229 ± 131	220 ± 48	0.0
Spray #1	363 ± 84	232 ± 31	0.2	214 ± 127	111 ± 29	0.3
Spray #2	309 ± 33	261 ± 77	0.1	210 ± 104	161 ± 65	0.1
Spray #3	361 ± 54	265 ± 13	0.1	218 ± 63	293 ± 80	-0.1
Spray #4	348 ± 91	184 ± 49	0.3	206 ± 30	299 ± 70	-0.2

Conclusion: While sprays have certificates proving that these treatments are highly effective in laboratory settings, we couldn't see the same effectiveness in real life. One explanation can be the biofilm formation on surfaces; oily layer from hands, or hand cream residues can physically protect microorganisms from the treated surface.

Disclosure of Interest
None declared.

P198

Evaluation of microbial contamination on ambulance surfaces—a pilot study

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Introduction: Standard infection control precautions (SICPs) are basic measures to reduce the risk of transmitting infectious agents in all healthcare-related contexts, including inter- and pre-hospital care. Cross-transmission of microorganisms from inanimate surfaces during ambulance care and transport may have a significant role for healthcare-associated infections (HAIs). The microbiological analysis of the surfaces of extra-hospital emergency vehicles can also serve as guidance measures for the quality of ambulance decontamination protocols as well as effectiveness of hand hygiene practices.
Objectives: The aim of this study was to estimate the degree of microbiological contamination of ambulance surfaces and describe opportunities for improvement in cleaning and disinfection processes.
Methods: Samples were taken from 12 pre-defined surfaces inside the ambulance, from 8 ambulances in mainland Portugal, in March and April 2022, through convenience sampling. The testing was carried out by an external independent laboratory, and the results were presented in Colony Forming Units (CFU) per plate and compared with values reported in the literature.
Results: Of the total 79 samples analyzed, 2 samples were found to have a contamination level pre-defined as early alerts for cleaning conditions (between 15 and 25 CFU/plate), and 12 samples registered contamination values which alerted for swift intervention (above 25 CFU/plate).
The most frequently contaminated sampled site was the work counter, followed by the handle of the first and second drawers, the right armrest of the professional's chair, and the handle of waste container. The sample sites which were least often contaminated were the walls and the ceiling bars.
Conclusion: The results suggest that surfaces most frequently manipulated during care (work counter, drawer handles and waste containers) are at higher risk for contamination. The data suggests that cleaning and disinfection procedures for these surfaces should be improved. Providing adequate conditions for cleaning and disinfecting ambulances and training professionals for complying with decontamination protocols, together with keeping up good hand hygiene practices are essential to prevent cross-infection.

Disclosure of Interest
None declared.

P199

Evaluation of the daily cleaning in an intensive care unit

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Introduction: The burn-intensive care unit (ICU) of a French Hospital has been experiencing an epidemic of imipenem-resistant *A. baumanii*. In addition, to audits conducted to evaluate the respect of standard precautions, the daily cleaning of all 10 rooms (all with airlock) was assessed.
Objectives: To describe results of cleaning audit.
Methods: The observations were based on the facility's protocol, which specifies 14 surfaces (S) in the room and x S in the airlock. Compliance of cleaning was evaluated as follows: expected satisfactorily completed, expected partially completed, expected not completed, not expected not completed or satisfactorily completed.
Results: Between May and September 2022, 15 professionals (50%) were observed. Cleaning time ranged from 20 to 80 min. The number of S observed was 38 in the rooms and 12 in the airlocks (Table 1). In the room, nursing carts, perfusion system, syringe pump, computer, overbed table and distribution arm were satisfactory cleaned in more than 80% of cases. Compliance of cleaning of the treatment cart and the ventilator was 60 and 64% respectively. However, the beds and patients' lifts were satisfactorily cleaned in 47% and 20% of cases respectively.

	Expected, n = 15 (%)		
	Not completed	**Partially completed**	**Satisfactorily completed**
Nursing cart	0 (0)	2 (13.3)	13 (86.7)
Perfusion system	0 (0)	3 (20)	12 (80)
Syringe pump	0 (0)	3 (20)	12 (80)
Computer	0 (0)	3 (20)	12 (80)
Overbed table	0 (0)	3 (20)	12 (80)
Ventilator (n = 11)	0 (0)	4 (36.4)	7 (63.6)
Treatment cart	0 (0)	6 (40)	9 (60)
Distribution arm	1 (6.7)	2 (13.3)	12 (80)
Medical bed	0 (0)	8 (53.3)	7 (46.7)
Patient lift	11 (73.3)	1 (6.7)	3 (20)
Wet bench		1 (6.7)	14 (93.3)
Bedpan washer	1 (6.7)	0 (0)	14 (93.3)
Wire storage cart	5 (33.3)	0 (0)	10 (66.7)

Conclusion: ICU's room includes a large number of S to be disinfected on a daily basis. Some of them are difficult to clean: complicated access, challenging material, and multiple cutted surfaces; therefore, they are cleaned in a less satisfactory way than "simple" S. The protocol is not exhaustive and does not specify the degree of minutiae (top, bottom, …) to be applied. Thus, the interpretation of the quality of cleaning in a binary way yes/no is not satisfactory. The ongoing

protocol updating is based on the following measures: prioritize the S that must be treated daily, specify the expected results by breaking down each S into different elements, and stop the daily cleaning of certain S.

Disclosure of Interest
None declared.

P200

Activity of surface disinfectants against multi-drug-resistant organisms isolated in the University Hospital Hamburg–Eppendorf (UKE)

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Introduction: The raising challenge of Multi-Drug-Resistant Organisms (MDRO) in the clinical field cause questions to what extend surface disinfectants present with reduced activity.
Objectives: Another scientific question is if the susceptibility of laboratory strains mentioned in the European Standards (EN) are representing clinically isolated strains.
Methods: The study was performed based on a suspension assay described in EN 13727 with 4 commercially available surface disinfectants. The tests were performed with the test bacteria mentioned in Table 1. Statistical testing were done using unpaired t-tests and, for non-normal data, the Mann–Whitney test.
Results: The results show that there are under use conditions no significant differences between the laboratory and clinical strains. There was no significant difference between MDRO and Multi-Drug-Sensitive Organisms (MDSO). However, the data show differences in lower concentrations than use conditions.
Table 1: Test bacteria purchased American Type Culture Collection (ATCC) or isolated by UKE.

Laboratory strain	Clinical isolate	Resistances
Pseudomonas aeruginosa (ATCC 15442)	*P. aeruginosa*	Carpabenemase former, qac positive (Quarternary ammonium compound-resistance protein), Imipenem-Resistance
Staphylococcus aureus (ATCC 6538)	CA-MRSA 01	Methicillin-Resistance, CA (community acquired)
	CA-MRSA 02	Methicillin-Resistance, CA (community acquired)
Enterococcus hirae (ATCC 6057)	*E. faecium*	VRE (Vancomycin-resistant *Enterococci*) Linezolid-Resistance
Enterococcus faecium (ATCC 10541)		
Acinetobacter baumanii (ATCC 19606)	*A. baumanii*	Imipenem-Resistance
Klebsiella pneumoniae (ATCC 4352)	*K. pneumoniae*	Imipenem-Resistance

Conclusion: The data show that MDRO were not more resistant to surface disinfectants under use conditions than MDSO. There was no significant difference under the test conditions between laboratory strains and clinical isolates. The standard reference strains from EN still represent a sufficient activity level. Further studies with more practice-like test principle are needed to study this topic further.

Disclosure of Interest
None declared.

P201

Microbial contamination on hospital privacy curtains in cohort isolation rooms for multi-drug resistant organisms patient: a cross-sectional study

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P201

Introduction: Hospital privacy curtains are susceptible to various microorganisms shortly after use. In South Korea, multi-person rooms are prevalent in general hospitals, emphasizing the crucial role of curtains in maintaining patient privacy within these shared spaces.
Objectives: This cross-section study aimed to investigate the extent of microbial contamination on hospital privacy curtains in the cohort isolation rooms dedicated to patients with multi-drug resistant organisms (MDROs).
Methods: A total of 158 polyester curtains from multi-person rooms of a tertiary general hospital in Seoul were sample in April, 2023. The curtains were divided into three groups: 14 curtains for patients with methicillin-resistant *Staphylococcus aureus* (MRSA), 14 curtains for patients with vancomycin-resistant *Enterococci* (VRE), and 130 curtains for patients sharing the isolation rooms with either MRSA or VRE patients. Using Rodac plates, samples were collected from the outer surface of the high-touch edges of the curtains, and the microbial contamination was quantified by assessing the presence of MRSA and VRE.
Results: MRSA was detected on 2 out of 14 curtains from patients with MRSA and on 13 out of 67 curtains from patients without MRSA, showing no significant difference. Similarly, VRE was found on 2 out of 14 curtains from patients with VRE and on 5 out of 63 curtains from patients without VRE, with no significant variation observed. Furthermore, no significant disparities in microbial contamination were observed based on the length of stay, the number of patients in the room, or the distance between beds.
Conclusion: This study reveals that the contamination levels of MRSA and VRE on curtains used in the same room were comparable, regardless of whether the patient was a carrier of these MDROs or not. Thus, regular replacement of privacy curtains is warranted, irrespective of their usage by MDRO patients.

Disclosure of Interest
None declared.

P202

Synergetic effects of copper ions and hydrogen peroxide in sterilization

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P202

Introduction: High sterilization activity of copper has been attributed to reactive oxygen species (ROS), particularly hydroxyl radical (·OH) produced by oxidation of hydrogen peroxide (H_2O_2) by Cu^+, i.e. Fenton-like reaction. Hydrogen peroxide itself is also ROS and is a good bactericide.
Objectives: It was investigated in this study if ·OH had been produced in a solutions containing copper ions and H_2O_2, and if the products had contributed to increase sterilization activities of H_2O_2.
Methods: Sample solutions, whose the concentration of H_2O_2 was ~ 1.0×10^{-1} M and that value of Cu ions was ~ 2.9×10^{-5} M, were prepared, and their sterilization activities R were measured. The samples were also subjected to electron spin resonance to measure ROS in the samples.
Results: It has a tendency that the higher ·OH concentration, the higher the R value of the sample. Exceptionally low R value was found in the samples with low concentration of both Cu ions and H_2O_2.
Conclusion: Synergetic activity takes place in solutions containing both H_2O_2 and Cu ions, resulting in higher sterilization activities which cannot be archived if they were used alone. It is also shown that not only ·OH but also Cu ions was key factor for increasing in the R value.

Disclosure of Interest
None declared.

P203

Factors affecting the contamination of stethoscopes and cell phones owned by hospital staff in northern South Africa

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P203

Introduction: Fomites contamination has been claimed as one of the most important sources of nosocomial infections. Cell phones and stethoscopes are common instruments used by hospital staff members all over the world, and are handled very often during the course of their duties. However very little research has been conducted in South Africa as well as many African countries on this issue. Furthermore, nosocomial infections do occur quite regularly, although the sources of these infections are often not identified.
Objectives: In the present study, we evaluated the factors that could be associated with microbial contamination of stethoscopes and cell phones in major public hospitals in northern South Africa.
Methods: Ethical clearence was obtained from the University of Pretoria and authorization was otained from the Limpopo Department of Health and the Hospitals management. Data was collected through questionnaires from hospital personnel while their stethoscopes and cellphones were swabbed for the isolation of microorganisms and antibiotic susceptibility profiles.
Results: About 46% of staff cleaned their stethoscopes sometimes while up to 13% indicated that they never cleaned their stethoscope. The overall contamination rates were 88.34% for cell phones and 80% for stethoscopes with a statistically significant difference between the two ($\chi^2 = 4.31$; $p = 0.038$). Yeasts (70%) were the most commonly isolated microorganisms followed by *E. coli* (67%). Cell phones were more often contaminated by *E. coli* compared to stethoscope ($\chi^2 = 4.54$, $p = 0.033$) while *Staphylococcus* spp were isolated from 27% of the stethoscopes. Methicillin resistance was found in 35.3% of all the *Staphylococcus* isolates and ciprofloxacin appeared to be the most effective antibiotic against *Staphylococcus* with only 3.3% resistance rate.
Conclusion: The present study showed high rates of contamination of stethoscopes and cell phones in the public hospitals with very low habit of cleaning of these instruments either before or after use. There is need for the Department of Health as well as managers of public hospitals to take infection control measures very seriously and to enforce the practice thereof among staff members for an improvement in the management of nosocomial infections.

Disclosure of Interest
None declared.

P204

Flocked swab and liquid based medium versus contact plates for environmental surface monitoring: an in-vitro study

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Introduction: Contaminated environmental surfaces can be important sources of hospital-acquired infections. Several collection methods have been already described including swab or sponge samples, enrichment medium and contact plates.
Objectives: This study aims to compare a swab culture method (Copan FLOQSwabs® and SRK® medium) and a contact plate culture method (RODAC plate) for recovery of gram positive and negative bacteria from different patterns of environmental surfaces, to establish an internal protocol.
Methods: Methicillin-resistance *Staphylococcus aureus* (MRSA, ATCC 43300) and *Escherichia coli* (ATCC 25922) 0.5 McFarland suspensions were prepared. 25 µl aliquots of 0.5:50,000 diluited suspensions (75 CFU), were spread on 5×5 cm pieces of stainless steel and pharma wall for *E. coli* and MRSA, respectively. FLOQSwabs® moistened with SRK® medium were used to swab 25 cm^2 areas. RODAC plates (24 cm^2) were applied for 10 s on surface, then incubated. After sampling, swabs were immediately inserted into 1 ml of SRK medium, then 100 µl were inoculated into Blood agar plates. Both RODAC and Blood agar plates were incubated at 37 °C for 48 h. Tests were performed in triplicate.
Results: Overall, target organisms were recovered from every environmental surfaces. CFU counts are summarized in Table 1. An average value of 1.7 CFU/cm^2 was obtained with RODAC plates, starting from *E. coli* suspension spread on steel surface. In parallel, 2.1 CFU/cm^2 were obtained when specimens were collected by FLOQSwabs® and SRK® medium. Concerning the MRSA suspension, 1.3 and 1.7 CFU/cm^2 were obtained from contact plates and FLOQSwabs® in SRK® medium, respectively. CFU recovery was of 55.1% and 42.7% for RODAC vs 71.1% and 57.8% for FLOQ-SRK system for *E. coli* and MRSA, respectively.
Table 1

	Replicate	FLOQ-SRK (CFU)		RODAC (CFU)	ΔRODAC—SRK (CFU)
		Raw	Normalized		
E. coli	A	5	50	48	-2
	B	7	70	43	-27
	C	4	40	33	-7
	Mean	5	53	41	-12
MRSA	D	5	50	35	-15
	E	6	60	40	-20
	F	2	20	21	1
	Mean	4	43	32	-11

Conclusion: In conclusion, FLOQSwabs® with SRK® medium recovered slightly more amount of microorganisms than RODAC plates. Moreover, flocked swab with transport medium may be preferred due

to the ability to collect specimens from irregular and large surfaces, to make dilutions before plating and for potential cost savings.

Disclosure of Interest
None declared.

P205

Microbiological assessment of pathogens of nosocomial infections isolated from medical equipment surfaces and air

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Abstract video clip description: Introduction: Pathogens causing nosocomial infections (NI) demonstrate significant resistance to many pharmaceuticals. Therefore, the use of disinfectants for prevention in medical institutions is of increasing importance.
Objective: To determine the susceptibility of microorganisms colonizing medical equipment to antibiotics and disinfectants.
Research methods: Microbiological examination of medical equipment was conducted at the Regional Clinical Center of Neurosurgery and Neurology of the Transcarpathian Region. Four clinical strains isolated from medical equipment and air were used. Microorganism identification was performed according to generally accepted methods in clinical microbiology. Antibiotic susceptibility testing was conducted using the disc-diffusion method following the rules of the European Committee on Antimicrobial Susceptibility Testing (EUCAST). The antimicrobial properties of Econorm DEZ, Korzolex, Surfanios, and Sanidez were determined using serial dilution method.
Results and discussion: The structure of the investigated pathogens causing infectious complications included Staphylococcus aureus, Staphylococcus epidermidis, Pseudomonas aeruginosa, and Micrococcus luteus. The S. aureus strain exhibited sensitivity to ceftriaxone, moxifloxacin, amikacin, ampicillin, gatifloxacin, tobramycin, and clindamycin. P. aeruginosa was susceptible to ceftazidime, piperacillin/tazobactam, and amikacin. According to the results of the disinfectant studies, Econorm DEZ, Korzolex, and Sanidez inhibited the growth of all tested microorganisms, while Surfanios showed only partial inhibitory activity against the isolated staphylococcal strains.
Conclusions: The most effective preventive measures against NI were found to be Econorm DEZ, Korzolex, and Sanidez, which exhibited high bactericidal properties against the tested clinical strains.

Disclosure of Interest
None declared.

P206

Increasing patient safety through a new phase 3 simulated-use test for chemical surface disinfectants

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Introduction: Insufficient disinfection of frequently touched surfaces in healthcare facilities is an important risk factor in the spreading of nosocomial pathogens. For a disinfectant to be registered as a biocidal product, it must pass several phase 1 and 2 efficacy tests, which are very standardized but do not reflect the reality during the actual use of the product.
Objectives: To be able to test disinfectants under real life conditions in the lab, the first phase 3 step 1 test was developed in this study.
Methods: This so-called simulated-use test is based on the EN 16615, which describes an efficacy test where a test surface is contaminated on the first of four fields marked on the test surface. The disinfectant is then applied to the surface by wiping the test surface in a standardized, but unrealistic way, from test field one to test field four and back. The surviving test organisms are then recovered from all test fields.
Results: The practical relevance of this test method was improved by implementing a new contamination as well as a new wiping procedure: In the simulated-use test the test surfaces are contaminated via the newly developed touch transfer method (Knobloch et al., 2017) and are then wiped by four test persons in a non-standardized way so that the individual variance of the wiping technique is represented.
In addition to that, the simulation of a hospital environment was achieved by using the following material from our project partner "UKE" in the simulated-use tests: i) common and relevant surface materials as test surfaces, ii) strains isolated in the immediate patient environment as test organisms, possibly as a mixed inoculum and iii) wiping materials and disinfectants used by the cleaning staff.
Conclusion: Depending on the type of healthcare facility in which a disinfectant is meant to be used in, the materials present in that environment must be validated and then used in the simulated-use test. Once a simulated-use test is established, it is the best laboratory test to ensure patient safety by accurately measuring the efficacy of a disinfectant through the direct simulation of its practical use.

Disclosure of Interest
None declared.

P207

Innovative approach for hospital environment monitoring: a comparison between cultural method and isothermal loop mediated amplification (LAMP)

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Introduction: Hospital environment can be a source of infection for both patients and medical staff; therefore, the monitoring of medical settings is essential to test the sanitization protocol applied. Traditional techniques based on culture and biochemical methods, required several days for pathogens detection and identification, leading to a long-term closure of hospital wards that result associated to infections.
Objectives: In the light of this, the aim of the study is to compare the "gold standard" method, based on the use of standard contact plates (UNI EN 17141:2021), to a more rapid and sensitive technique, such as the loop mediated isothermal amplification (LAMP), to reduce the time of analysis.
Methods: Serial dilution of *Pseudomonas aeruginosa* (ATCC 10145) and *Staphilococcus aureus* (ATCC 23235) were prepared starting from a 0.5 McFarland bacterial suspension (corresponding to 1.5×10^8 CFU/mL) to a final concentration of 1.5×10^1 CFU/mL. Surfaces of 100 cm^2 were contaminated in duplicate with 1 mL of each dilution. For each pair of contaminated surfaces, one was analyzed using the standard contact plates method, while the other, sampled by SRK FLOQSwabs® (Copan, Brescia, Italy), was analyzed by LAMP. Staring from 18 h of swab pre-incubation, required by manufacturer, the time of analysis was reduced to 3, 6 and 9 h.
Results: The results obtained were then compared. Cultural method showed positive samples, after 48 h of incubation, only for surfaces contaminated with a concentration up to 1.5×10^5 CFU/mL and 1.5×10^4 CFU/mL for *P. aeruginosa* and *S. aureus,* respectively. By contrast, LAMP positive results were found for *P. aeruginosa*, after 9, 6 and

3 h, corresponding respectively to a pathogen concentration up to 1.5×10^2 CFU/mL, 1.5×10^3 CFU/mL and 1.5×10^4 CFU/mL; while, for *S. aureus*, LAMP positive samples were detected at a concentration up to 1.5×10^1 CFU/mL, regardless of pre-incubation time.
Conclusion: Results suggest that LAMP permit to detect pathogens contamination also reducing the pre-incubation time required by manufacturer. Therefore, the analysis of samples from several hospital settings is planned to confirm the efficiency of LAMP as a valid approach for a cheap, quick and "on-site" environmental surveillance.

Disclosure of Interest
None declared.

Poster session: SARS-COV2: Infection control

P208

Evaluation of SARS-COV-2 transmission in ward received COVID-19 patients

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Introduction: From December 2022, West China hospital of Sichuan University began to admitting COVID-19 patients. As resources became overwhelmed, the hospital began converting ordinary wards into back-up COVID-19 wards. Previous studies about SARS-CoV-2 transmission did not focused on omicron variant. And study objects in previous studies were isolation ward, which differ with back-up COVID-19 ward.
Objectives: We sought to elucidate contamination of air and surface in back-up COVID-19 ward, provide evidence in selecting effective infection prevention and control interventions.
Methods: There was a cross-sectional study in West China Hospital. Between January 9 to February 16, 2023, surface and air samples were collected from 16 (29.63%) of the back-up COVID-19 wards, including patient zone, public zone and office zone. Quantitative RT-PCR was performed to detect SARS CoV-2 RNA. And a correlation test were conducted to detect the reliance between positive sample and compliance of disinfection, rate of covid-19 patients and critical patients.
Results: 15.51%(N = 14) of 503 surface samples and none of 86 air samples were positive for SARS-CoV-2. There was significant difference among patient, public zone and office zones in positive rate of surface samples, but not in air samples. There was no clear relationship between rate of positive surface or air samples and rate of COVID-19 patients, critical patients and compliance of disinfection.
Conclusion: Positive surface samples were found in public zone and patient zone, and the rate was higher in public zone. It suggests that the disinfection frequency of public zone should be added. And patients' accessible zones should be restricted. There was no relationship between contamination and rate of COVID-19 or critical patients, thus the disinfection regulation should be unified in all back-up COVID-19 wards.

Disclosure of Interest
None declared.

P209

Standard precautions and their compliance by nursing professionals in Brazil during the COVID-19 pandemic in Brazil

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P209

Introduction: Among the preventive measures for COVID-19, when the diagnosis is not recognized, it is recommended to follow standard precautions, which consist of practices to prevent infections in any environment where care is provided, assuming that all people may be potentially infected with a pathogen that can be disseminated.
Objectives: Thus, the objective of the research was to analyze compliance with standard precautions by nursing professionals working in care practice during the COVID-19 pandemic in Brazil.
Methods: Analytical cross-sectional study, carried out from October to December 2020 with nursing professionals who worked in direct health care in the Brazilian territory during the COVID-19 pandemic, through a virtual questionnaire containing sociodemographic, training and work variables of the participants and, the Brazilian Version of the Compliance with Standard Precautions Scale. Descriptive and inferential statistics were used, analyzed using the statistical software R, version 4.1.1. Research approved by the Research Ethics Committee.
Results: 9,583 nursing professionals participated. The mean compliance with standard precautions was 15.27 (SD ± 2.94), corresponding to 55.1%. There was a difference between the mean compliance scores between the sociodemographic, training and work variables of the participants ($p < 0.01$), except in the ambulatory, infirmary, surgical center, private practice and field hospital sectors for assistance to patients with COVID-19. Female professionals, from the Midwest and Southeast regions, from a private institution, who provided assistance in a COVID-19 field hospital, who were not isolated from their families and who received training for COVID-19 were more likely to comply with precautions-standard.
Conclusion: Considering that all professionals must follow standard precautions, compliance was lower than expected, not happening in its entirety in the face of the COVID-19 pandemic scenario.

Disclosure of Interest
None declared.

P210

Successful infection prevention and control strategies used during COVID-19 pandemic

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Introduction: In 2020, the project Enhancing Infection Prevention and Control to Respond to COVID-19 in Brazil (PREVCOVID-BR) was initiated aiming to increase Infection Prevention and Control (IPC) capacity to respond to COVID-19 in hospitals. Key activities included placement of two fellows in hospitals, mentorship and material resources provision, periodic assessment, feedback and improvement plan development.
Objectives: To describe the results of hospitals IPC capacity assessments along the project.
Methods: Ten public hospitals in Manaus and São Paulo participated in two phases (Phase 1: August 2020-November 2021 and Phase 2: January 2021-September 2022); two hospitals were replaced in Phase 2. Hospital IPC capacity to respond to COVID-19 was assessed by

fellows three times (baseline, midpoint, and endpoint) per phase using a standardized tool measuring IPC capacity across nine domains, with scores assessed as a percentage of the total possible value per domain and overall.
Results: The average overall scores increased from 60 to 87% and 78% to 87% in Manaus, and from 70 to 89% and 87% to 88% in São Paulo for Phase 1 and Phase 2, respectively. Scores for screening for suspected COVID-19 patients increased from 37 to 76% and 59% to 69% in Manaus in Phases 1 and 2, respectively and in São Paulo increased from 57 to 84% in Phase 1 but remained at 74% in Phase 2. Scores for the domain of monitoring capacity of health workers for COVID-19 increased from 50 to 90% and 73% to 80% in Manaus and from 70 to 80% and 73% to 87% in São Paulo in Phases 1 and 2, respectively.
Conclusion: IPC capacity for COVID-19 improved at all participating hospitals and was sustained along the project.

Disclosure of Interest
None declared.

P211

Infection prevention and control during the SARS-COV-2 pandemic in Namibia

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P211

Introduction: The SARS-CoV-2 pandemic highlighted the importance of infection prevention and control (IPC) in the health sector. This called for structural adjustments and this contributed to reduction of transmission of health care associated infections. Thiscalled for the construction of dedicated isolation units and repurposing of available public infrastructure.
Objectives: To highlight the importance of infection prevention and control (IPC) in the health sector.
Methods: The monitoring of IPC capacities focused on functional triage system and isolation rooms, early monitoring of healthcare personnel exposed to confirmed cases of SARS-CoV-2, utilized a health care workers risk assessment tool to monitor exposure, assessment and reporting of Health Care Workers with confirmed SARS-CoV-2 status.
Adaptation of additional guiding documents on various aspects of IPC was done in response to the evolving nature of the pandemic. Specific reference was made to different care settings and IPC measures used to manage human remains of patients who died of SARS-CoV-2 disease.
Standard Operating Procedure were developed to coodinate the workflow of the Infection and Control Pillar of the National SARS-CoV-2.
Results: A total of 171,205 cases were reported including co-infections were recorded in the country, of the total confirmed cases, 5808 (3.4%) healthcare workers during the pandemic.
4881 (84%) public sector, 911 (15, 7%) private sector, 16 (0, 3%) Non-governmental organizations.
5776 (99.6%) recovered, and 25 (0.4%) deaths.
Total deaths recorded 4090.
Key challenges were attributed to the lack of representation of key stakeholders tasked with WASH and IPC, limited knowledge and skills on IPC, inadequate PPE and IPC commodities and the misinterpretation guidelines and limited isolation facilities.
Conclusion: IPC played a decisive role during the SARS-CoV-2 pandemic outbreak, and its correct application continues to save lives. Effective IPC required constant action at all levels of the health system, from policymakers to facility managers, health care workers, and other relevant stakeholders. The prioritization of critical gaps in the national IPC programmer and maintenance thereof was highlighted during the SARS-CoV-2 pandemic.

Disclosure of Interest
None declared.

P212

Role of hospital infection prevention and control committee (HIPC) in preventing transmission of COVID-19 in healthcare facilities

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Introduction: COVID-19 is a catastrophic global pandemic caused by SARS-CoV-2. In lieu of neither vaccine nor effective drug, the only way to control this pandemic is through a robust infection prevention and control strategy. Hospital infection control committee is the integral component of the HCF, which is responsible for establishing, implementing and monitoring the infection control activities for the prevention of COVID.
Objectives: The role of HICC can be broadly grouped into — (i) development of standard operating procedure (SOP), ii) continuous COVID education and training, (iii) monitoring the compliance to SOP and (iv) post exposure risk assessment.
Methods: (A) Development of SOP—The function of HICC in COVID is to prepare an evidence-based standard operating procedure for infection prevention and control which can be followed by the HCW.
(B) Continuous COVID education and training—Includes Hand hygiene (indications and method), appropriate use of personal protective equipment including the correct method of donning and doffing of each PPE and its sequence.
(C) HICC Infrastructure—1. HICC control room and 2. HIC team
(D) Monitoring of compliance to SOP—Hand Hygiene, PPE (Donning and Doffing monitoring), Environmental cleaning and housekeeping practices, Biomedical waste, Kitchen and Laundry management, Operation theatre management, Staff health safety, HAI surveillance, care bundle audit and antibiotic audit in COVID facility.
(E) Post exposure risk assessment for COVID-19—HICC should perform risk assessment if any HCW complains about any breach during their posting.
Results:

Table: Components of biomedical waste segregation practices to be monitored during infection control round

1. Segregation of waste is done in the appropriate color coded bags
2. Double bagging is being used in the COVID areas
3. Bags and dedicated trolleys are labelled with COVID-19 waste sticker
4. Bags are tied whenever they are 3/4th filled up
5. Outer surface of bag is disinfected appropriately before handing over
6. Bags are timely transported to CBMWTF (< 24 h)

Conclusion: Infection control is the single most important measure to prevent the cross transmission of SARS-CoV-2 and HICC should take the lead in supervising the effective implementation and monitoring of the infection control program during pandemics in a HCF.

Disclosure of Interest
None declared.

P213

Infection and prevention control strategies during covid-19 pandemic in Indonesian Red Cross Bogor Hospital

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Introduction: Background: Infection and Prevention Control (IPC) is a very important part of the Covid-19 pandemic. IPC has a big role

in preventing the spread of Covid-19 infection in healthcare facilities. Many strategies are needed to prevent the spread of Covid-19 wider.
Objectives: There are 6.714 Covid-19 inpatients from 2020 to 2022 and 1.315 who have been treated as outpatients in 2022 in Indonesian Red Cross Bogor Hospital. The purpose of this study is to describe strategies that were carried out to prevent the spread of Covid-19 during the Covid-19 pandemic in Indonesian Red Cross Bogor Hospital which were intended to health care workers, patients, and hospital visitors from the risk of being infected.
Methods: Method: This study is descriptive. We collect data and information from the IPC Committee of Indonesian Red Cross Bogor Hospital from 2020 to 2022 which includes all IPC activities related to the Covid-19 Pandemic.
Results: Result: Indonesian Red Cross Bogor Hospital has established new sevices during pandemic. Engineering control is carried out by creating negative pressure in intensive care unit, emergency room, operating theatre, biosafety level 2 microbiology laboratory, new covid-19 inpatient ward, and covid-19 outpatient ward. Administrative control is also carried out, regarding the regulation or standard operating procedure related to Covid-19 from patient admission to discharge. The use of personal protective equipment is carried out in education, outreach, monitored, and evaluated.
Conclusion: Conclusion: The strategies that have been implemented are optimal. The continuation of the infection prevention and control program continues to be carried out as needed to maintain the quality of infection prevention and control implementation.

Disclosure of Interest
None declared.

P214

Prevention and control of covid-19 on cruise ship: experience report of an infection preventionist

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Introduction: The COVID-19 pandemic revealed improvements were needed in prevention and control of infections (PCI) on naval vessels like cruise ships. Crew members in close quarters also contacts between passengers, crew, and on shore people, facilitate the spread of infectious diseases. Therefore, the role of an Infection Disease and Prevention Officer (IDPO), must be a fundamental member of the crew, to adapt and execute the Infection Prevention and Control Programs that are consolidated and internationally recommended.
Objectives: To report the experience of implementing and improving the infection prevention and control actions on cruise ships and its impact on crew and passengers from an IDPO perspective.
Methods: Descriptive study through experiential report. The author reviewed existing literature formulating the basic question through the PICO strategy. The following subjects were developed: Internal vessel restructuring for COVID-19 prevention and control; Technical Audits and IDPO's work plan; Certification program and external audit; Implemented improvements; Difficulties faced and Lessons learned contributing improvement to cruise ship PCI.
Results: The technical audits by IDPO indicated 61 non-conformities with an improvement rate of 36% (n = 22/61) before the start of the Certification Program. About 09 non-conformities were identified by the external auditors hired to examine the infection prevention and control actions. Its improvement recommendations were discussed with the cruise line company and the ship's Internal Quality Committee for implementation so that a certification seal could be awarded. The vagueness of the IDPO's role and the ship's rigid hierarchy limited its potential for action. The infection prevention and control system developed in hospitals can and should be applied to cruise ships with required adaptations.
Conclusion: It was possible to conclude that Infection prevention and control actions managed by a specialist on board a cruise ship resulted in improved compliance indicators of according to the Essential Components created by the World Health Organization. It is hoped that this study would be helpful for cruise ships and other naval vessels, maritime engineering companies, health organizations, educational institutions and interested individuals, to prepare staff to face new infection outbreaks and epidemics.

Disclosure of Interest
None declared.

P216

The operating system of a single medical institution dedicated to COVID-19 in Korean medical institutions

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Introduction: In Korea, general bed in hospitals has been converted for the treatment of COVID-19 patients, in order to respond actively to the crisis of the outbreak of the COVID-19 pandemic. The first through eighth floors were designated as general patient treatment wards, while the ninth through thirteenth floors were designated for the treatment of COVID-19 patients.
Objectives: Our goal was to treat critically severe patients safely in one hospital because it is dangerous to transfer them.
Methods: The zones, where negative pressure facilities of mobile negative presses were established, were operated separately after the moving path of patients and medical staff was thoroughly controlled. A lift dedicated to COVID-19 patients was operated on, so they could be directly admitted and discharged from the outside to a dedicated hospital. A smart device system in the dedicated hospital was applied for minimal patient contact. A step-up/down system was operated to provide different treatment levels to enable step-by-step treatment in the hospital according to the severity of patients with severe symptoms, allowing patients with efficient circulation treatment without transfer to other hospitals.
Results: A total of 4,358 patients were hospitalized during the COVID-19 dedicated hospital, in which the average number of hospitalized patients was 26.7 days for severe patients and 10.4 days for moderate patients. There were 497 cases of using the step-up/down system in dedicated hospitals, which are including 231 cases of step-up for intensive treatment due to the patient's poor condition, and 266 cases of step-down for moving beds due to the patient's improved condition.
Conclusion: The operation of the step-up/down system for infectious patients presented a pioneering model in a hospital for providing treatment for safe medical services on the variance of changes in the patient's condition.

Disclosure of Interest
None declared.

P217

Optimizing the mechanism of surging capacity during the COVID-19 pandemic in a teaching hospital in Taiwan

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Introduction: Lessons have learned from the coronavirus disease 2019 (COVID-19) pandemic that the hospitals have to develop a mechanism to make decision regarding surge capacity for COVID-19 inpatient services timely.
Objectives: To optimize the surge capacity domain of hospital preparedness and response plan for emerging infectious diseases following the first wave of community outbreak of COVID-19 in Taiwan.
Methods: Using a tabletop exercise to update surge capacity plan in September 2021 in a 2600-bed teaching hospital which provide primary and tertiary care (including complicated COVID-19 cases) for preparedness of possible next community outbreak. The model for surge capacity was established at strategic level, explicitly describe the rationale and data driven decision-making mechanism. The superintendent chaired the tabletop exercise and department heads came into conclusion of which inpatient service units be transformed rapidly into COVID-19 dedicated wards (for isolation of confirmed cases and for quarantine of those at risk or stepdown). Furthermore, we conducted 7 workshops for tactical level chaired by vice superintendent and 16 departments staffs from August through December 2021. The key elements and conclusion for surge capacity were documented and refined when indicated.
Results: The document "surge capacity operation plan" was updated, including phase1: involved 6 centralized wards which are surged at the same time or sequentially, paired wards for original patient allocation, training and redeployment of healthcare workers. Phase 2: add "the dedicated rooms of the specialized ward " with supporting interventions, that were necessary for the patients had both original medical and COVID-19 care needs. In response to the community outbreak in 2022, the maximum of dedicated beds for COVID-19 confirmed case accounted for 26.1% (432/1657) of the general acute beds, and 20.8% (33 of 159) of the ICU beds, surged within the timeframe by government policy.
Conclusion: Through tabletop exercise, superintendent and department heads came into conclusion and consensus that how to surge capacity and executed accordingly and coordinatively within the timeframe.

Disclosure of Interest
None declared.

P218

Knowledge attitude and practice (KAP) related to infection prevention and control (IPC) measures among ambulance drivers of Nepal red cross society during the COVID-19 pandemic

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Introduction: People with suspected COVID-19 can infect others at any time. Ensuring the proper implementation of standard and transmission-based infection prevention and control (IPC) precautions is essential in health settings, including patient transfer and transport, for the safety of patients and health workers (HWs).
Objectives: The target of this study was to assess the knowledge, attitude, and practices (KAP) related to IPC during patient transfer and transport through ambulances by drivers.
Methods: A cross-sectional study was conducted among 250 ambulance drivers of Nepal Red Cross Society (NRCS) through a semi-structured questionnaire on KAP related to IPC from April 2020 to May 2020. We analyzed survey data by using descriptive statistics. Chi-square test and binary logistic analysis were used to examine the association between sociodemographic characteristics with KAP related to IPC.
Results: Among 250 participants, all (100%) of them were male. The study found that the majority of respondents (78%) had completed their education at the school level, while (15%) had obtained a higher school certificate, and the remaining (7%) had pursued higher studies. According to the findings, (82%) of ambulance drivers demonstrated a good understanding of appropriate practices, while (93%) exhibited adequate knowledge. However, a negative attitude was observed among (38%) of the ambulance drivers in adopting IPC measures. In the multivariate binary logistic analysis, the ambulance drivers with the experience of less than two years (OR 0.24, 95% CI 0.17–0.79) and more than 10 years (OR 0.16, 95% CI 0.08–0.44) were significantly associated with negative attitude. The confidence score for IPC materials use (OR 1.11, 95% CI 1.03–1.22) was significantly associated with an optimistic attitude of drivers.
Conclusion: Ambulance drivers exhibit knowledge and proactive practices in minimizing the spread of COVID-19 infection through proper IPC measures. However, drivers may face challenges in maintaining optimistic attitudes towards IPC measures. Therefore, implementing regularly updated educational training programs focusing on IPC for targeted groups, such as ambulance drivers, will play a significant role in enhancing both their attitudes and practices.

Disclosure of Interest
None declared.

P219

To study the knowledge, attitude, and practice about the COVID-19 (SARS-COV-2) infection among health care workers in a tertiary care hospital in northern India

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Introduction: As the primary carers, the HCWs have direct contact with the patients of COVID-19 illness. By enhancing their knowledge, attitudes, and practices about COVID-19, HCWs can prevent or significantly minimize their risk of contracting it.
Objectives: To evaluate the knowledge, attitude, and practice about various aspects of the COVID-19 infection among health care workers and to find out their association vis-à-vis different variables.
Methods: The research was conducted at the Department of Obstetrics and Gynaecology, Pt.BDS PGIMS, Rohtak (n = 209). The research instrument was a methodically designed questionnaire in the English language. The survey included 35 items covering diverse facets of the COVID-19 infection, with 14 items about knowledge,13 about attitude & eight about practices adopted by HCWs. Each correct knowledge-based inquiry was granted a score of one, while an incorrect answer was assigned a score of zero. The survey questions about attitudes and practices were constructed utilizing a five-point Likert scale.
Results: The data indicate that most participants, precisely 53%, belonged to the age bracket of 19–25 years, 63% of the participants identified as female, 69% were married, 76% from urban areas, and 57% were enrolled in M.B.B.S. medical programs. The participants' mean knowledge score was 9.59, with a minimum score of 2.00, a maximum score of 14.00, and a standard deviation of 2.07. The present study employed an ANOVA test to examine the correlation between knowledge and various sociodemographic factors. The results revealed a statistically significant difference in the mean knowledge scores across age groups ($p = 0.0233$) and male participants ($p = 0.0395$). The study utilized the Pearson Chi-Square Test to examine the correlation between various attitude and perception statements and distinct sociodemographic variables. The results indicated the presence of statistically significant difference.
Conclusion: Evaluating diverse areas of knowledge, attitude, and practice among frontline healthcare workers holds significant importance. The present study has illuminated several domains of healthcare workers' knowledge, attitude, and practices (HCWs) that require improvement and intervention through targeted measures such as structured training programs.

Disclosure of Interest
None declared.

Poster session: SARS-COV2: Surveillance and epidemiology

P220

COVID-19 surge pattern, fatality rate and associated risk factors in Nigeria: findings of the epidemiological surveillance of SARS-COV-2 pandemic (2020–2022)

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Introduction: Epidemiologic surveillance of Corona Virus Disease 2019 (Covid-19) remains a global strategy to track the SARS-CoV-2 spread and the connected mortality.
Objectives: The study seeks to investigate Covid-19 waves pattern and fatality associated risk factors to reinforce SARS-CoV-2 containment and prevention strategy.
Methods: An epidemiological analysis of data mined from the Surveillance Outbreak Response and Analytics System. Epi curve depicts the SARS-CoV-2 pandemic wave pattern, cumulative incidence (CI), incidence rate (IR) and case fatality rate (CFR) were computed and compared. Bivariate and multivariable regression assessed the impact of the pandemic waves, demographics, and clinical factors on Covid-19 fatality. All analysis was performed using Stata (version 17.0) at a 95% confidence interval.
Results: Four waves of the Covid-19 pandemic were observed between 2020 and 2022 [Feb 2020–Oct 2020 (19.0%), Oct 2020–Jun 2021 (44.3%), Jun 2021–Nov 2021 (24.4%) and Nov 2021–Feb 2022 (12.4%)]. Incidence was highest in the first (CI = 13.8%) and lowest in the third (CI = 7.3%) waves with IR of 1.5/100 person-months of observation. CFR is 0.95% with 1.80%, 0.70%, 0.81% and 0.25% in first, second, third and fourth waves respectively. The waves are significantly associated with SARS-CoV-2 mortality ($p < 0.001$). Odds of death is higher in first (cOR = 11.37, 95% CI 9.20–14.03) second (cOR = 3.17, 95% CI 2.55–3.92) and third (cOR = 2.18, 95% CI 1.74–2.74) waves than the fourth. Age (aOR = 1.05, 95% CI 1.04–1.06), gender (aOR = 1.77, 95% CI 1.42–2.21), education (aOR = 1.99, 95% CI 1.28–3.08) and inpatient status (aOR = 9.91, 95% CI 8.06–12.18) are demographics and clinical risk factors of Covid-19 mortality.
Conclusion: Nigeria experienced four waves of Covid-19 pandemic with a propagated pattern and about 1% case fatality rate in the first two years of the pandemic. Covid-19 incidence and fatality were highest and more likely in the first wave. Containment strategy implemented in the low incidence waves need to be optimized and treatment modality considering mortality predisposing factors is critical for SARS-COV-2 clinical management and prevention.

Disclosure of Interest
None declared.

P221

Clinical characteristics and risk factors for mortality with COVID-19: a survival analysis among hospitalized patients in Tunisia

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Introduction: there is a huge gap in the state of knowledge of Covid-19 risk factors between developed countries and African countries including Tunisia. Therefore, prognostic factors of corona virus disease 2019 (COVID_19) patients among Tunisian hospitalized patients are lacking.
Objectives: Our objective was to describe the clinical characteristics of COVID_19 patients in a tertiary care center since the start of the pandemic and to identify independent risk factors for hospital mortality.
Methods: We conducted a non-interventional prospective study of adult confirmed COVID_19 patients who were hospitalized in Sahloul university Hospital between September 2020 and November 2021. We used Kaplan Meier survival analysis and Cox Proportional Hazard regression to identify independent risk factors of nosocomial infection-associated mortality.
Results: A total of 1978 patients were hospitalized in Sahloul University Hospital between September 26th 2020 and November 30th 2022. The mean age was 55.65 ± 21.39 years [1–94]. During the study period, a total of 417 Deaths were reported, with a median survival $30 +/- 3.11$ days (95% CI [23.904; 36.096]). Mortality was significantly associated with: age ($p < 10^{-3}$), comorbidities ($p = 0.01$), obesity ($p < 10^{-3}$), cardiovascular disease ($p = 0.015$), endocrine pathologies ($p = 0.01$), obesity ($p < 10^{-3}$), hospitalization in intensive care units (ICU) ($p < 10^{-3}$) and Oro tracheal intubation ($p < 10^{-3}$).
At multivariable analyses, hypertension (HR 1.93; CI [1.2; 3.72]), cardiovascular disease (HR 4.11; CI [1.99; 17.09]) and being admitted in ICU (HR 31.49; CI [11.04; 72.9]), were independent associated factors with COVID-19 mortality.
Conclusion: Conclusion: Our findings would facilitate the early identification of high-risk COVID_19 patients, especially in primary hospitals.

Disclosure of Interest
None declared.

P222

Hospital acquired infections associated to COVID-19 in the intensive care unit: clinical characteristics, outcome and evolution according the epidemic phases

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Introduction: Intensive care units' patients are at high risk of hospital-acquired infections (HAIs) due to patient-dependent and patient-independent factors. These HAIs lead to increased morbidity, mortality and hospital costs. HAIs in ICUs have also been reported for COVID-19 patients and we highlighted that COVID-19 may be an independent risk factor of ventilator-associated pneumonia.
Objectives: Our objective was to describe the hospital associated infections (HAIs) epidemiology and their evolution with patients infected by COVID-19 hospitalized in intensive care unit (ICU) at a French university and regional hospital between March 2020 and May 2021.
Methods: We conducted a descriptive, retrospective, single-center epidemiological study. Our primary outcome was the occurrence of a secondary infection (pneumonia or bacteremia).
Results: A total of 441 patients were included. 52.4% of patients contracted at least one HAI during their stay. The incidence rate was 26.9 ventilator-associated pneumonia (VAP) per 1000 ventilator-days and the cumulative incidence rate was 57.2 VAP per 100 intubated patients. The incidence rate was 7.7 bacteremia per 1000 patient-ICU days and the cumulative incidence was 18.3 bacteremia per 100 patients. The decrease in intubation's exposure from August to December 2020 resulted in a significant decrease in the cumulative incidence rate of VAP from 52.0 during the first wave to 37.0 VAP per 100 patients during the second one. *Enterobacteriaceae* and *Pseudomonas aeruginosa* were the most common microorganisms involved in VAP, whereas gram-positive cocci, but also *Pseudomonas aeruginosa*, dominated the bacteremia's episodes.
Conclusion: Changes in practice as well as knowledge's evolution may have influenced the HAIs' epidemiology.

Disclosure of Interest
None declared.

P223

Etiology of severe acute respiratory infections during the first four waves of SARS-COV-2 pandemic in Iran: a single center study

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Introduction: Acute respiratory infections (ARI) caused by a wide range of etiologies are a great public health challenge worldwide.
Objectives: In this study, we evaluated the characteristics of ARI caused by some respiratory pathogens among patients admitted to the intensive care units (ICUs) in a referral hospital in Iran during the first four waves of the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) pandemic.
Methods: We enrolled 395 patients with ARI hospitalized in ICUs of Nemazi Teaching Hospital affiliated to Shiraz University of Medical Sciences in Shiraz, Iran during 13 months from April 2020 to June 2021. Real-time polymerase chain reaction assay were used for detection of SARS-CoV-2, *influenza* viruses, *respiratory syncytial virus* (RSV), *Mycoplasma* and *Chlamydia* in the nasopharyngeal fluid samples. The demographic and clinical data such as underlying diseases were assessed in patents with and without Coronavirus disease 2019 (COVID-19).
Results: Two hundred and nine (53.7%) were male. The mean age was 32 ($\pm$ 27) years old. An etiology was detected in 63 (16%) patients (53 ones with SARS-CoV-2, 5 with each Chlamydia and Mycoplasma). SARS-COV-2/mycoplasma coinfection was detected in one patient. There were neither patients with RSV or influenza infection. The highest rate of COVID-19 were among adults aged between 36 and 65-year-old (5.31%) and the lowest rate among children under 5 years of age (0.3%). The shortness of breath was the most common symptom in the SARS-CoV-2-infected patients. It was significantly more frequent among patients with COVID-19 (P value $\leq$ 0.001). Totally, 146 (37%) patients had at least one underlying diseases and diabetes (8.1%) was the most common one. The rate of diabetes was not different significantly between patients with and without COVID-19.
Conclusion: Detecting no any infection with RSV and Influenza infection and a considerable number of Chlamydia and Mycoplasma infection during the first four waves of SARS-CoV-2 pandemic highlights the importance of surveillance of etiology of ARI during the respiratory pandemics. It could be crucial in implementing infection control programs and selecting empirical antibiotic regimens, appropriately.

Disclosure of Interest
None declared.

P224

Factors associated with mortality in the first and second waves of the COVID-19 pandemic in a Brazilian intensive care unit

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Introduction: COVID-19 is a relatively new disease. Therefore, analyzing epidemiological aspects of those critically affected by the disease may help identify predictors of death.
Objectives: To identify clinical and laboratory aspects associated with mortality among patients with COVID-19 admitted to an intensive care unit (ICU) during the first and second waves of the pandemic, in which predominated alpha and gamma lineages of SARS-CoV-2, respectively.
Methods: Retrospective cohort study. We included patients with COVID-19 confirmed by RT-PCR, from March to November 2020 (first wave) and from December 2020 to August 2021 (second wave). Data were collected from the patient's medical records. Independent variables were assessed on the first day of ICU admission, and mortality was assessed at the end of the ICU admission. We used Fisher's exact test and Student's t-test, as appropriate. Two logistic regression models were developed, one for each pandemic wave.
Results: 377 patients were included in the first wave and 240 in the second. In the first wave, the univariate analysis identified that age, SAPS-3 score, platelets, fibrinogen, D-dimers, lactate dehydrogenase, urea, creatinine, International Normalized Index, and Inspiratory oxygen fraction were associated with mortality. In the logistic regression model, only age was associated with mortality. In the second wave, the univariate analysis identified that SAPS-3 severity score, chronic obstructive pulmonary disease (COPD), use of vasoactive drugs, urea, creatinine, tidal volume, ratio of oxygen pressure to the inspiratory fraction of oxygen, oxygen pressure, oxygen saturation, and axillary temperature were associated with mortality. In the regression model, oxygen saturation, axillary temperature, tidal volume, SAPS-3, COPD, and use of vasoactive drugs remained associated.
Conclusion: Age was the only independent factor associated with death in the first wave, while, in the second one, oxygen saturation, axillary temperature, tidal volume, SAPS-3, COPD, and use of vasoactive drugs were implicated as predictors of mortality. These findings highlight the evolving nature of Covid-19, which represents a challenge to the healthcare system.

Disclosure of Interest
None declared.

P225

Previous antibiotic exposure and risk of admission with sepsis in patients with COVID-19

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Introduction: Sepsis is a serious complication in patients with COVID-19. Antibiotic exposure appeared to increase the risk of subsequent bacterial infections including sepsis.
Objectives: We aimed to examine the association between previous antibiotic exposure and bacterial sepsis in patients with COVID-19.
Methods: This is a case–control study using electronic health records collected from all public hospitals in Hong Kong. COVID-19 patients aged $\geq$ 18 years infected during January-December 2022 from the local community were eligible. Cases were patients with sepsis identified within 3 days of admission defined based on suspected bloodstream infection and organ dysfunction. Controls were patients without sepsis during admission. Previous antibiotic exposure was defined as any prescription of antibiotic(s) during 8–90 days before admission, and further categorized following the AWaRe classification by the World Health Organization. Multivariable logistic regression models were used to examine the association between previous antibiotic exposure and sepsis admission adjusting for demographics, comorbidities, admission during epidemic peak, COVID-19 vaccination and antiviral treatment before admission.
Results: We identified 2,119 patients with sepsis of whom 23.4% (n = 495) were exposed to antibiotics 8–90 days before admission compared to 17.9% (n = 10,165) in 56,764 patients without sepsis. A

higher proportion of cases were exposed to Reserve antibiotics (1.1%, n = 23) than controls (0.5%, n = 272). Cases were also older, more likely to be male and had more comorbidities. After adjusting for covariates, exposure to Reserve antibiotics instead of Access or Watch antibiotics was associated with higher risk of sepsis in patients hospitalized with COVID-19 compared to patients without antibiotic exposure (adjusted odds ratio: 1.7, 95% CI 1.1–2.6). In addition, prior COVID-19 vaccination and antivirals were associated with a lower risk of sepsis admission.
Conclusion: The higher risk of admission with sepsis in patients with prior use of Reserve antibiotics implied that exposure to antibiotics at higher risk of resistance may predispose individuals to future severe infections. Studies are needed to illustrate the causal relationship between antibiotic exposure and subsequent severe infections considering the causative bacterial pathogens.

Disclosure of Interest
None declared.

P226

Management and outcomes of hospitalized patients with COVID-19 in Monastir University Hospital, Tunisia

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Introduction: COVID-19 had emerged in late 2019 and became a serious public health problem worldwide.
Objectives: The objective of this study was to determine selected indicators related to COVID-19 hospitalizations and predictors factors to hospital death during the five-month follow-up period.
Methods: We performed a longitudinal study among inpatients with COVID-19 in Monastir University hospital, between 1st October 2020 and 28th February 2021. We calculated these indicators: median length of stay (LOS), bed occupancy rate (BOR), bed turnover rate (BTR) and case fatality rate (CFR). The Kaplan–Meier and Cox regression were used to obtain hazard ratios (HRs) and 95% confidence intervals (CIs).
Results: We included 754 hospitalizations for COVID-19. The mean age was 64.3 years ± 14.1. Sex ratio (H/F) was 1.61. The median LOS was significantly longer in the intensive care unit (ICU) than in other departments (11[7–16], versus 7[2–14] days). The BTR and the BOR per month were respectively 2.4 patient/bed and 96.3% in the ICU versus 1.4 patient/bed and 62.3% in other wards. The BOR in the ICU exceeded the 100% during the outbreak of January/February 2021. The CFR was equal in both genders. The CFR significantly increased with age and with ICU admission ($p < 0.001$). During the study period, HR of death was significantly the highest in patients aged more than 75 years (HR = 7.673, 95% CI [3.214–18.318]) and in patients receiving artificial ventilation (HR = 3.809; 95% CI [2.145–6.767]).
Conclusion: This study highlighted the saturation of our health system with an overload in ICU, hence the need to strengthen the resilience of health structures in epidemic times.

Disclosure of Interest
None declared.

P227

Clinical characteristics of COVID-19 in cancer patients

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Introduction: The novel corona virus disease 2019 (COVID-19), first reported in China in December 2019, is a worldwide health threat. It became a public health emergency of international concern because of its severity and rapid spread.
Objectives: The aim of this study was to determine clinical characteristics of COVID-19 in cancer patients.
Methods: A prospective study was conducted at the department of medical oncology of Sfax, from November 2020 to February 2021. This was a consecutive cohort of all patients during this defined period.
Results: Among 226 cancer patients, corona virus disease was detected in 19 patients (8.4%). The incidence of COVID-19 infection in female was 10.7% and 4% in men. Two of them had a poor performance status (> 2) and four patients (21%) were obese. Among 34 patients aged more than 70 years old, 6 patients (31%) had confirmed *positive COVID-19* test. Co morbidities such as diabetes, hypertension, cardiovascular disease and chronic obstructive pulmonary disease were observed in 31% of cases (n = 6). Patients with metastatic tumor presented 63% of all infected patients. In 42% of cases, patients were under chemotherapy. Clinically, 15 patients (79%) presented with symptoms such as fever, dyspnea, caught, myalgia and ageusia/anosmia. A severe form of COVID19 requiring hospitalization was seen in 4 patients (21%).
Conclusion: This high prevalence may be explained by the susceptibility of patients with cancer to COVID-19 infection. Patients with cancer were more prone to infection with severe events, and an increased risk of death. This might be related to the systemic immunosuppressive state caused directly by tumour growth and indirectly by effects of anticancer treatment.

Disclosure of Interest
None declared.

P228

Vaccination profile and the risk of COVID-19 severe forms: results from a surveillance system in a Tunisian University Hospital 2021–2022

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Introduction: The COVID-19 vaccination campaign started in 2021 was a crucial step to reduce mortality especially in subjects at high risk of severe forms. However, its in depth impact on the evolution of the disease has not been a frequent research topic.
Objectives: To monitor the covid-19 cases in Sahloul Sousse University Hospital from 2021 to 2022 and to assess the association between severe forms and vaccination profile.
Methods: An exhaustive longitudinal descriptive study was carried out among patients with COVID-19, hospitalized in Sahloul University Hospital during the period from 01/04/2021 to 15/08/2022. The sociodemographic and clinical data of the patients were collected prospectively using a pre-established form.
Results: Overall, 1348 COVID-19 patients were identified. The median age was 58 years with a a sex ratio of 1.22. The median length of stay was 7 days [4–13]. Non-invasive ventilation (NIV) was reported in 11.1%, and intubation in 8.5% of cases. The overall mortality rate was 19.7%. The covid-19 vaccination rate was 15.5%: 3.9% a single dose, 9.3% two doses and 2.3% three doses. The mortality rate was significantly higher in unvaccinated patients (26.7% versus 17.8% ($p = 0.035$). Intubation was more frequent in vaccinated patients (12.1% VS 9.1; $p = 0.324$). Unvaccinated patients significantly required NIV (21.6% vs. 9.9%; $p = 0.001$).

Conclusion: Mortality rate, and NIV were greater in unvaccinated patients who were susceptible to severe forms of COVID-19. Thus, vaccination has an effect on reducing the risk of severe forms of COVID-19. This statement should be largely shared both in scientific community and in population.

Disclosure of Interest
None declared.

P229

Seroprevalence of SARS COV 2 during the first wave of the COVID 19 pandemic in Côte d'Ivoire

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Introduction: In Côte d'Ivoire, the first case of COVID 19 was recorded on March 11, 2020, with the main focus on the city of Abidjan. Serological surveillance is an important tool to assess the real extent of Covid 19 disease at the national level.
Objectives: To determine the serum IgG and IgM SARS-COV-2 antibodies in blood donors.
Methods: A cross-sectional study of blood donors from June 2020 and December 2021 was conducted at the Medical Biology Department of the University Hospital Center of Angré, Abidjan. Samples were collected from blood donors with no history or symptoms of Covid-19 visiting blood centers nationwide. A questionnaire was used for data collection including age, sex and geographical origin. Blood types have been determined. The IgM and IgG SARS-COV-2 antibodies were detected using the VIDAS® automate system using the ELFA (Enzyme Linked Fluorescent Assay) method. significance level set at 0.05.
Results: The seroprevalence in our study was 58.10% (4944/8510) for IgG and 4.68% (398/8519) for IgM. Donors between 15 and 45 years old had the highest seroprevalence rates (84.75%). The mean age was 33.90 (SD: 10.37). Males had a 85.06% seroprevalence, while females had 14.94%. The IgG antibodies rate were correlated to sex ($p = 0.01$) and age ($p < 0.001$). Prevalence was differential by geography, Abidjan had the highest rate (85.06%) compared to the others cities.
Conclusion: This study highlighted the seroprevalence of COVID 19 in Côte d'Ivoire during the first wave. The SARS-COV-2 antibodies detection should be performed in the population to improve disease control and management strategies.
Keywords: Seroprevalence—blood donors, COVID-19—SARS-CoV-2 – Côte d'Ivoire.

Disclosure of Interest
None declared.

P231

SARS-COV-2 seroprevalence and infection among healthcare personnel following the large-scale community outbreak: a cross-sectional study

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Introduction: Assessing the occupational risk of SARS-CoV-2 infection among healthcare personnel (HCP) helps develop effective facility-based strategies for minimizing intra-hospital transmission of SARS-CoV-2.
Objectives: The study aimed to estimate the SARS-CoV-2 seroprevalence and identify factors associated with SARS-CoV-2 infection among HCP.
Methods: From October 2022 to March 2023, adult HCP at a medical center were prospectively enrolled to undergo testing for the presence of anti-SARS-CoV-2 anti-N and anti-S antibodies. The included HCP completed a questionnaire interview to collect information on the history of SARS-CoV-2 exposure and infection. We examined the factors associated with acquisition of SARS-CoV-2 infection, which was detected through PCR or antigen testing.
Results: A total of 532 HCP were included, primarily consisting of females (87.8%) with a median age of 40 years. The majority of participants were frontline HCP (69.9%), and a significant proportion of HCP had a history of SARS-CoV-2 exposure (67.1%) and infection (47.4%). The rate of exposure within hospitals (39.5%) was similar to that within households (40.6%). The coverage rate for 2-dose SARS-CoV-2 vaccination reached 99.4% and 95.1% of participants had received the third dose before the community outbreak. The seroprevalence of anti-N and anti-S antibodies were 26.7% and 99.8%, respectively. In participants who had previously been infected with SARS-CoV-2, 51.2% (129/252) tested positive for anti-N antibody; in those without any prior history of infection, 4.6% (13/280) tested positive for anti-N antibody. The factors associated with SARS-CoV-2 infection included a history of exposure to SARS-CoV-2 within hospitals (AOR, 2.38; 95% CI 1.65–3.45) and within households (AOR, 2.57; 95% CI 1.78–3.71). Among participants without a previous history of SARS-CoV-2 infection, those who had been exposed to SARS-CoV-2 exhibited a numerically higher titer of anti-S antibody compared to those who had not (median, 1109 vs 1010 BAU/mL).
Conclusion: The elevated risk of SARS-CoV-2 exposure within hospitals led to increased rates of SARS-CoV-2 infection. Receiving SARS-CoV-2 vaccination with a heightened level of anti-S antibodies may confer protection against COVID-19.

Disclosure of Interest
None declared.

P232

SARS-COV-2 seropositivity among healthcare professionals (HCP) in a rural state

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Introduction: Most SARS-CoV-2 serosurveys of HCPs were done in urban areas.
Objectives: We assessed the seroconversion rate and risk factors for seropositivity over time at an academic health center in a rural US state.
Methods: HCP ≥ 18 years old were invited to complete a screening survey. Those who reported having COVID-19 were invited to participate; remaining participants were selected randomly. Participants ($n = 302$) completed surveys & provided blood samples at 3-month intervals (T0, T3, T6, T9). We used the Roche & Diasorin SARS-CoV-2 assays. We used generalized linear mixed models, which allowed us to use response variables from different distributions. The model selection process used Bayseian information criteria in a forward selection process, where time in months was assumed to be in the model & a pre-determined list of clinically meaningful variables (CMV) was used to build the final model. The CMV were sex, race, vaccination status, mask use, job (nurse vs. other), high-risk tasks, aerosol generating procedures, caring for persons with COVID-19, practicing social distancing, children in household, living alone, asthma, diabetes, & hypertension.

Results: At T0, 77/302 (25.5%) HCP were seropositive. Of the seronegative HCP, 6/198 (3.00%), 6/183 (3.3%), 14/180 (7.8%) had seroconverted at T3, T6, & T9 respectively. 15/21 (71%) of seroconversions occurred during the Omicron surge. After model selection, the study timepoint, children in the household, & having been vaccinated stayed in the model.

Parameter	Estimate	S.E	p-value	OR	95% CI for OR
Intercept	− 14.2544	5.4612	0.0117	6.45e−7	(1.448e−11, 0.0287)
Time (months)	0.1858	0.2221	0.4054	1.2041	(0.7792, 1.861)
Children in Household	0.3969	1.8362	0.8294	1.4872	(0.0407, 54.37)
Vaccine	− 0.1331	1.8763	0.9521	0.8754	(0.0221, 34.621)

Conclusion: The seroconversion rate among HCP in a rural US state was low but increased substantially later in the pandemic, possibly due to HCP decreasing their vigilance in public & children bringing SARS-CoV-2 into the home. Although missing data among participants & data sparsity at the beginning & end of the study led to wide confidence intervals, the model suggests that the timepoint in the pandemic & children in the household may have increased the likelihood of seroconversion. Vaccination may have been protective in this population.

Disclosure of Interest
None declared.

P233

The seroprevalence of COVID-19 among the residents of homeless shelters in Krakow, Poland after 2 years of COVID-19 pandemic

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Introduction: People stayed in homeless shelters are population vulnerable to COVID-19 according to weak access to healthcare system as well as lack of quarantines or personal protective equipment (PPE). The aim of our study was the rating of SARS-CoV-2 seroprevalence in residents of homeless shelters in Krakow after 2 years of COVID-19 pandemic.
Objectives: The aim of our study was the rating of SARS-CoV-2 seroprevalence in residents of homeless shelters in Krakow after 2 years of COVID-19 pandemic.
Methods: Serum specimens from 47 homeless residents of the two largest shelters in Krakow qualified for the study. All antibody (Ab) tests—quantitative and qualitative determination of antibodies in the IgG class against the N protein—were performed using the CLIA immunochemiluminescent technique. The study was funded by the JU N41/DBS/000607 and approved by the JU Bioethics Committee, 1072.6120.211.2021.
Results: Most respondents were men (66%, n = 31) with an average age of 58.8 years. Only 52.2% of the residents declared using PPE, and 73.3% self-isolation in shelters during the pandemic. In 28 (57.1%) cases a positive result of Ab test was obtained, of which only 13 people (27.7%) declared a history of COVID-19, including 5 cases required hospitalization, with (3 cases) or without intubation. In the seropositive residents, the COVID-19 vaccination rate was lower (64.3% vs 84.2%). There was no correlation between the level of the Ab test and the number of days since the declared onset of the disease. In the multivariate analysis, only the age of patients was associated with a past COVID-19, assessed based on Ab status.
Conclusion: In the group of Polish homeless people under study after 2 years of COVID-19 pandemic, a very high level of SARS-CoV-2 seroprevalence was obtained—higher in general Polish population. The obtained results also indicate the problem of asymptomatic infections, which can lead to cross-infections among other homeless people, especially when the principle of isolation is not applied, our data shows that 1/3 responders were not covered by proper isolation. Unfortunately, in the case of a closed cohort during the pandemic it could have contributed to higher morbidity and mortality of residents od shelters.

Disclosure of Interest
None declared.

P234

The recurrence of COVID-19 among a cohort of Tunisian patients infected with SARS-COV2 during the first wave of the pandemic

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Introduction: The extent of immunity against SARS-CoV2 following primary infection and/or vaccination remained poorly understood. The emergence of various waves related to new variants of the virus justified the conduct of longitudinal studies.
Objectives: The objective of this study was to determine the incidence of new episodes of COVID-19 at 18 months after a primary infection that occurred during the first wave in Sousse, Tunisia.
Methods: A prospective longitudinal study was conducted on a randomly selected sample of patients with COVID-19 reported between October 28 and November 28, 2020, in the Sousse governorate. The subjects were followed up to the 18th month. A questionnaire was administered by pre-trained physicians via phone interview for data collection.
Results: A total of 375 patients were included in this study. Their median age was 40 (IQR: 29.7–54.2) years. The sex ratio (M/F) was 0.6. Asthenia and dyspnea were reported by 51.5% and 11.5% of the participants, respectively. Twenty-nine participants (7.7%) required hospitalization. Long COVID was observed in 19 (5.1%) patients. After the first episode of COVID-19, 69.1% of the participants were vaccinated against the disease. A second and third episode of COVID-19 were found in 16.5% and 5.7% of the patients, respectively. Recurrence was less frequent with more vaccine doses received (OR of 0.32 [0.12–0.86] for 2 doses and 0.20 [0.05–0.90] for 3 doses).
Conclusion: COVID-19 reinfection can still occur even after vaccination. Adherence to hygiene measures should be maintained after COVID-19. Regular booster vaccinations following a primary episode of SARS CoV-2 may help reduce the risk of reinfections.

Disclosure of Interest
None declared.

P235

Long COVID-19 incidence among a cohort of outpatients infected with sars-cov2 during the first wave of the pandemic in Tunisia

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Introduction: With the resurgence of SARS-CoV-2 infection in new waves, the advent of Long COVID-19 (LC) is poised to generate an additional public health crisis following the pandemic.
Objectives: The aim of this study was to investigate the 18-month prognosis of COVID-19 outpatients (LC and recurrence) diagnosed during the first wave of the pandemic, in Sousse (Tunisia).
Methods: A prospective longitudinal study was conducted on a randomly selected sample of patients with COVID-19 reported between October 28 and November 28, 2020, in the Sousse governorate. The subjects were followed up to the 18th month by pre-trained physicians via phone interview. Post-covid-19 syndrome or LC was defined as signs that developed during or after an infection with COVID-19, persisting for more than 12 weeks and not attributable to alternative diagnoses.
Results: In total, 375 COVID-19 patients participated to the current study. Their median age was 40 years (IQR: [29.75–54.25]). The sex ratio (M/F) was 0.61. Smell disturbance, ageusia and dyspnea were reported by 50.1%, 40.5% and 11.5% of participants respectively. While 9.3% of patients were asymptomatic. The hospitalization incidence rate was 7.7%. LC was found among 19 participants (5.1%) and 110 patients (29.3%) reported new symptoms after recovery. Memory disorders (12.3%), asthenia (4.8%), respiratory disorders (3.7%), and sensory disturbances (3.2%) were the top four new symptoms ranked. Hospitalized patients were significantly more likely to suffer from LC than no hospitalized participants (18.2% vs 5.9%; $p = 0.05$). During the follow-up, a second and third episode of COVID-19 was found in 16.5% and 5.7% of the patients, respectively. LC was found during the second and third episodes among 27.4%, and 55.6% of participants, respectively.
Conclusion: LC increased at each episode of re-infection of COVID-19. Thus, raising awareness about LC among the public and policymakers is essential to prepare healthcare facilities for continuous monitoring and support.

Disclosure of Interest
None declared.

Poster session: SARS-COV2: Other

P236

Maternal and neonatal outcomes following COVID-19 vaccination in pregnancy

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Introduction: The physiological and anatomical changes that occur during pregnancy make the mother vulnerable to severe infections and reduce the mother's tolerance to hypoxia. Vaccination is a fundamental strategy to prevent diseases.
Objectives: The present study was done with the aim of investigating maternal and neonatal outcomes following COVID-19 vaccination in Pregnancy.
Methods: This cross-sectional study was carried out on 1645 pregnant women (685 COVID-19 vaccinated during pregnancy and 960 non-vaccinated). The study was conducted in the public hospitals of Kerman, located in southeastern of Iran, from January to March,2022. Maternal and neonatal outcomes were measured by interview and observation during labor, delivery and postpartum.
Results: All vaccinated women had received the Sinopharm vaccine The mean birth weight of the neonates was 2778.9 ± 877.9 g in the vaccinated and 2827 ± 843.6 g in the non-vaccinated group. The first minute Apgar score was 8.05 ± 1.89 in the vaccinated and 8.15 ± 2.05 in the non-vaccinated group. The risk of maternal morbidities was not significantly different in two groups ($p > 0.001$). Only the risk of NICU admission was higher in vaccinated women than in non-vaccinated women ($OR = 3.39$, $P < 0.001$).
Conclusion: Since serious complications associated with receiving COVID-19 vaccines during pregnancy were not observed in the present study, and COVID-19 can have serious and fatal effects during pregnancy, it seems reasonable to recommend vaccination during pregnancy to prevent the potential risk posed by COVID-19.

Disclosure of Interest
None declared.

P237

Performance evaluation of the COVID19-presto IGG/IGM rapid serological test compared to the enzyme linked fluorescence assay (ELFA)

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Introduction: Antibody tests for SARS-CoV-2 may helps estimate the number of people exposed to this virus in the past and assesses the burden of infection. Rapid lateral flow assays for IgG and IgM antibodies produced during the COVID-19 epidemic have been developed.
Objectives: This study aimed to evaluate a rapid diagnostic test COVID-PRESTO® IgG/IgM compared to reference technique: enzyme-linked fluorescence assay (ELFA).
Methods: This cross-sectional study was carried out at the Medical Biology Department of the University Hospital of Angré (Abidjan) from 1st to 30 November 2021. A questionnaire was used to collected data about age, sex, and clinical and socioeconomic information. Blood samples were collected to detect SARS COV 2 antibodies using the COVID-PRESTO® rapid detection tests and the VIDAS® SARS-COV-2 automatic system. The targeted protein is the recep- tor-binding domain of the spike surface protein of SARS-CoV-2. Descriptive statistics were reported as frequency and percentage for qualitative variables and Mean ± SD (Median (IQR) for the quantitative variable.
Results: In total, 655 participants were included. Overall, 431 (65.8%) were female. The mean age was 30.72 years (SD: 23.13). Concerning the performance of rapid test, COVID-PRESTO® COVID-19 IgG/IgM RDT, the results showed for IgG antibody a sensitivity of 96.39% and specificity of 41.53%. For the IgM antibody the sensitivity were 37.93% and the specificity at 74.53%.
Key words: SARS-Cov-2, Covid 19, Serology, Rapid test, IgG/IgM antibodies.
Conclusion: The COVID-PRESTO® COVID-19 IgG/IgM RDT test showed, compared to an automated ELFA test, a high sensitivity in IgG antibodies and good specificity for IgM antibody. Therefore, this test could be included in the control strategies for disease management.

Disclosure of Interest
None declared.

P238

Relationship between COVID19 screening score and RT-PCR SARS-COV-2 test results in Dr. Soetomo general academic hospital, Surabaya—Indonesia

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Introduction: COVID19 can be asymptomatic and present similarly to other illness, making early screening a needed tool to determine whether a patient's risk of COVID19 infection. Dr. Soetomo hospital has developed independent guidelines for screening to determine risk level of COVID19 infection.
Objectives: This study aimed to determine the relationship between COVID19 screening score and SARS-Cov-2 RT-PCR test results.
Methods: This study was an observational cross-sectional study of medical records from June to September 2020, with 106 patients from polyclinic, emergency room and hospitalized patients from June–September 2020 (n = 106). The statistical analysis included COVID19 screening score which consists of major criteria dan minor criteria (A, B and C) and the Sars-Cov-2 RT-PCR test result.
Results: The mean age at low risk was 26.6 years, medium risk was 33 years and high risk was 34 years. The chi-square test showed that there was a significant relationship between the COVID19 screening scores and the Sars-CoV-2 RT-PCR test results ($p = 0.03$, $p < 0.05$). The screening criteria Mayor and Minor C were having significant relationship with the positive results of COVID19 (p 0.039 and 0.023 respectively). Patients with major criteria and minor C criteria were more likely to be positive for COVID19 with OR 4.38 and 5.94, respectively.
Conclusion: There is a relationship between COVID-19 screening scores to SARS-CoV-2 RT-PCR test results in Dr. Soetomo General Academic Hospital, suggesting that the screening tool can be useful in identifying COVID-19 risk level in patients. This may be particularly beneficial in health centers in areas with limited resources.

Disclosure of Interest
None declared.

P239

The accuracy of the carb (Covid Assessment and Review Board) screening tool in diagnosing patients with COVID 19 from March 2020–March 2022 in a tertiary hospital

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Introduction: During the start of the pandemic, the Philippines had the second highest number of COVID19 cases in Southeast Asia, with only 85 DOH accredited rtpcr centers. A COVID 19 Assessment Review Board was established by Silliman Medical Center Foundation (SUMCFI) to manage the institution's resources and COVID patients. A Screening Tool was utilized which included WHO modified case definitions and Clinical Criteria, Epidemiologic Data, radiographs and laboratories to categorize patients as likely, suspect and unlikely during hosipital admission.
Objectives: The general objective was to determine the accuracy of the CARB assessment tool in diagnosing patients with COVID 19 admitted in SUMCFI from March 2020 to March 2022. The specific objectives included determining the clinical profile, association of a positive rtpcr and a likely assessment, and factors associated with a positive rtpcr.
Methods: This is a single-center, retrospective analytical study, with an inclusion of all patients 19 years and above who underwent assessment from March 2020 to March 2022 and excluded all patients who expired before an RTPCR was conducted. The accuracy of the Tool and predictors for a positive RT PCR were computed using Univariate Logistic Regression.
Results: Three thousand three hundred seventy-three patients were categorized into confirmed, likely, suspect, and unlikely of which 1679 patients were included in the study. The tool had an accuracy of 77.84%(AUC 0.7685, Sensitivity 91.89% Specificity 61.78%). A Likely Assessment was 16 × more likely to have a positive rtpcr and Assessment of Suspect was 0.05 × less likely to have a positive rtpcr. The variables: age, CARB assessment, direct exposure, cough, abdominal pain, vomiting, WBC, LDH, CRP, D-Dimer, Procalcitonin, and Ferritin had a significant association with a positive RTPCR. A recalibration of the tool using a multivariate logistic regression showed CARB Suspect, cough, normal WBC Count, and low LDH were the best predictors for a positive RT PCR result.
Conclusion: The CARB Assessment Screening Tool was accurate and can be utilized as a good predictor for a positive RT PCR.

Disclosure of Interest
None declared.

P240

Regional genomic surveillance program of SARS-COV-2 virus on Illumina platforms: one year study

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P240

Introduction: SARS-CoV-2 molecular testing with method of whole genome sequencing (WGS) is esential for real-time genomic surveillance in Slovakia. Launching of the Slovak National SARS-CoV-2 sequencing program has contributed to the worldwide endeavor to monitor the development of the COVID-19 pandemic. We describe the results of SARS-CoV-2 genomic surveillance study at region of the Regional Public Health Authority in Trenčín.
Objectives: Study represents the major results of WGS of SARS-CoV-2 obtained by one out of seven genomic surveillance laboratories in Slovakia with using Illumina sequencing technology.
Methods: Swabs were collected from subjects for RT-PCR routine testing of SARS-CoV-2. Samples that were chosen had an RT-PCR cycle threshold under 30. Samples were isolated with Quick-RNA Viral Kit, Zymo Research. We followed the manufacturer's protocol. WGS libraries were prepared manually in 96-well plates according to the Illumina COVIDSeq Test protocol. cDNA was prepared using the ARTIC v4 protocol. Data from WGS was sent to Comenius University Science Park in Bratislava for bioinformatic analysis. Sequecing data was shared using integrated system for national COVID-19 sequencing in Slovakia.
Results: Regional Genomic laboratories sequenced number of samples (from 45 to 95 per week) according to epidemiological situation in region in that time. We analyzed a total of 2448 SARS-CoV-2 positive isolates collected from regional population in Trenčín from 1 February 2022, to 31 January 2023. In our regional study, the most prevalent lineage detected during the analyzed period was BA.2 (n = 1022 samples), present in 41.7% of SARS-CoV-2 positive cases followed by BA.1.1 (n = 540 samples, 22%) and BA.5 (n = 421,17.2%). During one year study we identified two out of five WHO variants of concern—Delta (B.1.617.2) and Omicron (BA.1.1.529). Delta lineages were circulating in population in the first weeks of 2022 in exceptional cases (n = 33) and Omicron variant was detected as a dominat throughout the monitored period (n = 2319).

Conclusion: Our surveillance study of SARS-CoV-2 genomes in collaboration with the Public Health Authority of the Slovak Republic can be helped to inform the public about the regional epidemiological situation during the pandemic.

Disclosure of Interest
None declared.

P241

Concordance assessment of Elisa tests for anti-SARS-COV-2 antibodies in covid-19 patients in in the geriatric population in southern Poland

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Introduction: The detection of anti-SARS-CoV-2 antibodies is an important part of COVID-19 surveillance. However, the immunoassays used for this purpose are not standardized and their compatibility is still an unsolved problem. In this study, we evaluated the concordance/discordance of five ELISA tests for anti-SARS-CoV-2 antibodies in a multimorbidity elderly population.
Objectives: In this study, we evaluated the concordance/discordance of five ELISA tests for anti-SARS-CoV-2 antibodies in a multimorbidity elderly population.
Methods: Sera obtained from blood samples taken from 255 patients, residents of 8 long-term care facilities in southern Poland, were used in the study. Four different qualitative ELISA tests were performed: Anti-SARS-COV-2 NCP (IgG) for serum, Anti-SARS-COV-2 QuantiVac (IgG), Anti-SARS-CoV-2 (IgA), and Anti-SARS-CoV-2 NCP ELISA (IgM) (Euroimmun, Lubeck, Germany). All of them were targeting spike (S) protein and were used according to the protocols provided by the manufacturers and performed manually. The concordance of the results was assessed using Cohen's kappa coefficient. The study was approved by the Bioethics Committee of the JU, 1072.6120.212.2021. This research was funded by the NCN, 2020/39/B/NZ6/01939.
Results: Significant kappa values: $p = 0.00003$, $\kappa = 0.18$ for Anti-Sars-Cov-2 QuantiVac IgG and Anti-Sars-Cov-2 NCP IgG; $p < 0.0001$, $\kappa = 0.70$ for Anti-Sars-Cov-2 QuantiVac IgG and Anti-Sars-Cov-2 (IgA); $p = 0.0008$, $\kappa = 0.10$ for COVID-19 patients and SARS-CoV-2 QuantiVac; $p < 0.0001$, $\kappa = 0.32$ for vaccination against COVID-19 and Anti-Sars-Cov-2 QuantiVac; $p < 0.0001$, $\kappa = 0.38$ for Anti-sars-cov-2 IgA and vaccination against COVID-19; $p = 0.0007$, $\kappa = 0.11$ for COVID-19 patients and Anti-SARS-CoV-2 (IgA); $p = 0.001$, $\kappa = 0.19$ for RZS; $p = 0.0002$, $\kappa = 0.20$ for COVID-19 patients and SARS-CoV-2 NCP (IgG). The results indicate a high concordance among the evaluated tests.
Conclusion: Our results indicate that the evaluated ELISA tests can be used interchangeably to detect anti-SARS-Cov-2 IgG and IgM antibodies in COVID-19 patients. However, one test? which one? can be recommended for follow-up estimation.

Disclosure of Interest
None declared.

P242

Surfaces environmental monitoring of SARS-COV-2: loop mediated isothermal amplification (LAMP) and droplet digital PCR (DDPCR) in comparison with standard real time PCR (RT-PCR)

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Introduction: The Coronavirus Disease 2019 (COVID-19) outbreak proved how countries are unprepared for the pandemic risk and the importance of combining clinical and environmental surveillance to control outbreaks. The high persistence of SARS-CoV-2 on substrates marks the role of appropriate disinfection treatments and surveillance programs, especially in healthcare facilities.
Objectives: This study proposes an environmental SARS-CoV-2 surfaces monitoring collected in healthcare and community facilities using the new SRK FLOQSwabs® (Copan, Brescia, Italy).
Methods: The samples were processed with several molecular techniques: the Loop mediated isothermal AMPlification (LAMP, Enbiotech, Palermo, Italy), droplet digital PCR (ddPCR, Bio-Rad, Hercules, California, US) and Real Time PCR (RT-PCR, Seegene, Seoul, South Korea). A total of 31 surfaces were sampled using SRK FLOQSwabs® covering an area of 25 cm^2. After the heat deactivation, RNA extraction was carried out using two methods: a direct extraction using LAMP extraction buffer provided by kit and through a spin-column method (QIAamp Viral RNA Mini Kit, QIAGEN, Hilden, Germany) for both RT-PCR and ddPCR. Descriptive statistics was performed for data analysis.
Results: For each technique we found the following percentage (%) of positive samples: LAMP 74%, ddPCR 48% and RT-PCR 35%. Using RT-PCR as reference method a high sensitivity (SE) for LAMP (73%) and for ddPCR (73%) was observed. By contrast, specificity (SP) was higher for ddPCR (65%) respect to LAMP (25%). On the other hand, comparing the faster and cheaper LAMP with the most sensitive and specific ddPCR, we found an increase of both SE and SP for LAMP (80% and 31%, respectively).
Conclusion: These results suggest how FLOQSwabs® ensure a suitable SARS-COV-2 recovery for both LAMP and ddPCR. Therefore, considering the speed, cost-efficiency and on-site use, LAMP could be reliable to evaluate the hygienic condition of surfaces and test the efficacy of sanitisation protocols applied. A larger set of samples could confirm this data, and enable us to introduce LAMP for environmental SARS-CoV-2 surveillance, especially in high-risk facilities.

Disclosure of Interest
None declared.

P243

Validation of COVID-19 canines scent detection team and deployment in a long-term care facility

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Introduction: Long-term care (LTC) residents have been over represented in terms of morbidity and mortality associated with COVID-19. The use of dogs for the detection of COVID-19 has been very successful in laboratory settings. Canine COVID detection has the potential to provide rapid, non-invasive screening in congregate settings. However, the ability to assess whether laboratory-trained canines can transfer their scent detection skills to the clinical setting has had limited evaluation.
Objectives: This observational study aimed to train 2 dogs for COVID-19 detection and transition to an effective mass screening of LTC residents.
Methods: Two dogs at VCH have been trained to work a scent stand line-up using breath, sweat and gargle clinical samples from COVID positive and negative PCR samples. Pillowcases were selected as a target element for screening as it harbours the three elements that the dogs were trained and validated on in a laboratory setting. In

collaboration with a local LTC, blind screening of patients have been conducted during the Omicron wave.
Results: Overall, after third party, double blind validation on pillow case the overall sensitivity was 100% and the specificity was of 87.5% for the first dog and 100% for both sensitivity and specificity for the second dog. A screening program successfully took place for 6 weeks in the LTC with minimal impact on the overall workflow of the healthcare workers and residents.
Conclusion: The power of this program is the ability to train and test dogs on a target pathogen, critically evaluate them, and then shift the team from the laboratory into a clinical/operational setting. This pilot project supports that deploying canine detections teams to triage a clinical setting is possible and could, in future, be used for congregate living settings.

Disclosure of Interest
M. Charles Speaker bureau of: Cepheid, Hologic, T. Zurberg: None declared, E. Eckbo: None declared, T. Woznow: None declared, L. Aksu: None declared, R. Pescador: None declared, L. Navas: None declared, E. Thompson: None declared, R. O'Neill: None declared, E. Bryce: None declared.

Poster session: Candida spp, candida auris and other fungi

P244
Contact tracing of *Candida auris*: Is it adequate to stop at one?
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Introduction: *Candida auris* (*C. auris*), a multidrug-resistant fungal pathogen that can cause serious healthcare-associated infection with high mortality rate. It survives well in the environment and causing outbreaks in healthcare settings. Active surveillance and contact tracing are the current approach for identifying patients at risk of *C. auris* colonisation.
Objectives: Our objective was to review the current method in identifying patients with *C. auris* colonisation.
Methods: The study was conducted between Jul 2021 and Feb 2023 on all hospitalised adults with a history of overseas hospitalisation in the preceding 12 months. One-time screening for *C. auris* in patients meeting the above surveillance screening criteria, as well as exposed contacts was performed via swab culture from nares, axilla and groin. A contact of a patient with *C. auris* was defined as a patient who shared the same cubicle or were in the same Intensive Care Unit as the index case as well as one who moved into a bed recently vacated by the index case. The results of the high risk screening group and exposed contacts were collected and analyzed.
Results: A total of 184 patients met the screening criteria from July 2021 till February 2023, of which, 116 patients were screened, with 1 patient tested positive (0.9% of screened cases). From this Index case, 11 contacts were identified, with the exposure duration ranging from 1 to 5 days. 10 of the 11 contacts were screened except 1 patient who was discharged during the contact tracing process and was not re-hospitalised. All the post-exposure screening tests of the contacts were negative.
A month later, one of the contact who was initially screened negative had *C. auris* detected from the blood culture. A further 83 contacts were identified with the exposure duration ranging from 1 to 27 days. Of which, 25 contacts were available for screening and subsequently tested negative. The isolates from the two *C. auris* cases were found to be closely related by phylogenetic studies performed by the National Public Health laboratory.
Conclusion: Active screening for *C. auris* in high risk patients remains important. Current one-time screening of exposed contacts for *C. auris* might not be adequate, hence, additional screening of high risk contacts should be considered before discontinuing any infection prevention and control measures.

Disclosure of Interest
None declared.

P245
The effect of training on knowledge of healthcare professionals regarding containment measures of *Candida auris* across United Arab Emirates
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Introduction: *Candida auris* is an emerging multidrug-resistant organism that can cause invasive infections associated with death. Outbreaks with *Candida auris* have largely been reported worldwide.
Objectives: The aim of this study was to assess the knowledge of healthcare professionals in the United Arab Emirates (UAE) regarding containment measures of *Candida auris* before and after an interventional educational session.
Methods: An educational symposium was conducted in October 2022 for 101 healthcare professionals (15 nationalities) from 56 hospitals across UAE. Most of them (70/101, 69%) were Infection Control Professionals (ICP). The knowledge of the participants was assessed using an electronic questionnaire consisting of 6 questions before and after the training. Moreover, this evaluation was used to assess the appropriateness of the material presented.
Results: Among 101 participants, 64 (63%) completed the questionnaire before and after the training. A statistically significant increase in knowledge after the training was noticed (p value < 0.01). The overall value of knowledge increased from 51% (197/384) before to 86% (331/384) after the training. The increase was noted among all assessed elements.
Conclusion: Interactive and relevant awareness sessions improve knowledge related to infection prevention and control among healthcare professionals. Active education helps to increase engagement, improves critical thinking and learning retention, and fosters the problem-solving skills among staff in healthcare settings.

Disclosure of Interest
None declared.

P246
Isolation and identification of candida species in candidasis and their drug sensitivity patterns
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Abstract video clip description: Background: Candidiasis is a serious infection caused by *Candida* spp. It can proliferate other organs apart from the starting point of infection by creating life-threatening pathogenesis. The most common infecting agent is *Candida albicans*. However, we should not ignore non-albicans candidiasis. Oral candidiasis and Skin candidiasis is common as *Candida* is a part of normal human mycobiota and alternation of normal mycobiota may lead to opportunistic *Candida* as pathogens. Vaginal candidiasis is a serious threat and caused morbidity and mortality. In this study, we evaluated the prevalence of *Candida* spp and their drug sensitivity patterns in oral and vaginal candidiasis.
Materials and Methods: All swab samples from the oropharyngeal and vaginal region were collected from the suspected Candidiasis patients. After culture in a specific medium, all *Candida* spp. were identified with the conventional method. The drug sensitivity patterns were carried out with the disc diffusion methods.

Result: *Candida albicans* is the most prevalent species among all *Candida* spp. found in oral and skin candidiasis. Whereas *Candida famata* and *Candida rugosa* are the prevalent group, found in vaginal candidiasis. In the majority, *Candida albicans* is the most antifungal-resistant species and followed by *Candida glabrata* and *Candida tropicalis* in oral and skin Candidiasis. In the same way, *Candida rugosa* plays maximum resistance in vaginal candidiasis followed by *Candida glabrata.*
Conclusion: Candidiasis is a common infection in the skin, oral and vaginal regions. The empirical therapy with antifungals may manifest the disease and develop the drug-resistant Candida spp. Hence, before prescribing the antifungal drug the culture, sensitivity, and minimum inhibitory concentration (MIC) should be carried out. So that the effective antifungal drug will be prescribed at the earliest.

Disclosure of Interest
None declared.

P247

Comparison of antimicrobial susceptibility of *Candida albicans* versus *Candida auris* to octenidine- and chlorhexidine-based wash-mitts commonly used in healthcare

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Introduction: Management of outbreaks of the newly emerging pathogen *Candida auris* may include use of antimicrobial wash-mitts for decolonization. However, currently there is little clinical evidence to support the wide adoption of 'whole body decolonization' as part of the protocol to effectively manage *C. auris* outbreaks. In the absence of large-scale clinical trials, the immediate assessment of the efficacy claims for these products can be based on in vitro experimental data that follows the standard protocols established by CEN (European committee for Standardization).
Objectives: In this study, the chemical tolerance of *C. auris* was compared with the surrogate test organism *Candida albicans* as established in the European standards (EN).
Methods: The study was conducted following the protocol for the quantitative suspension test EN 13624 using *C. albicans* ATCC 10231 in comparison to *C. auris* DSMZ 21092 and *C. auris* DSMZ 105986. Two commercially available wash-mitts containing chlorhexidine digluconate (CHX) or octenidine dihydrochloride (OCT) were used. Experiments were conducted using the impregnation liquid squeezed from the wash-mitts at a contact time of 30 s at different concentrations between 0.5% to 97% in the presence of 0.03% bovine serum albumin.
Results: Yeasticidal efficacy according to EN 13624 was found for the OCT wash-mitts at 30 s at $\geq$ 10% concentration with *C. albicans* ($\geq$ 4 log RF). In comparison, for both *C. auris* strains $\geq$ 4 log RF was found at a much lower concentration of $\geq$ 1%. For the CHX wash-mitts efficacy against *C. albicans* was below 2 log RF at 97% concentration within 30 s. In contrast efficacy against the two *C. auris* strains was around 3 log RF.
Conclusion: In conclusion, both *C. auris* strains were found to be significantly more susceptible when compared to *C. albicans* in this study. Moreover, our data also demonstrates that not all antiseptic-impregnated body wipes is equally effective against *C. auris* with OCT having a higher efficacy compared to CHX. Further studies are warranted to determine if this in vitro difference correlates to clinical outcomes when it comes to *C. auris* decolonization.

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P248

Compounds isolated from Fusarium sp. Amtw3 endophytic cultural extract exhibit antibiofilm potency in resistant bacterial pathogens

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Introduction: Antimicrobial resistance (AMR) poses challenging threats to the global public health. Bacterial biofilms are well recognized as one of the main driving causes behind the resistance crisis and persistent chronic infections. Microbial natural products have, and will continue to supply new active antimicrobial scaffolds for new antibiotics discovery. Can Friedelin and 6-methyl-3-(prop-1-en-1-yl)-5,6-dhihydro-2H-pyran-2-one isolated from Fusarium sp. Amtw3 endophytic extract be associated with antibacterial properties?
Objectives: This work aimed to investigate the antibacterial potency of two compounds isolated from of a crude endophytic fungi extract (Fusarium sp. Amtw3) sheltered by a medicinal plant.
Methods: Compounds were tested for antibiofilm activity against Staphylococcus aureus and Klebsiella oxytoca and their potential mode of inhibition including the kinetic of killing and inhibition of catalase were investigated. Data collected from at least three independent experiments were analyzed using one-way ANOVA with GraphPad Prism 8.0. Data are expressed as the mean $\pm$ SD of experiments performed in triplicate. Error bars represent the SD, and significant differences for multiple comparisons were determined by the Turkey test at $p < 0.05$.
Results: The two compounds exhibited antibiofilm activity with IC50 values ranging from 0.08 to 0.19 µg/mL and 0.07–0.09 µg/mL against S. aureus and K. oxytoca respectively. The compounds were able to inhibit bacterial catalase activity with percentages of remaining H2O2 in bacterial culture ranging from 55.93–56.82% to 65.32–67.79%, for S. aureus and K. oxytoca respectively. The both compounds demonstrated a concentration-dependent bactericidal activity.
Conclusion: These results suggest that friedelin and 6-methyl-3-(prop-1-en-1-yl)-5,6-dhihydro-2H-pyran-2-one could serve as starting point for drug discovery against AMR.

Disclosure of Interest
None declared.

P249

Fungal diversity in the hospital environment in tertiary care setting, Abidjan Cote d'Ivoire

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Introduction: Invasive fungal infections acquired in the hospital have progressively emerged as an important cause of life-threatening infection. In particular, airborne fungi in hospitals are considered critical pathogens of hospital-associated infections.
Objectives: The aim of this study was to identify fungi in the environment hospital.
Methods: The study was conducted at the clinical services (intensive care unit, medical emergency, surgical emergency and surgical block) of the University Hospital of Angre from April to May 2023. The air samples were collecting by exposing petri dishes. The material from

inanimate surfaces was also collected by swabs. Sabouraud dextrose agar added with the antibiotic chloramphenicol was used to culture the fungi. To grow the fungi, the plates were incubated at 28 °C for 1–4 days. The identification yeast strains was performed with the Candida medium chromaticÒ and VITEK-2Ò. Filamentous fungi were were identified based on the macroscopic characteristics and microscopy of colonies.
Results: Among 124 samples collected, 81 fungal strains were identified (65.32%). The dominant fungal species were *Aspergillus niger* (24.19%), *Aspergillus flavus* (11.29%), *Aspergillus fumigatus* (4.84%), *Fusarium oxyporum* (10.49%) and *Candida krusei* (3.23%). The prevalence of fungi species was highest in the emergency department (medical and surgical) respectively 85.19% and 93.10% than intensive care unit (23.81%).
Conclusion: The results reinforced the need to monitor environmental fungi more frequently and efficiently in hospitals. It may provide reliable results for hospital infection control and surveillance.
Key words: Fungal diversity -Environment-Hospital – Abidjan.

Disclosure of Interest
None declared.

P250

Improved fungal detection using metagenomic analysis in china: a comparative study

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P250

Introduction: Fungal infection caused by various fungal pathogens has been a significant challenge for developing countries due to limitations in medical resources and sanitation conditions. Conventional culture method is time-consuming with low detection rate. Recently, metagenomic sequencing has greatly improved the diagnostic rate of infectious disease by comprehensively detecting mutiple pathogens through the analysis of microbial genetic information.
Objectives: We aimed to evaluate the detection performance of metagenomic technology based on Oxford Nanopore Technology (ONT) sequencing platform for fungal infections in patients with suspected lower respiratory tract infections (LRTI).
Methods: A comprehensive diagnostic evaluation for fungus was conducted on bronchoalveolar lavage fluid (BALF) specimens from 277 suspected LRTI patients recruited from 12 hospitals in China. Metagenomic analysis, the conventional culture method, and other clinical auxiliary diagnostic methods including smear examination and immunological detection methods, were employed for fungal detection. The final diagnosis by clinical physicians was considered as the gold standard.
Results: Among 277 patients, 105 were clinically diagnosed with fungal infection and mixed infection involving fungi (67 cases and 38 cases respectively). The fungi detected were *Aspergillus* (42.9%), *Pneumocystis* (23.8%), *Candida* (21.0%), *Cryptococcus* (10.5%), *Malassezia* (8.6%), *Mucor* (2.9%), and *Rhizopus* (1.9%). Regarding overall fungal detection, metagenomic sequencing showed a significantly higher detection rate (70.48%) compared to the conventional culture method (32.38%, $\chi2 = 30.50$, $p < 0.001$). The fungal detection rate reached 55.24% after combining culture method with other clinical auxiliary diagnostic methods, which was still significantly lower than metagenomic sequencing ($\chi2 = 5.22$, $p = 0.02$). Specifically, metagenomic sequencing exhibited a higher detection rate (92.00%) for *Pneumocystis* infection, compared to culture method (32.00%, $\chi2 = 19.10$, $p < 0.001$).
Conclusion: This study suggested that metagenomic sequencing by ONT platform exhibited improved fungal detection performance compared to current clinical diagnostic methods, highlighting its potential for clinical applications.

Disclosure of Interest
None declared.

Poster session: Gram-positive bacteria

P251

pathogenicity of staphylococcus aureus strains isolated from suppurations at the Centre Hospitalier Universitaire Départemental du Borgou

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P251

Introduction: Suppurative infections and the rapid emergence of multi-resistant bacteria pose a serious threat to public health worldwide, due to limited treatment options.
Objectives: The aim of this study was to determine the pathogenicity of Staphylococcus aureus strains isolated from suppurations at the Centre Hospitalier Universitaire Départemental du Borgou-Alibori (CHUD-BA).
Methods: This was a cross-sectional study with analytical aims. The study was spread over a 9-month period from June 2021 to February 2022 and included patients admitted to the Centre Hospitalier Universitaire Départemental du Borgou-Alibori (CHUD-BA). A total of 107 cases of suppuration were sampled. Bacterial isolation, identification and antibiotic susceptibility testing were performed using standard microbiological techniques, followed by molecular characterization for virulence genes.
Results: The results show that suppurative infections are dominated by Gram-positive bacteria (51.76%) versus 48.26% Gram-negative bacteria. In fact, 36.45% of samples were contaminated by strains of Staphylococcus aureus, 22.43% by strains of Escherichia coli, 12.15% by strains of Streptococcus spp and 5.61% by strains of Klebsiella pneumoniae. The strains isolated were resistant to the majority of antibiotics tested. The biofilm formation test revealed that 55.36% of Staphylococcus aureus strains were biofilm-forming. Detection of the mecA gene revealed that 17.95% of S. aureus strains possessed this gene. Detection of the cna gene reveals that 43.59% of S. aureus strains possess this gene.
Conclusion: Suppuration is a very common infection, in both hospital and community settings. S. aureus are the bacteria most frequently isolated during these infections. Antibiotic resistance, which has become a real public health problem, can complicate the treatment of suppurations, hence the importance of rationalizing antibiotic use.

Disclosure of Interest
B. Boya: None declared, H. SINA Conflict with: No conflicts of interest, M. ALASSANE: None declared.

P252

High rate of panton valentine leukocidin producing staphylococcus aureus on pus samples in public hospitals in Benin

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Introduction: Methicillin resistant *Staphylococcus aureus (MRSA)* is a major cause of hospital-acquired infections worldwide with a considerable impact on patients' health and substantial healthcare costs.

Objectives: The aim of this study was to determine the molecular characteristics of MRSA isolated on pus samples by using the whole genome sequencing (WGS).
Methods: Between 2019 and 2021, samples were collected from patients in six public hospitals in Benin. The two wards concerned were obstetric and gastrointestinal surgery. Strains were identified as MRSA using conventional methods in laboratory of microbiology of Cotonou. The confirmation was done in Belgium with Matrix assisted laser desorption/ionization time of flight (MALDI_TOF). Whole genome sequencing (WGS) was used on confirmed MRSA siolates to characterize their genomic content (antimicrobial resistance genes, virulence factors, toxin genes as well as sequence type characterization).
Results: Amongst 229 isolates, 49 were identified as *staphylococcus aureus* including 32 MRSA. High quality WGS datasets were obtained for 16 sample of which numerous genes and mutations associated with antimicrobial resistance were identified. Resistance to beta-lactams (including methicillin) 100%, tetracyclin (100%), fofomycin (81.2%) and trimethoprim (100%) was predicted most frequently. All isolates were sensitive to vancomycin. All isolates carried multiple virulence genes, including genes encoding the leukocidin Panton Valentine (LPV) (62.5%, n = 10) and the TSST-1genes (25%, n = 4) associated with toxic shock syndrome. the mecA gene was detected in all isolates with association to four sequence types (ST), the most common being ST8 (50%, n = 8), ST152 (31.25%, n = 5) and ST121 (25%, n = 4). All isolateswith the sequence type ST121 and ST152 were hlgA:hlgB positive.
Conclusion: The phenotypic and genotypic diversity with presence of several virulence factors and toxin genes isolated oon MRSA in hospitals is worrifying. There is an urgent need to improve hand hygiene practices and antimicrobial stewardship in the country.

Disclosure of Interest
None declared.

P253

Implementation of individual BP cuff to reduce MRSA acquisition

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Introduction: Methicillin-resistant Staphyloccus aureus (MRSA) is the leading cause of healthcare-associated infection in the hospital. Healthcare-associated infections caused by MRSA increased patient's morbidity, mortality, hospital length of stay and cost. Blood pressure cuffs are commonly shared among patients and known as reservoirs for infectious agents and increased the risk of cross infection from contaminated blood pressure cuffs if not cleaned effectively between patients. Many studies have demonstrated disinfection of blood pressure cuffs using disinfectant wipes were effective against infections.
Objectives: To reduce MRSA acquisitions rate in 2 medical wards within 6 weeks.
Methods: Plan-Do-Study-Act (PDSA) methodology was used for this project. Inappropriate and ineffective cleaning of the blood pressure cuffs due to poor condition of the cuffs from frequent cleaning were identified as root cause for increased MRSA acquisition rate. The team introduced new workflow as introduction of single-patient blood pressure cuffs, staff training for the new workflow, compliance audit and random blood pressure cuffs were cultured for MRSA. Infectious patients used disposable blood pressure cuffs and non-infectious patients used the individual blood pressure cuffs during their whole hospitalization.
Results: To test our hypothesis of contaminated blood pressure cuffs, 16 blood pressure cuffs from 4 wards were cultured for MRSA. Result showed 6 (40%) were positive with MRSA.
Two medical wards with the highest MRSA acquisition rates were chosen for this pilot project. At the start of the project, 37 random blood pressure cuffs were cultured for MRSA and results showed 7 (19%) were positive with MRSA. After introduction of the new work process, MRSA acquisition rate in these 2 wards were decreased within 6 weeks and blood pressure cuffs were randomly cultured for MRSA and all the blood pressure cuffs were negative with the introduction of single patient blood pressure cuff.
Conclusion: With the introduction of single-patient blood pressure cuffs, there was a significant decrease of MRSA acquisition rate and decrease MRSA contamination from blood pressure cuffs.

Disclosure of Interest
None declared.

P254

MRSA outbreak in breast surgery patients in a tertiary cancer center: experiences in investigation and infection control

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Introduction: ACTREC commissioned new operation theatres (OTs) after necessary validation protocols In September 2022. Breast surgeons raised an alert on a cluster of 3 MRSA (Methicillin-resistant Staphylococcus aureus) positives among post-operative breast surgery cases from the new OTs within a month, confirmed by clinical and laboratory correlation. Being more than the usual post-surgery MRSA rates in our setting, this was considered a post-surgery MRSA infection cluster.
Objectives: To investigate the MRSA cluster issue, review the perioperative procedures and protocols in the new OTs and decide on action points.
Methods: The microbiologist, surgeons, infection perfectionists, and medical administration reviewed the procedures and protocols in the new OTs. Action points included repeat validation of OT engineering controls for air exchanges per hour, air velocity, pressure differential, HEPA filter validation and air sampling check by settle plate method for microbiological contamination. Additionally, 11 OT and allied staff were tested for MRSA carrier status by culturing nasal swabs, and surface swab cultures from 36 high-touch OT areas were taken.
Results: Air sampling results showed no growth of any microorganisms. Engineering control parameters were within acceptable ranges. One OT nurse out of 11 screened was positive for MRSA nasal swab culture. Most of the surface swab cultures from the OT table, lamp, and other high-touch areas were negative on culture with an occasional coagulase-negative staphylococcus growth. The OT nurse positive for MRSA was excluded from the OT, advised decolonization protocol till clearance by repeat culture. Cleaning and disinfection were reinforced in the OT with a sufficient time interval for the same in between patients. Hand hygiene protocol was monitored for strict compliance.
Conclusion: A critical facility like the OT requires constant vigilance in protocol implementation. Any adverse event reported needs to be swiftly acted upon factoring in all possible reasons by a multipronged team approach.

Disclosure of Interest
None declared.

P255

MRSA care bundle-a quality initiative for prevention of MRSA bacteremia in a haematology unit

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Introduction: Methicillin-resistant *Staphylococcus aureus* (MRSA) colonized patients have approximately four-fold increased risk for invasive

infections. The risk is expected to be higher among patient with cancers due to frequent hospitalization, use of invasive procedures and devices, prolonged immunosuppression status and mucosal barrier injuries from chemotherapy, and exposure to broad-spectrum antimicrobials. The employment of bundle practices is a promising approach in prevention of invasive infections.
Objectives: We thought to explore a bundle of evidence-based practices, specifically targeting in preventing of healthcare onset (HO) MRSA bacteraemia and review its effectiveness.
Methods: MRSA care bundle is a quality initiative in response to the rising incidence of HO MRSA bacteraemia at a hematological unit, despite the full implementation of multidrug-resistant organisms and device-associated infection bundles at a tertiary acute care hospital in Singapore. MRSA care bundle is implemented for all MRSA patients at admission to the hematological unit since December 2020, repeated at one-week interval for the second cycle and at two-week interval thereafter for long stayers. The care bundle includes (1) modified contact precautions and isolation/cohorting, (2) five-day MRSA decolonization therapy with octenidine-based product, (3) daily hospital linen change prior patient bath, (4) environment and equipment hygiene, (5) patient education and empowerment on personal hygiene. The incidence rate of MRSA bacteraemia was compared between pre-intervention (January 2020-December 2020) and post-intervention (January 2021-December 2022) of the MRSA care bundle.
Results: Total six patients developed primary MRSA bacteraemia (pre-intervention period, n = five; post-intervention period, n = one). Mean incidence rate of HO MRSA bacteraemia for pre- and post-intervention peroids is 5.30 and 0.51 per 10,000 patient days respectively. Overall, we observed a significant reduction of HO MRSA bacteraemia rate by 90.38% (p = 0.019; 95% CI, − 0.17–10.84).
Conclusion: MRSA care bundle practice shows effective in preventing HO MRSA bacteraemia in our high-risk patients with hematologic malignancies.

Disclosure of Interest
None declared.

P256

Characteristics of a methicillin-resistant staphylococcus aureus cohort at Geneva University Hospital

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Introduction: Since 1994, patients at HUG who are colonised or infected with MRSA are integrated into an electronic alert system. Removing an alert requires multiple negative follow-up swabs and individual assessment by an infection control nurse. Uncertainty remains about the most accurate rules to discontinue an MRSA alert and related contact precautions.
Objectives: To describe the characteristics and follow-up of patients with an electronic MRSA alert.
Methods: We conducted a retrospective, observational cohort study among all inpatients at HUG with an MRSA alert in their electronic medical record between 1997 and 2022. We describe the clinical characteristics of MRSA carriers, as well as molecular features of the retrieved MRSA isolates.
Results: Among 5198 patients flagged with an MRSA alert, 54% (n = 2801) were men. At the last MRSA positivity, the mean age was 54y (± 28) with 757 patients < 18y. 810 (16%) patients had their last positive screening result before 2000, 2559 (49%) between 2000 and 2009, 1381 (27%) between 2010 and 2019 and 448 (9%) between 2020 to 2022. 1679 (32%) patients had a negative nasal follow-up swab: 938 patients had one negative nasal swab, 280 patients had 2 and 416 patients had ≥ 3 negative nasal swabs. 2215 (43%) patients were not re-admitted at HUG. We observed a predominance of SCCmec I isolates from 2005 to 2010 (n = 564), replaced by predominant SCCmec IV since 2013 (n = 764). The exotoxin Panton-Valentine Leucocidin (PVL) was identified in 11.2% (n = 584) of patients (since 2004). The yearly proportion of PVL-positive MRSA cases was 3.6% (n = 7) in 2004 and increased to 34.1% (n = 63) in 2022.
Conclusion: At HUG, only a minority of MRSA carriers could be followed up and a majority of them are flagged for extended periods due to the impracticality to realise multiple follow-up swabs. Extending the follow-up outside the hospital setting and simplifying the rules for MRSA alert discontinuation needs to be considered.

Disclosure of Interest
None declared.

P258

Risk factors associated with healthcare-associated vancomycin-resistant enterococcus (VRE) in a tertiary hospital in Singapore

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Abstract video clip description: Objectives:
To determine risk factors associated with healthcare-associated vancomycin-resistant *Enterococci* (HA-VRE) acquisition in a tertiary hospital in Singapore.
Methods: A case–control study was conducted over a 12-month period in 2019. Cases were defined as inpatients who initially screened negative for VRE, but from whom VRE was isolated from subsequent screening or clinical specimens, during the same admission. Controls were patients admitted in 2019, who screened negative for VRE and remained VRE negative through their inpatient-stay. Active surveillance (i.e. compulsory admission screening test, followed by every 14 days) for VRE was conducted for all patients admitted to hematology, oncology and renal departments and intensive care unit (ICU). Factors such as age, maintenance haemodialysis, admission to ICU, colonization or infection with multi-drug resistant organisms (MDROs), prior surgeries within 3 months, antibiotic use in preceding 3-months, and hospitalization in preceding one-year were analyzed. Mortality within 3 months was the outcome measure studied.
Results: Ninety-seven cases and 194 controls were included in the study. Five of 97 cases (5%) had VRE central line infections. Mean age was higher in the case-group as compared to control (64 versus 59 years, p-value 0.02). HA-VRE was associated with maintenance haemodialysis (OR 4.6, 95% CI 1.8–12.0), ICU admission (OR 6.1, 95% CI 2.8–13.2), prior surgeries within 3 months (OR 3.7, 95% CI 1.6–8.3), presence of carbapenemase producing carbapenem resistant enterobacteriales (CP-CRE) (OR 7.2, 95% CI 2.0–26.0), methicillin resistant *Staphylococcus aureus* (MRSA) (OR 9.4, 95% CI 1.3–66.8), prior use of vancomycin (OR 28.2, 95% CI 5.4–146.5) or metronidazole (OR 4.4, 95% CI 1.0–19.0). Three-month mortality rate was 23.7% in case group and 3.6% in control group (p-value < 0.001).
Conclusions: HA-VRE was associated with maintenance haemodialysis, ICU admission, surgical procedures, co-carriage of MRSA or CP-CRE, vancomycin and metronidazole use. Targeted infection prevention and antimicrobial stewardship programs may reduce HA-VRE.

Disclosure of Interest
None declared.

P259

Is there added value of additional screen for post-exposure vancomycin-resistant enterococci (VRE) screening

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P259

Introduction: Early detection and containment of positive contacts of VRE can reduce further inpatient transmission. There lacks recommendation on whether additional screening swabs are needed to detect additional positive contacts substantially.
Objectives: To evaluate the yield of first and second post-exposure VRE screen.
Methods: A retrospective review of VRE screening results of inpatient contacts of VRE who had post-exposure screenings performed from 2010 to 2022, was conducted. Contact of VRE was defined as a patient who stayed in the same cubicle as an index case of VRE for a cumulative duration of more than 24 h. One set of VRE post-exposure screening consisted of culture swabs collected from skin or rectal sites performed twice within 7 days. Rates of VRE detection on first and second screen (Screen1 & Screen2) were calculated and compared.
Results: There were 813 inpatient contacts of VRE. By sample collection site, 797 (55.5%) and 638 (44.5%) sets of swabs were collected from rectal and skin sites respectively. 86.1% (118/137) positive swabs for VRE were from rectal samples and 13.9% (19/137) swab samples detected VRE from skin. Median duration between Screen1 and Screen2 was 24.0 (interquartile range 22.3–24.7) hours.
Of inpatient contacts on post-exposure VRE screening, 9.6% (78/813) were tested positive for VRE. 84.6% (66/78) were positive in Screen1 and additional 15.4% (12/78) were only positive from Screen2. 30.8% (24/78) of positive screening results were discordant between Screen1 and Screen2.
Conclusion: Discordant results between the Screen1 and Screen2 are likely due to sampling error. Additional screening could increase the yield of VRE detection and should be considered especially if the first screen result is negative.

Disclosure of Interest
None declared.

Poster session: MDRO: Microbiologic issues for IPC purposes

P260

Convergence of hypervirulence and carbapenemase-mediated resistance in Klebsiella pneumoniae in Switzerland

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Introduction: The growing crisis of carbapenem resistance in *Klebsiella pneumoniae* is being accelerated by plasmid-mediated carbapenemases dissemination. In addition to chromosomally encoded K1 and K2 capsule loci, plasmid-mediated dissemination of hypervirulence genes is a growing issue. The convergence of both phenomena, leading to carbapenem-resistant and hypervirulent superbugs, is a worrisome scenario.
Objectives: In a Swiss institution, carbapenemase-producing *K. pneumoniae* were analyzed by long-read WGS for plasmid-mediated virulence and resistance typing.
Methods: Twenty-two non-repetitive clinical isolates, from one Swiss center in the 2020–2021 period, previously identified as carbapenemase-producers by multiplex assay, were sequenced using long-read sequencing technology on MinION R10.4 flow cells, Guppy was used for super accurate base calling, Flye was used for assemblies. Annotations include sequence types, resistance genes and plasmid type determination, using CGE tools, Kleborate and Ridom SeqSphere.
Results: The 22 K. *pneumoniae:* OXA-48 n = 8, OXA-181 n = 1, OXA-232 n = 1, KPC-3 n = 6, KPC-2, n = 2, NDM-1 n = 2, NDM-5 n = 1, VIM-1 n = 1. MLST showed CC258, ST147, ST395, ST45, ST48, ST16, ST101 mainly polyclonal distribution. Two small possible clusters (< 15 loci difference by cgMLST and same carbapenemase-plasmid) were detected: ST48 with an IncL-bla_{OXA-48} plasmid (63 kb) (N = 2) and ST395 harboring an IncFIIK-IncFIB-bla_{KPC-3} plasmid (187 kb) (N = 2).
Virulence analysis showed that both ST395 KPC-3 isolates harbored KL2 capsule in addition to an IncHI1B-IncFIB (297 kb) hv plasmid encoding aerobactin *iuc1-iutA* and *rmpA2*. One KL51-ST16 isolate showed O3b O-antigen and harbored *bla*NDM-1 on a plasmid encoding hv determinants *iuc1-iutA—rmpA2*.
Conclusion: In this center two-year sampling of carbapenemase-positive *K. pneumoniae,* 14% presented genomic markers of hypervirulence, including the ST395 and the ST16 emerging clones, associated to high patient fatality rates in Brazil and Vietnam. ST16 harboured an hybrid plasmid encoding both *bla*NDM-1 and hv determinants *iuc1-iutA-rmpA2*. Genomic monitoring of the convergence of hypervirulence to high-risk *K. pneumoniae* MDR clones is warranted. Importantly, long-read sequencing technology allowed for the closure of full bacterial chromosomes and plasmids.

Disclosure of Interest
None declared.

P261

Hypervirulent Klebsiella pneumoniae: familial spread in Malaysia

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Introduction: Hypervirulent *Klebsiella pneumoniae* (HVKP) infection can lead to visceral abscesses and endophthalmitis. Clonal spread of HVKP among family members is extremely rare with only two published case reports.
Objectives: We report two cases of systemic HVKP infection in a father and son, and utilizing genetic identification methods to explore the relationship of the HVKP strains, pathogenicity, and possible transmission routes.
Methods: Three isolates, namely KKH-F (father; fluid), KHL-SA (son; abscess) and KHL-SB (son; blood) underwent Illumina iSeq paired-end whole-genome sequencing. Raw reads generated were imported into Galaxy for quality control; removing low-quality reads and adapter trimming using fastp v0.23.2. High quality reads generated were assembled de novo using SPAdes v3.15.4 and analyzed with AMRFinderplus v3.11.4 with multilocus sequence typing (MLST) to identify antimicrobial resistance, virulence and stress response genes.
Results: Case 1: A 72-year-old man was diagnosed with *K. pneumoniae* bacteremia, with liver and seminal vesicle abscesses. Ten-weeks of amoxicillin-clavulanate therapy and drainage led to recovery.
Case 2: Seven months later, his son, a 45-year-old man was diagnosed with septic shock from *K. pneumoniae* bacteremia with liver abscesses. Treatment by drainage and prolonged therapy with intravenous (IV) meropenem followed by IV cefuroxime was given. Three weeks into therapy, he developed carbapenem-resistant *K. pneumoniae* pneumonia requiring combination therapy using IV ceftazidime-avibactam and IV aztreonam.
All index isolates were susceptible to multiple antibiotics, including ampicillin-sulbactam, amoxicillin-clavulanate, and parenteral cefuroxime. Molecular studies showed that these isolates have identical ST23 sequences with mucoid phenotype regulator genes, rmpA2, rmpA, rmpD, and rmpC. The isolates also harbored blaSHV-11 genes at the chromosomal level.
Conclusion: To our best knowledge, this is the first report of blaSHV-11 dissemination within household members. Further studies are needed to assess the extent of rmpADC locus acquisition impact on hypermucoviscosity, carbapenem resistance and transmission risks.

Note: The author has obtained consent from patient to publish this abstract.

Disclosure of Interest
None declared.

P262

Local epidemiology and genomic analysis of *Acinetobacter baumannii* strains circulating in hospital and non-hospital environments in Kano, North-West Nigeria

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Introduction: *Acinetobacter baumanni*i are pathogenic bacteria of public health importance, they occupy different ecological niches and can spread faster within and between different environment.
Objectives: The local epidemiology and transmission pathway of *A. baumannii* strains circulating in hospitals and non-hospital environments in Kano Nigeria is unknown and hence this study.
Methods: A cross-sectional study design was used to collect 172 hospital and non-hospital environmental samples. *A. baumannii* was isolated on Chrom Agar and confirmed by amplification of *blaoxa* 51-like genes. The coding region of blaOXA51-like genes was sequenced to determine available variants and whole-genome sequencing of 22 isolates was used to determine sequence type, intrinsic and acquired antibiotic resistance and virulence genes, single nucleotide polymorphism (SNPs) and investigate phylogenetic relationships between the isolates.
Results: Thirty-three *A. baumannii* were isolated from both hospital (bed, chair, and drawers) and non-hospital (student hostels; door handles and toilet floors, soil, sewage) environments. All the isolates belong to 2 variants of blaOXA51-like genes, 16 (48.8%) are blaOXA-66, and 11 (33.3%) are blaOXA-180. About 70% of the isolates were susceptible to many antibiotics, and 8 resistance genes encoding aminoglycoside, tetracycline, and, sulphonamide resistance were acquired by only *blaOXA-66* variants, and 39 virulence genes that play a role in increasing pathogenicity and transmission were acquired by all the variants. Intrinsic blaADC-25 encoding resistance to β-lactam was found in all A. baumannii strains. The 2 variants had MLST allelic profiles ST of 942 and 1050, 2058, which are not commonly reported in Nigeria. The WGS analysis further revealed hundreds of truncated and few functioning insertion sequences (IS) that could promote resistance to carbapenem and β-lactams. Few isolates from hospital and non-hospital sources form a cluster with SNPs number in the range of 85–100, suggesting a close relationship.
Conclusion: The 2 variants circulating in both environments suggest transmission in both directions. Detection of bla*OXA-180* in a clinical sample indicates environment to human transmission.

Disclosure of Interest
None declared.

P263

Phenotypic characterization of extended spectrum beta-lactamase, class C cephalosporinase and carbapenemase-producing Klebsiella species isolated from patients consulted at four Yaounde-based hospitals

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P263

Introduction: *Klebsiella* spp. are bacteria of medical importance for their role in opportunistic infections which are often difficult to treat because of resistance to one or several antimicrobials.
Objectives: The aim of this study was to determine antimicrobial resistance due to Extended Spectrum Beta-lactamase (ESBL), Class C cephalosporinase (AmpC) and carbapenemase enzymes in *Klebsiella spp.* isolated from patients consulted at four hospitals.
Methods: The study was cross-sectional and descriptive. A total of 4190 non-repetitive patients' specimens from 13 types of clinical specimens were analysed from February to November 2020. Two hundred and twenty five (225) *Klebsiella spp* isolates were identified using API 20E and antimicrobial susceptibility testing done according to the Kirby Bauer disc diffusion method. ESBL and AmpC phenotypes were determined by the combination disc method and carbapenemases by double disc synergy method, referenced by EUCAST.
Results: The frequency of the species was *Klebsiella pneumoniae* (69%, 155/255), *K. oxytoca* (14%, 31/255), *K. ozaenae* (12%, 27/225) and *K. rhinoscleromatis* (5%, 11/225). Isolates were most resistant to sulphomethoxazole trimethoprim (84%, 189/225), cepaholosporins (80%, 180/225), and least resistant to carbapenems (10.7%, 24/225). Two *K. oxytoca* and one *K. pneumoniae* were resistant to all antibiotics tested. *Klebsiella pneumoniae* had the most multidrug resistant isolates (59.4%, 134/225). Most isolates (83.6%, 188/225) expressed at least one enzyme, while 63.6% (143/225) of the isolates expressed at least two enzymes. The enzymes were ESBL (71.6%, 161/225), carbapenemase (10.7%, 24/225) and AmpC (6.6%, 15/225) producers. Three carbapenemases (*Klebsiella pneumoniae* carbapenemase-KPC, Metallo-Beta Lactamase-MBL and OXA-48) were detected.
Conclusion: These results revealed that resistance of *Klebsiella* spp. to cephalosporins is high and this may be exacerbated by co-expression of AmpC and carbapenemases aggravating associated patient morbidity and mortality. Monitoring of antimicrobial resistance of local strains is necessary for informed decisions on empirical treatment.

Disclosure of Interest
None declared.

P264

Molecular characteristics of Klebsiella pneumoniae isoltaes from patients in public hospitals in Benin

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P264

Introduction: Klebsiella pneumoniae is an opportunistic pathogen associated with community acquired and nosocomial infections. Highly drug resistant klebsialla pneumoniae have emerged rapidly and are becoming a major concern in clinical management.
Objectives: The aim of this study was to assess antimicrobial resistance and explore molecular characteristics of K. pneumoniae strains.
Methods: Between January 2019 and January 2021, samples were collected from patients in six public hospitals in Benin. Two departments were included: obstetrics and gastrointestinal. Isolates were identified with routine microbiological methods based on cultures followed by matrix-assisted laser desorption time of flight mass spectrophotometry (MALDI-TOF), tested for antibiotic susceptibility using Kirby-bauer disc diffusion test and confirmed by Phoenix antibiogram. Whole genome sequencing (WGS) was used on confirmed extended-spectrum, beta-lactamases (ESBL) producing Klebsiella pneumoniae strains to characterize their genomic content and study their relatedness.
Results: Thirty *K. pneumoniae* strains were isolated. Of these 25were defined as ESBL. 1Antibiotic susceptibility testing showed co-resistant to quinolones aminoglycosides and trimethoprim. We found that cefoxitin, imipenem, meropenem, and amikacin were the most sensitive antibiotics. The blaCTXM-71 and blaCTXM-15 encoding ESBL resistance was found respectively in 52% (n = 13) and 48% (n = 12) as

well as other beta-lactam genes asociated such as blaOXA-1, blaTEM-1 and blaSHV-100. Additionnaly, we frequently observed genes encoding resistance against aminoglycosides (aac-(3)-II-a), quinolones (QnrS, qnrBn qnrB71) and sulfonamides (sul1 and sul2). we identified high virulence sequence type (ST) including ST307 and ST45.
Conclusion: There is an urgent need for epidemiological and molecular studies to undrestand the dynamics of antibiotic resistance transmission to guide strategies for K. pneumoniae surveillance. Moreover, strict adherence to good hand hygiene practices is primordial to reduce the spread of MDR bacteria in surgical ite infections.

Disclosure of Interest
None declared.

P265

Ceftazidime-avibactam susceptibility among critical-ill patients with carbapenem-resistant enterobacteriaceae infections

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Introduction: In recent years, the rapid spread of extensively drug-resistant (XDR) and multidrug-resistant (MDR) Gram-negative bacteria have seriously threatened global public health. The worldwide mechanism for carbapenem resistant among Gram negative pathogens is via secretion of carbapenemase. One of the treatment options for carbapenem resistant Enterobacteriaceae (CRE) is ceftazidime-avibactam (CAZ-AVI) which had activity against Ambler class A and class D serine carbapenemases. In contrast, avibactam does not inhibit metallo-β-lactamase enzymes.
Objectives: To identify some of the predominant carbapenemases genes among CRE and test the susceptibility to ceftazidime-avibactam.
Methods: Our retrospective study included, 340 carbapenem-resistant Enterobacteriaceae isolates from clinical specimens received from four different tertiary hospitals since July 2020 to May 2022. Microbiological identification was performed by Vitek2 compact (bioMerieux), antimicrobial susceptibility testing was performed according to CLSI guideline including testing the sensitivity by disc diffusion to CAZ-AVI and MIC by Vitek2 Card XN-12 which include CAZ-AVI.
We screened isolates for ten carbapenemase genes (KPC, NDM, OXA-48, IMP, SPM, VIM, AIM, GIM, SIM, DIM) by conventional multiplex polymerase chain reaction (PCR) in concordance with technique of Poirel et al.
Results: Out of 340 non-repetitive CRE isolates *K. pneumoniae* was the dominant (322; 94.7%). 9.1% of isolates were sensitive to CAZ-AVI. Among 99% of these CRE different carbapenemase genes were detected; with high prevalence of NDM gene (85%). 221 isolates (65%) carried more than one carbapenemase genes.
Conclusion: A higher resistance rate to CAZ-AVI is associated with our CRE. So, proper identification and awareness of the locally prevalent carbapenemases among different Gram negative is one of the essential clues to guide the appropriate selection of antimicrobial therapy and improve benefit-risk outcomes.

Disclosure of Interest
None declared.

P266

Intestinal carriage of extended-spectrum β-lactamase-producing enterobacteriaceae in Moroccan hospitalized patients in a university hospital

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Introduction: The prevalence of extended-spectrum β-lactamase-producing Enterobacteriaceae (ESBL-E) in hospitalized and community patients is of significant public health concern.
Objectives: This study aimed to investigate the intestinal carriage and molecular epidemiology of ESBL-E isolated from patients at admission to a medical ward.
Methods: From January to July 2019, 100 patients admitted to the medical ward via intensive care unit (ICU) were screened for ESBL-E carriage at admission. ESBL-E were identified by double-disk synergy test. PCR was used to characterize the resistance genes.
Results: In the present study, 127 strains of Enterobacteriaceae were collected, the prevalence of intestinal carriage of ESBL-E was 12.6% (16/127), *E. coli* was the predominant specie (9/16; 56.2%). A high rate of multiresistance in ESBL-E was detected, 87.5% were resistant to Gentamicin, 81.2% to SXT, 87.5% were resistant to Nalidixic Acid and Norfloxacin, and 75% were resistant to Ciprofloxacin. All isolates were susceptible to Amikacin, Imipenem and Fosfomycin. Among all species, the $bla_{CTX\text{-}M\text{-}1}$ group was the most common gene detected (75%), followed by bla_{TEM} (62.5%) and bla_{SHV} (31.2%).
Conclusion: These findings suggest the need for action to better handle the burden of multidrug-resistant bacteria. Education of healthcare workers on basic procedures of infection control is recommended, as well as the implementation of antimicrobial stewardship program in all departments of healthcare facilities.

Disclosure of Interest
None declared.

P267

Prevalence, antibiogram profile and molecular characteristics of carbapenem-resistant pseudomonas Aeruginosa

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Introduction: *Pseudomonas aeruginosa* is one of the major pathogens that cause various nosocomial infections. Carbapenems are used as effective antibiotics for the treatment of *P. aeruginosa* infections. However, as the rate of carbapenem resistance of *P. aeruginosa* has increased, carbapenem-resistant *P. aeruginosa* (CRPA) has become a serious global health threat.
Objectives: The aim of this study was to investigate the prevalence, antimicrobial resistance profiles and the presence of carbapenemase genes of CRPA.
Methods: A total of 434 non-duplicate *P. aeruginosa* clinical isolates were collected from a university hospital in Daejeon, South Korea from March 2020 to April 2021. Antimicrobial susceptibility tests were performed using the broth microdilution method. The carbapenemase genes (bla_{KPC}, bla_{IMP}, bla_{VIM}, bla_{NDM}, bla_{GES}, and $bla_{OXA\text{-}48\text{-}like}$) were evaluated by PCR and DNA sequencing. Multilocus sequence typing (MLST) was performed to determine epidemiological characteristics of carbapenemase-producing CRPA isolates.
Results: The carbapenem resistance rate of *P. aeruginosa* was 36.4% (158/434). The 158 CRPA isolates were obtained from various clinical specimens, including urine (44.9%), sputum (36.1%), deep wound (7.0%), bile (3.2%), abscess (2.5%), blood (2.5%), ear (1.3%), peritoneal fluid (1.3%), bronchial washing (0.6%), catheter tip (0.6%). These CRPA isolates were resistant to imipenem (95.6%), meropenem (92.4%), levofloxacin (84.2%), ciprofloxacin (83.5%), cefepime (66.5%), ceftazidime (61.4%), tobramycin (57.6%), amikacin (54.4%), piperacillin-tazobactam (42.4%), and aztreonam (38.6%). A total of 124 (78.5%) out of the 158 CRPA isolates were identified as multidrug-resistant. The 45.6% (72/158) of CRPA isolates harbored carbapenemase genes, such as $bla_{IMP\text{-}6}$ or $bla_{NDM\text{-}1}$. NDM-1 was the most prevalent carbapenemase type, followed by IMP-6. The CRPA isolates harboring $bla_{IMP\text{-}6}$ and $bla_{NDM\text{-}1}$ belonged to ST235 and ST773 subtypes, respectively.

Conclusion: This study shows that most CRPA strains are multidrug-resistant and CRPA ST235 harboring bla_{IMP-6} and ST773 harboring bla_{NDM-1} are predominant clone in the study area. These findings suggest that we should pay attention to infection control measures to limit the spread of carbapenemase-producing CRPA.

Disclosure of Interest
None declared.

P268

Regional spread of an unusual ESBL-producing *Escherichia coli* ST131H89 clone across different human and environmental reservoirs in Western Switzerland

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Introduction: Several studies have identified the unusual extended-spectrum-beta-lactamase-producing *Escherichia coli* (ESBL-EC) subclone ST131H89 in Switzerland.
Objectives: We aimed to investigate the prevalence of ST131H89 and to describe the genetic relatedness of identified strains.
Methods: This study integrated data from Swiss studies, including (1) annual prevalence surveys of ESBL-EC carriage between 2018 and 2020 among 2,403 LTCF residents, (2) a cross-sectional analysis among 606 residents from 16 LTCFs in 2019, and (3) a cohort of discharged ESBL-EC carriers, their household contacts, and environmental *E. coli* strains between 2017 to 2019. The first isolate per person and all environmental isolates was included, except for cluster analysis. All studies combined phenotypic screening and next generation sequencing (NGS). We assessed genomic relatedness within ESBL-EC ST131H89 using annotated neighbor joining Single Nucleotide Polymorphism (SNP) tree and SNP matrix (ie, < 10 SNP differences).
Results: Of the 207 ESBL-EC ST131 isolates included between 2017 and 2020, 126 originated from LTCF patients, 39 from discharged patients and community residents, and 42 from environmental water sources. ST131H89 isolates (19%, n = 39) were observed only in Geneva and Vaud. Among 76 LTCF residents, 12 community residents, and 9 environmental samples (single river), ST131H89 isolates were respectively observed in 34 (44.7%), 3 (25.0%), and 2 (22.2%) samples. A total of 55 ST131H89 isolates underwent NGS. We identified 4 clusters without direct epidemiological link. One cluster included 9 isolates from Geneva: 2 residents, 2 Rhône river isolates and one isolate from a LTCF resident (1–8 SNP differences).
Conclusion: Molecular surveillance identified unusual regional spread and reservoirs of ESBL-EC ST131H89 in Western Switzerland. This clone warrants further surveillance and preventive efforts.

Disclosure of Interest
None declared.

P269

Nosocomial transmission of TET(X3), blandm-1, and blaoxa-98-carrying *Acinetobacter baumannii* conferring resistance to eravacycline and omadacycline

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Introduction: Carbapenem-resistant *Acinetobacter baumanii* (CRAb) is a critically important pathogen causing serious nosocomial infections. Antibiotics of the tetracyclin class are often the last treatment options.
Objectives: We describe a simultaneous introduction of two distinct CRAb strains in three patients with similar carbapenemase-encoding plasmids, also carrying the *tet(× 3)* gene. We assessed the susceptibilities against novel tetracycline antibiotics.
Methods: The chromosomal and plasmid sequences of the CRAb and non-carbapenemase carrying *A. baumannii* isolates cultured from patient material were analysed using hybrid assemblies of short-read and long-read sequencing data. Minimal inhibitory concentration (MIC) determination for the newly registered tetracyclin antibiotics eravacyclin and omadacyclin was performed by broth microdilution.
Results: The initial outbreak consisted of a carbapenemase and *tet(× 3)* negative *A. baumannii* isolated from patients on the IC ward of a medium size regional hospital. During the outbreak, while infection prevention control measures were in place, CRAb isolates were isolated from three patients over a period of multiple months. No direct epidemiological link could be identified to explain transmission between two of the three patients and no CRAb isolates were cultured from environmental samples. Sequencing of the CRAb isolates revealed that the outbreak consisted of two different strains of CRAb carrying similar plasmids. The plasmids contained multiple antibiotic resistance genes including *tet(× 3)*, and bla_{NDM-1}, and bla_{OXA-98} carbapenemase genes. The MIC of eravacyclin and omadacyclin against the two *tet(× 3)* carrying CRAb isolates were ≥ 2 mg/L and ≥ 8 mg/L, respectively, while the tested plasmid naïve outbreak *A. baumannii* isolate had MICs of 0.125 mg/L and 0.5 mg/L, respectively.
Conclusion: To our knowledge this is the first description of a *tet(× 3)*-carrying CRAb in the Netherlands. The acquisition of these plasmids resulted in nearly pandrug resistant patterns, including lack of susceptibility against eravacyclin and omadacyclin. The source of the two distinct CRAb isolates is unclear, since no environmental cultures were positive for CRAb.

Disclosure of Interest
None declared.

Poster session: MDROs on the rise

P273

Epidemiological overview of multi-drug-resistant bacterial infections among patients in a Tunisian University Hospital, 2021–2023

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Introduction: Bacterial infections are a global health concern due to the rise of antibiotic-resistant strains. This burden is also affecting developing countries such as Tunisia with limited scientific data available.
Objectives: We aimed to assess the epidemiologic patterns of multidrug-resistant bacteria in a Tunisian University Hospital.
Methods: A cross-sectional study was conducted from March 2021 to January 2023. Data was collected among all hospitalized patients carrying MultiDrug-Resistant bacteria (MDRb) at Mahdia University Hospital based on notification by the bacteriology laboratory. Binary logistic regression model was used to assess associated factors. SPSS software was used for data entry and statistical analysis.
Results: A total of 155 patients with MDR bacterial infections (MDRbi) were recruited, with a mean age of 49.9 ± 21 years old and a sex ratio of 1.7. Half of them were hospitalized in Intensive Care Units. Almost

all identified infections were associated with healthcare (92.3%). Those MDRbi decreased from 97.5% in 2021 to 88.6% in 2023. The primary cause for hospitalization was acute respiratory distress (29.6%). The most commonly isolated bacteria were gram-negative: Klebsiella Pneumoniae producing Extended Spectrum Beta-Lactamase (ESBL), Acinetobacter and Escherichia Coli producing ESBL (42.2%, 27.3% and 10.9% respectively).
Regarding internal risk factors, 30.3% had diabetes. One-third of patients had received antibiotics in the previous three months. Peripheral Intra-Venous catheterization (PIVc) was the most common external risk factor (61.3%), followed by urinary catheterization in the last seven days (47.7%) and orotracheal intubation (45.8%). In multivariable analysis, the only independently associated factor to MDRbi was PIVc (OR = 19 [2–156], p = 0.007).
Conclusion: Our study highlights the alarming prevalence of MDRbi among hospitalized patients, mainly those with comorbidities, recent antibiotic use and invasive medical procedures. There is an urgent need for effective control strategies to prevent the further spread of MDRb and reduce morbi-mortality.

Disclosure of Interest
None declared.

P274

Healthcare crisis and the emerging of newly strains of antimicrobial resistant pathogens in Al Azhar University Hospital, New Damietta, Egypt

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Introduction: ESKAPE pathogens are incriminated in healthcare-associated infections (HAIs) which represent a serious public health problem, globally.
Objectives: This work was carried out to evaluate the prevalence of ESKAPE organisms in intensive care units (ICUs), Al-Azhar University Hospital, New Damietta, Egypt.
Methods: The current study was conducted on 100 patients attending ICUs, Al-Azhar University Hospital, New Damietta between January 2021 and June 2022. Screening and assessment of the bio-typing, antimicrobial susceptibility pattern of different clinical isolates were carried out. The MICs were simultaneously measured using the BD Phoenix TM System according to the manufacturer's instructions and customized according to the Clinical and Laboratory Standard Institute (CLSI) guidelines.
Results: This study included 61 males and 39 females with their age ranged from 14 to 73 (mean = 37.6 ± 15.4) years. Out of 100 bacterial isolates, Gram negative organisms represented 57% of them. A higher incidence (46%) was found in blood specimens followed by sputum (28%), urine (16%), while pus specimens showed a less frequency (10%). Klebsiella spp. were the most frequently gram negative isolates (34%), while Staphylococcus aureus was the most frequently Gram-positive isolate (13%). Extensively drug-resistant (XDR) was observed in five *K. pneumoniae* and Pan-drug resistance (PDR) was observed in one A. baumannii isolates. Colistin sensitivity was 97, 1%, 96% and 95, 7% for E. coli, Klebsiella and Pseudomonas aeruginosa, respectively. The present study shows a very high prevalence of carbapenem resistance among Klebsiella pneumoniae, showing 71% and 74.2% for imipenem and meropenem respectively. Staphylococcus aureus was highly sensitive to linezolid, Moxifloxacin and Mupirocin (100%, 84, 6% and 76, 9% respectively).
Conclusion: The current study indicates a higher resistance to cephalosporins and carbapenems which was observed mainly in *K. pneumonia*, *E. coli*, *A. baumannii* and *P. aeruginosa*. Restrict uses of Colistin and Carbapenems in our hospital should be considered to limit the emergence of resistance to these precious antibiotics.

Disclosure of Interest
None declared.

P275

Changing bacterial etiology and antimicrobial resistance profiles in adults with bloodstream infections in a Referral Hospital Iran: a retrospective study of the pre-COVID-19 and COVID-19 periods

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Introduction: Antibiotic resistance is a growing public health concern that threatens the effective treatment of bacterial infections, especially potentially lethal ones such as bloodstream infections.
Objectives: In this study, we seek to compare the frequency of bacterial isolates and their antibiotic resistance profiles in adults with bloodstream infections before and during the COVID-19 pandemic in a referral hospital in Iran.
Methods: In our study, we analyzed 2682 blood cultures that demonstrated bacterial growth in adults. We assessed the prevalence of bacterial isolates and their antibiotic resistance patterns using the disc diffusion method and compared them between the pre-pandemic period (March 21, 2017, to 2020) and the COVID-19 phase (March 20, 2020, to 2023). P-value < 0.05 was considered significant.
Results: Gram-negative bacteria (GNB) were more frequently isolated than Gram-positive ones (GPB) during COVID-19 episodes (73% vs. 27%, respectively), as was also seen in the pre-COVID-19 period. Among the 2028 isolated GNB, Enterobacteriaceae was significantly more prevalent during the COVID-19 period (45%) than pre-COVID-19 (32%). Among 1041 Enterobacteriaceae, *Escherichia coli, Klebsiella pneumonia,* and *Enterobacter* spp. were the most common ones in both periods. Among 977 non-fermenter bacilli, the rate of *Stenotrophomonas maltophilia* was significantly less frequent in the COVID-19 episode (7%) than in the pre-COVID-19 period (24%). The frequency of *Staphylococcus aureus* as the most frequent GPB was more prevalent in the COVID-19 period than the pre-COVID-19 one (15% vs. 11%, respectively). *Enterococcus* species was not significantly different between the two periods. The frequency of extended-spectrum beta-lactamases producing *Enterobacteriaceae*, vancomycin-resistant *enterococci* and methicillin-resistant *Staphylococcus aureus* were 49%, 61% and 56%, respectively, and there were no significant differences between the two episodes.
Conclusion: Our results revealed the potential effect of COVID-19 pandemic in changing the etiology of blood stream infection. Effective measures are needed to address antimicrobial resistance.

Disclosure of Interest
None declared.

P276

The effect of comorbidity on hospital mortality and hospitalization in patients with clinically diagnosed carbapenemase-producing carbapenem-resistant enterobacteriaceae from an Asian Tertiary Hospital

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Abstract video clip description: Little is known about the burden of clinically diagnosed CPE, especially patients with multiple genotypes and comorbid conditions in Asian patient population. We aim to assess the disease burden of patients with clinically diagnosed CPE and the usefulness of Charlson Comorbidity Index (CCI) as mortality predictors in this group of patients from a large hospital in Singapore.
Retrospective cohort study of hospital laboratory database to identify patients with CPE with single or multiple genotypes from Jan 2016 to Sep 2022; hospital discharge database was used to extract clinical information and identify respective patients with comorbidity using International Statistical Classification of Diseases and Related Health Problems, 10th Revision, Australian Modification (ICD-10-AM) codes.
Over the 7-year period, 276 patients had CPE were identified, including 26 patients infected with multiple genotypes (9.4%), with an hospital mortality rate of 28.3%. Patient with multiple CPE genotypes had a significantly higher mortality rate (46.2% vs 26.4%, $p = 0.033$) compared to patient with a single genotype. The hospital mortality rates (13.2%, 24.5%, 38.2%, and 100.0%, respectively, $p < 0.001$) were consistently increased for patients with CCI ranging from none, low, moderate to high grade, respectively. Logistic regression model analysis showed that CCI (Odds ratio (OR) 12.3, high vs. none, CI 2.8–54.6, $p = 0.001$), but not for patient with multiple genotypes (OR 1.5, 95% CI 0.7–3.4, $p = 0.318$) was significant and independent predictors of hospital mortality after adjustment.
The burden of CPE infection is high in this population. Comorbidity but not CPE with multiple genotypes was one of the most important contributors to hospital mortality.

Disclosure of Interest
None declared.

P277

Variation of current practices to control multidrug-resistant organisms: results of a survey across 24 European hospitals

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Introduction: The REVERSE project is evaluating the effectiveness of diagnostic stewardship, infection prevention and control (IPC), and antibiotic stewardship programmes on antimicrobial resistance in acute care hospitals in four countries (Greece, Italy, Spain, Romania). In 2022, we performed a baseline survey to examine the current IPC strategies in 24 participating sites.
Objectives: To evaluate the screening and IPC practices targeting MDRO.
Methods: Hospitals were invited to complete an online survey, in English, assessing three components: existing guidelines on MDRO control, IPC measures in place and IPC infrastructure and resources.
Results: All 24 hospitals completed the questionnaire.18 (75%) sites reported having written guidelines for MDRO screening on admission. Universal screening of all admitted patients was not performed by any hospital except for specific units, mainly intensive care (ICU) (75%;18/24), haematology (54%;13/24) and transplantation units (38%;9/24). Frequently used risk factors to screen patients at high risk for MDRO carriage at admission were: previously known colonization (54%;13/24), transfer from another facility (54%;13/24) and overnight stays in other facilities in the last 6–12 months (46%;11/24). Targeted screening of high-risk patients included carbapenem-resistant Enterobacterales (CRE) (83%;20/24), carbapenem-resistant (CR) *Acinetobacter baumannii* (63%;15/24), CR-*Pseudomonas aeruginosa* (58%;14/24), ESBL-producing Enterobacterales (50%;12/24), methicillin resistant *Staphylococcus aureus* (71%;17/24) and vancomycin resistant enterococci (46%; 11/24). 14 (58%) institutions performed weekly swabs during hospitalization of patients, mainly in ICU and haematology units. All sites reported implementing contact precautions for CR Gram negative bacteria. Other practices were heterogeneously adopted such as isolation in single room, cohorting, dedicated staff or flagging. In terms of surveillance, 14 (58%) sites have a digitalized system to track MDRO carriers.
Conclusion: We observed a wide variation in adoption of MDRO screening and infection control practices, reflecting differences in published recommendations and national guidelines.

Disclosure of Interest
None declared.

P278

Antibiotic susceptibility patterns of bacteria associated with sepsis among hospitalized patients in the Yaoundé University Teaching Hospital

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Introduction: The steep increase in septicaemia cases is a major health problem that creates the biggest challenge for clinicians in the selection of appropriate antimicrobial agents. This is further complicated by the development of drug resistance in the causative agents.
Objectives: This study aimed that determining the antimicrobial resistance patterns of bacterial isolates associated with sepsis among hospitalized patients.
Methods: A cross-sectional study was carried out for 5 months at the Yaounde University Teaching Hospital. Bacterial species were isolated from 150 blood samples collected from hospitalized patients. Antimicrobial susceptibility testing was carried out using the Kirby-Bauer disc diffusion method. The isolates were tested for methicillin resistance and ESBLs.
Results: The prevalence of septicaemia was 16% among hospitalized patients. *Klebsiella spp., Escherichia coli,* and *Staphylococcus aureus* were the most common isolates. The antibiotic susceptibility patterns of the isolates showed that Gram-negative bacteria were highly resistant to Amoxicillin clavulanic acid and ceftriaxone while the Gram-positive bacteria were highly resistant to minocycline. Fifty percent (3/6) of the isolated *S. aureus* were methicillin-resistant and 27.8% (5/18) of the isolated Enterobacteriaceae were ESBLs producers. In multivariable logistic regression analysis, temperature above 37.9 ℃ (AOR = 4.455; 95% CI 1.458–15.693; $p = 0.033$) and being under respiratory assistance (AOR = 4.311; 95% CI 1.458–12.749; $p = 0.008$) were significantly associated with septicaemia.
Conclusion: The Occurrence of multidrug-resistant strains in this study emphasizes the needs for continuous surveillance in hospitals to detect resistant strains. Strict guidelines for antibiotic therapy and the implementation of infection control measures to reduce the increasing burden of antibiotic resistance are advocated.

Disclosure of Interest
None declared.

P279

Evaluation of effectiveness of enhanced carbapenemase-producing enterobacterales infection control program in hematologic wards

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Introduction: Carbapenemase-producing *Enterobacterales* (CPE) represent a major threat to immunocompromised hosts, including hematopoietic stem cell transplantation (HSCT) recipients and patients with hematologic malignancy.
Objectives: Due to a rise in CPE cases within hematologic wards, we implemented an enhanced infection control program and evaluated its effectiveness.
Methods: This quasi-experimental study was conducted on inpatient wards for hematologic malignancies and HSCT recipients at a tertiary care hospital in South Korea, comprising 25 patient rooms, of which 16 were multi-patient rooms. Before June 2021, patients with CPE colonization and/or infection were isolated in single rooms with contact precautions, and contact tracing was performed for roommates in multi-patient rooms. From June 2021, an enhanced CPE infection control program was implemented, including cohorting nurses, active surveillance at admission and weekly during hospitalization using perirectal swabs for culture and Xpert PCR, and enhanced daily environmental disinfection. The incidence of CPE bloodstream infections (BSI) was compared before (June 2020–May 2021) and after intervention (June 2021–May 2022) using Poisson regression analysis, and the ratio of positive CPE among contacts was analyzed by logistic regression analysis.
Results: The study included 242 patients with CPE (152 with NDM-1, 64 with KPC, 4 with other carbapenemases, and 22 with co-colonization). The incidence of CPE BSI was 0.3/1,000 person-days in intervention period versus 0.4/1,000 person-days in control period (incidence rate ratio, 0.75 [95% confidence interval (CI), 0.35–1.88]; $P = 0.07$). The ratio of positive CPE among contacts was 0.01 in the intervention period versus 0.13 in the control period ($P < 0.001$).
Conclusion: The ratio of positive CPE among contacts significantly decreased after intervention and a trend towards a reduction in CPE BSI incidence in hematologic wards. Active surveillance, cohorting staff, and enhanced environmental disinfection may help prevent CPE transmission.

Disclosure of Interest
None declared.

P280

Screening for ESBL producing *E. coli* and methicillin resistance staphylococcus aureus isolated from a hospital restroom floors in Kano State, Northwestern Nigeria

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Introduction: Illnesses resulting from methicillin-resistant *Staphylococcus aureus* (MRSA) and extended spectrum beta-lactamase (ESBL) producing *E. coli* are increasing. This study aimed at isolating, identifying and determine the incidence of MRSA and ESBL producing *Escherichia coli* from a local hospital restroom floors.
Objectives: 1. To isolate and identify *Escherichia coli* and *Staphylococcus aureus* from toilet floors of the hospital.
2. To confirm the isolates using biochemical tests.
3. To determine ESBL and MRSA were using double disc synergy test and Cefoxitin susceptibility test respectively.
Methods: A total of 100 swab samples from the hospital restroom floors were collected in the morning before and after cleaning and cultured on MacConkey and Chocolate agar according to standard microbiological methods. ESBL and MRSA were determined using double disc synergy test and Cefoxitin susceptibility test respectively.
Results: Forty five (45) *Staphylococcus aureus* (45.0%) and 24 *Escherichia coli* (24.0%) were isolated. About 35% of the 45 *S. aureus* isolated were MRSA. Nine (37.5%) ESBL-*E. coli* was detected among the 24 isolated *E. coli.* Samples from the male restroom floors show the highest incidence of MRSA (45.7%) while the female shows the lowest (26.5%). Even though there are reduction in the number of *S. aureus* isolated from samples collected after routine cleaning of the toilets, (50% of *Staph* isolated) but percentage of MRSA in male and female restroom floors were 33.3% and 25.0% respectively.
Conclusion: MRSA and ESBL *E. coli* in hospital's toilet floors before and after wash, insignificant level of hygiene and could be contacted and spread to all users.

Disclosure of Interest
None declared.

P281

Impact of universal weekly screening as compared to surveillance of clinical specimens in an orthopaedic infection ward to detect acquisition of multidrug-resistant organisms (MDRO)

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Introduction: Patients in the septic orthopedic ward at Geneva University Hospitals present multiple risk factors for acquisition of MDRO, such as polymorbidity, extended and repeat stays, and prolonged therapy with broad-spectrum antibiotics. Following detection of 3 OXA-181 carbapenemase-producing Gram-negative bacteria (CP-GN) cases in 2019, active universal weekly screening of all patients was introduced.
Objectives: To compare active universal weekly screening of all patients and surveillance of clinical specimens to detect acquisition of MDRO.
Methods: From 2019 to 2022, patients in the ward were screened on admission and then weekly throughout the patient's hospitalisation. Samples collected included: nasal and inguinal swabs for methicillin-resistant *S. aureus*, axillary swab for carbapenem-resistant *A. baumannii* (CRAB) and ano-rectal swab for extended-spectrum beta-lactamase (ESBL) producing Enterobacterales, CP-GN, CRAB, and vancomycin-resistant *Enterococcus* (VRE).
Results: From 2019 to 2022, 4674 swabs from 2478 patients were collected through active universal weekly screening. At admission, 240 (9.7%) patients were identified as colonized with at least one MDRO. In weekly screening, 90 (3.6%) patients acquired MDRO during hospitalisation: 51 ESBL, 3 VRE and 36 CP-GN, including different resistance genes. The incidence density of CP-GN detection during hospitalization (Table 1) showed an increasing annual trend.
In comparison, during the same period, surveillance of clinical specimens only identified two patients, both of whom had positive samples for CP-GN, and one of whom had a clinical infection.
Table 1: Detection of new CP-GN cases identified during hospitalization per 1000 patients days.

Year	New CP-GN cases identified during hospitalisation	Patient days	CP-GN incidence per 1000 patient days
2019	4	7191	0.56
2020	5	5131	0.97
2021	10	6200	1.61
2022	18	7184	2.51

Conclusion: Relying on surveillance of clinical specimens alone appears to be insufficient to detect acquisition of MRDO in this ward. Active universal weekly screening enables timely detection of acquisition while patients receive specialized orthoseptic care.

Disclosure of Interest
None declared.

P282

Hospital outbreaks due to multiresistant Citrobacter spp: a systematic review

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Introduction: Extended-spectrum-β-lactamase (ESBL) and carbapenemase-producing (CP) *Citrobacter spp*. are emerging nosocomial pathogens. The current magnitude of *Citrobacter spp* involvement in hospital outbreaks is unclear.
Objectives: We performed a systematic review to evaluate the frequency of *Citrobacter* spp outbreaks and their main features since 2000.
Methods: We searched MEDLINE, Embase, and grey literature (Jan-2000–Dec-2022) for studies on hospital outbreaks involving ESBL and/or CP *Citrobacter* spp as the main epidemic pathogen (responsible for at least 1/3 of the cases).
Results: We screened 1,609 title/abstracts, 147 full texts and identified 12 published multi-resistant *Citrobacter spp* outbreak reports (ESBL, n = 5; CP, n = 8). Six outbreaks (50%) were detected in Europe (Belgium, France, Germany, Italy); 4 in Asia (Iran, Israel, Japan) and 2 in North America (Canada, USA). The outbreaks were mainly caused by *C. freundi* (9/12 studies) and lasted for a median of 162 days [interquartile range (iqr), 16–409]. The median number of infected and/or colonized patients per outbreak was 7 patients [iqr, 5–16] with respiratory (5/12), urinary tract infections (3/12) and bloodstream infections (3/12) as the most common infection types in the different studies. 32 patients had *Citrobacter* spp infections vs. 160 colonized, corresponding to an infection rate of 17%. In the 4 studies reporting patients' outcomes, the case fatality rate was 19% (6/32) among infected cases. Outbreak control measures included active patient screening (9/12 studies) and environmental screening (4/12), including sink/toilet sampling (4/12). Only 5/12 studies identified an outbreak source: foodborne (n = 1); toilets (1), sinks (1), healthcare workers (1), and contaminated intravitreal injections (1). Frequently implemented preventive measures included isolation of positive patients (7 studies), environmental cleaning (6) and reinforcement of hand hygiene (5). Outbreaks were reported to be under definitive control in 7 (58%) out of 12 studies.
Conclusion: Multi-resistant *Citrobacter spp*. are rarely reported as the main pathogens in healthcare-related outbreaks. Various outbreak source(s) were involved, including the hospital environment. Transition from epidemic to endemic occurrence was observed in almost half of the outbreak reports.

Disclosure of Interest
None declared.

P283

Resistance profile of enterobacteria strains isolated from urine at the Medical Biology Laboratory of the Donka National Hospital (Guinea)

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Introduction: The emergence and spread of antibiotic resistance represents a real threat to global public health.
Objectives: The aim of this study was to describe the antibiotic resistance profile of enterobacteria isolated from urine at the medical biology laboratory of the Donka national hospital.
Methods: This was a cross-sectional study at the medical biology laboratory of Donka University Hospital. We included samples from patients seen on an outpatient basis. Cultures were performed according to standard techniques, strains were identified using Biomerieux API 20E and antibiotic susceptibility testing was performed using Biomerieux ATBTM G-5 Kit. Results were analyzed in accordance with the recommendations of the antibiogram committee of the Société francaise de microbiologie CASFM v1 2022.
Results: From december 1, 2022 to march 31, 2023, we received and analyzed 287 urine samples from patients at the outpatient clinic of the chu de Donka. The mean age of the patients was 40.38 years plus or minus 19.97; women were the most common with a sex ratio of 1.12. The proportion of positive cultures was 16.03% (46); E. coli was the most isolated enterobacteria, accounting for 50% of isolates, followed by K. pneumoniae, 19.57%. We found E. coli to be resistant to various classes of antibiotics, notably penicillin, carboxipenicillin, 1st, 2nd and 3rd generation cephalosporins and fluoroquinolones.
Conclusion: This study highlighted the growing trend in bacterial resistance to antibiotics, which calls for appropriate measures to be taken in community settings.

Disclosure of Interest
None declared,

P284

Prevalence of multidrug-resistant bacteria carriage among patients admitted to intensive care unit at Chu Angre in 2021

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P284

Introduction: Multidrug-resistant bacteria (MDR) constitute a public health problem. The control and spread of such strains are major challenges in intensive care units (ICUs).
Objectives: To determine the prevalence of MDR colonization among patients admitted to the ICU.
Methods: This was a prospective cross-sectional study conducted from March to September 2021 in the intensive care unit of CHU Angre. Each admitted patient underwent nasal and rectal swabbing. Bacterial isolation and identification were performed using standard bacteriological methods. Antibiotic susceptibility testing was conducted using the Kirby-Bauer method, and the results were interpreted according to the CA-SFM 2019 guidelines.
Results: Out of 94 patients sampled, the positivity rate was 61.7% for nasal swabs and 89.4% for rectal swabs. The nasal carriage rate of *Staphylococcus aureus* was 41.4%. The bacteria primarily isolated from the rectal swabs were *Escherichia coli* (43.6%) and *Klebsiella pneumoniae* (26.5%).

Pseudomonas aeruginosa represented 28.7% of the isolates ones, and *Enterococcus spp* 77.7%. The proportion of methicillin-resistant *Staphylococcus aureus* (MRSA) was 54.2%. Extended-spectrum beta-lactamase-producing Enterobacteriaceae (ESBL) and carbapenemase-producing Enterobacteriaceae (CPE) represented 23.9% and 3.3%, respectively. 57.1% of *Pseudomonas aeruginosa* strains were resistant to ceftazidime, and 31.5% of *Enterococcus spp* strains were resistant to vancomycin. 59.6% of the admitted patients were carriers of at least one MDR strain.
Conclusion: The high rate of patients carrying MDR strains necessitates the definition of a decolonization strategy and the implementation of preventive measures to control the spread of such strains.

Disclosure of Interest
None declared.

P285

Fluoroquinolone-resistance enterobacteriaceae strains isolated from urinary tract infections at Angre University Hospital, 2021–2022

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P285

Introduction: Fluoroquinolones are an optimal choice for the empirical treatment of urinary tract infections (UTIs). The emergence of resistance strains results of a combination of several resistance mechanisms, particularly for Gram-negative bacilli.
Objectives: To determine fluoroquinolones resistant profiles of enterobacteria and multiple antibiotic resistance index (MARI).
Methods: This was a cross-sectional study which took place at the medical biology department. Urine samples from outpatients and inpatients at the University Hospital of Angre from 2021 to 2022 were analysed. Bacteria isolated from urinary tract infections were identified using standard bacteriological methods. Study of sensitivity to antibiotics using an automated system (Vitek^{MD}2 Compact®). Data were analysed using SPSS v.26 software.
Results: Prevalence of UTIs was 11.13% (160/1438). Enterobacteriaceae represented 81.25% (130/160) and *Escherichia coli* 58.46%. The overall resistance to fluoroquinolones (FQR) was 71.54% (93/130) of which 47.31% were hospital strains and 52.68% ambulatory strains. All strains were resistant to ofloxacin. They were resistant to levofloxacin and ciprofloxacin in 94.62% (88/93) and 75.27% (70/93) respectively. Species with a high frequency of FQR were *Enterobacter cloacae* 85.71% (6/7), *Escherichia coli* 78.95% (60/76) and *Klebsiella pneumoniae* 68.75% (22/32). All FQR strains showed a high MARI score > 0.2 (0.67–1). FQR isolates also produced extended spectrum beta-lactamase (ESBL) and carbapénémase in 52.69% (43/93) and 13.98% (13/93) respectively.
Conclusion: The increase of fluoroquinolone is a real threat. The molecular study of resistance mechanisms could help to understand the spread of such strains.

Disclosure of Interest
None declared.

P286

Intraventricular colistin

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P286

Introduction: Meningitis associated with care occurs more and more in our University Hospital. It is most often caused by multi-resistant bacteria reducing the therapeutic options available. Intraventricular Colistin is sometimes the only possible therapeutic alternative.
Objectives: We bring our experience on the use of colistin intraventricularly.
Methods: We report seven cases of meningitis associated with multi-resistant Acinetobacter baumanii care occurring on external cerebrospinal fluid (LCS) diversion drain (EVD) as part of a prospective study on epidemiology, clinical and therapeutic treatment-associated meningitis.
Results: During the study period (June 2014–June 2018) we diagnosed seven (07) episodes of Acinetobacter baumanii meningitis on DVE in 07 patients, 02 infants and 05 adults. The germ was sensitive, only to colistin (5/7), colistin and imipenem (2/7).
The seven patients were treated with colistin alone, intraventricularly, a daily injection through the CSF drainage catheter at a dosage of 10,000 IU on the first day, then 20,000 IU in the 2 infants and 50,000 IU in the 5 adults, from the 2nd day.
Sterilization of the CSF was obtained on the 3rd day (4/7), on the 5th (3/7). The total normalization of the CSF was obtained between the 14th and the 38th. The average duration of the treatment was 26 days.
We noted no adverse effects related to colistin in six patients. One infant presented with seizures. Healing was achieved in all our patients.
Conclusion: The use of colistin, locally, when possible, seems to us to be the treatment of choice for multiresistant Acinetobacter meningitis.

Disclosure of Interest
None declared.

P287

Control of *Acinetobacter baumannii* in an Argentinean intensive care

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P287

Introduction: Carbapenem-resistant Acinetobacter baumannii (CRAB) infections have increased over the last ten years in intensive care units (ICUs) causing 20% of respiratory infections (WHONET 2022) in Argentina. CRAB is difficult to eradicate from the environment due to its ability to persist on surfaces and reduced susceptibility to biocides which demonstrates the importance of implementing infection control programs (ICPs) for its control. In Argentina, ICPs are optional, and the degree of implementation is heterogeneous.
Objectives: To compare the ICUs CRAB infection rate in hospital with advanced ICP with the national rate.
Methods: Descriptive, observational study from 01/01/2018 to 12/31/2021 in an 18-bed ICU of a tertiary hospital University located in the province of Buenos Aires. The hospital has had an ICP since 2010 that includes sustained compliance to Hand Hygiene, compliance and audit of hospital hygiene, ASP, implementation and compliance with contact isolation measures foe CRAB.
A case of CRAB infection was defined as a patient admitted to the ICU with clinical manifestation + bacteriological documentation of CRAB within 48 h of admission to the unit. We compared our own rate with the national rate according to the report of the Hospital Infection Surveillance System of Argentina (VIHDA).
Results: The overall rate per 1000 patient-days (PD) in our UCIA was: 2018 = 0.61, 2019 = 0; 2020 = 0.90; 2021 = 0.37. VIHDA reports for the

same years were 1.8, 2, 1.75, 2.26 respectively. (Graph 1) The difference is statistically significant. Adherence to the program components is shown in Table 1.

	2018	2019	2020	2021
Hand hygiene compliance rate % (n)	83% (1731/2089)	89% (1956/2208)	83% (1699/2058)	66% (1432/2092)
Hospital hygiene compliance rate % (n)	90% (5932/6595)	91% (6637/7360)	92% (7424/8064)	90% (7694/8469)
Contact isolation compliance % (n)	76% (1129/1465)	69% (40/102)	No data	No data

Conclusion: The implementation of an advanced IPC accompanied by rigorous evaluation of compliance with its components is necessary to control the spread of CRAB in high-risk settings.

Disclosure of Interest
None declared.

P290

Ionic liquids are a promising direction for combating antimicrobial resistance: bactericidal activity related to the anions of 1-decyl-3-methylimidazolium ionic liquids

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P290

Introduction: The widespread occurrence of multi-drug resistant pathogens necessitates extensive research into novel compounds with advanced antimicrobial activity. Ionic liquids have shown great promise as antimicrobial agents. Although Ionic liquids have been around for decades and used in diverse applications, their antimicrobial properties are only recently gaining increased scientific attention. However, most research focuses on ionic liquid cations and alkyl chain lengths' effects on antimicrobial activity.
Objectives: To study the effect of the anion moiety of three 1-decyl-3-methylimidazolium ionic liquids on antimicrobial activity against bacteria S. aureus ATCC 25923, P. aeruginosa ATCC 15442 and the clinical isolates of the multi-drug resistant strains, methicillin-resistant S. aureus, MRSA and methicillin-resistant P. aeruginosa, MRPA.
Methods: Antimicrobial activity was determined using suspension challenge (EN 1276 standard) and disc diffusion susceptibility methods. The disc diffusion testing was carried out using Whatman filter paper, and HEPA filter media. The filters were cut to a diameter of 15 mm, impregnated with dilutions of the ionic liquids, and allowed to dry overnight. Filters were placed on the TSA surface swabbed with inoculum and incubated.
Results: The ionic liquids all demonstrated significant activity against the test bacteria. The tetrachloroferrate ($FeCl_4$) anion was more effective against the Gram-negative strains, *P. aeruginosa* and *MRPA*, while the tetrafluoroborate (BF_4) anion was superb against Gram-positive strains, *S. aureus,* and *MRSA*. The chloride (Cl^-) anions are similarly effective for both Gram-positive and Gram-negative bacteria. The bactericidal activity can be ranked as *S. aureus* > MRSA > *P. aeruginosa* > MRPA and the order of activity of the ionic liquids is $[Cl^-] > [BF_4] > [FeCl_4]$.
Conclusion: Ionic liquids of the same chain length exhibit varied responses related to the anion moiety and the type of microorganisms. The anion-antimicrobial activity relationship should be an important consideration in the design of ionic liquid-containing antimicrobial systems.

Disclosure of Interest
None declared.

P291

Staphylococcus aureus spontaneous resistance frequency to cannabidiol

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P291

Introduction: The emergence and spread of antibiotic resistance among bacterial pathogens pose a significant threat to global public health. *Staphylococcus aureus*, a notorious human pathogen, has shown remarkable adaptability and resistance to numerous antibiotics. In recent years, the therapeutic potential of cannabidiol (CBD), a non-psychoactive compound derived from *Cannabis sativa*, has gained considerable attention due to its diverse pharmacological properties, including antimicrobial activity. However, the potential for *S. aureus* to develop resistance to CBD and its implications for the efficacy of this compound remain largely unexplored.
Objectives: The aim of this report is to evaluate the efficacy of the product "PSEUDOMA", hydroalcoholic gel containing natural cannabidiol, developed by Pharmotech SA and more specifically, its persistent biocidal activity after application on hands.
Methods: The objective of this study is to investigate the spontaneous resistance frequency of Staphylococcus aureus to CBD and vancomycin to understand the potential emergence and frequency of resistance in *S. aureus* towards these antimicrobial agents.
Results: Table 1. Frequencies of spontaneous resistance of *S. aureus* to CBD and Vancomycin.

Compound/concentration (fold over MIC)	Number of clones	Frequencies of spontaneous resistance
CBD 4 ×	1	1.5×10^{-9}
CBD 8 ×	0	$< 1.5 \times 10^{-9}$
Vancomycin 4 ×	2	5.9×10^{-9}
Vancomycin 8 ×	2	5.9×10^{-9}

MIC of CBD: 3 µg/mL; MIC of Vancomycin: 1 µg/mL.
Conclusion: Only 1 clone was detected on plate containing 4 × the MIC of CBD and none at 8 × the MIC. This corresponds to a frequency of spontaneous resistance of 1.5×10^{-9} or below. For comparison, the frequency of spontaneous resistance for vancomycin, used as control, is a bit higher.
The clone capable to grow at 4 × the CBD MIC was restricted on a medium without CBD and its MIC was determined in liquid MH medium. No Increase of MIC was observed with an MIC of 2 µg/ml identical to the wild type strain. This suggests that the putative spontaneous resistance was unstable.

Taken together, these results suggest that *S. aureus* spontaneous resistance frequency to CBD is very low, similar or even below the frequency for Vancomycin.

Disclosure of Interest
C. Serna Jiménez Employee of: Pharmotech SA, R. Aeschbach Shareholder of: Pharmotech.

P292

Antimicrobial photodynamic therapy against extensively drug-resistant (XDR) gram-negative isolates with novel antibiotic resistance factors

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P292

Introduction: Antimicrobial resistance (AMR) poses an urgent global public health threat, resulting in 1.27 million deaths worldwide annually. The US has shown an alarming increase of 35% in AMR Enterobacteriaceae infections. The emergence and spread of new forms of resistance is concerning as it includes worldwide dissemination of extensively drug-resistant (XDR) microbes. Antimicrobial photodynamic therapy (aPDT, photodisinfection) can be deployed to combat drug-resistant microbes. aPDT utilizes a photosensitizer (PS) combined with a specific wavelength of excitation light to drive photochemical reactions to produce reactive oxygen species (ROS). ROS are lethal to bacteria, fungi, algae, protozoa, and viruses and utilize multi-target action mechanisms. The novel photosensitizer formulation, Steriwave™ (Ondine Biomedical Inc., Canada), combines photoactivated 0.01% methylene blue (MB) and 0.25% chlorhexidine gluconate in an aqueous excipient matrix to enhance the final antimicrobial effects.
Objectives: This study aimed to compare the in vitro aPDT efficacy of Steriwave™ to 0.01% MB alone against XDR gram-negative strains.
Methods: Gram-negative strains used in this study were received from CDC&FDA Antibiotic Resistance Isolate Bank. All selected isolates exhibited confirmed resistance to Aminoglycosides, Carbapenems, Cephems, Monobactam, Penicillin, Tetracyclines, Quinolones, Fluoroquinolones, Lipopeptides, and Nitrofuran. Isolates presented important drug-resistance genotypes, including KCP-3 NDM-1, KCP-3 NDM-7, NDM-5, and OXA-48. aPDT was carried out by exposing planktonic suspensions of each strain to PS containing either MB or Steriwave™. Illumination was performed at 670 nm for 60 s (150 mW/cm^2; 9 J/cm^2). Samples were serially diluted and plated on agar for colony counting.
Results: Relative to untreated controls, aPDT with commercial PS formulation resulted in a mean reduction of > 4 $\log_{10}$ reduction in < 20 s against all isolates tested, whereas for MB alone, more than 60 s illumination was required to achieve 3$\log_{10}$ reduction.
Conclusion: aPDT is highly effective against a variety of clinically-relevant and XDR strains in less than 20 s of treatment in a planktonic in vitro model. aPDT represents a promising alternative to antibiotics in antimicrobial resistance strategies.

Disclosure of Interest
None declared.

P293

Evaluation of the effectiveness of modern antiseptics against multidrug-resistant clinical strains of p. aeruginosa isolated from combat wounds during hostilities on the territory of Ukraine

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P293

Introduction: *Pseudomonas aeruginosa* is one of the most dangerous pathogens of healthcare-associated infections.
Objectives: To study and evaluate the effectiveness in vitro of modern antiseptics against multidrug resistant (MDR) clinical strains of *P. aeruginosa*.
Methods: The activity of antiseptics chlorhexidine 0.5% (CHG), polyhexanide 0.1% (PHMB), octenidine 0.1% (OCT), miramistin 0.01% (MRM), decamethoxin 0.1% (DCM), decamethoxin 0.02%, povidone-iodine 10% (PVP-I) was tested against MDR *P. aeruginosa* (n = 43). The minimum inhibitory concentration (MIC), the minimum bactericidal concentration (MBC) were determined (in accordance to the Clinical and Laboratory Standards Institute guidelines, USA), and then the index of antiseptic activity (IAA) was calculated. The IAA indicator is the ratio of the working concentration of a certain antiseptic to its MIC in relation to a given microorganism. The antiseptic was considered active if the IAA was greater than four (IAA > 4).
Results: Based on MIC and MBC values, DCM 0.1% (MIC = 63.24 ± 5.24 μg/ml; MBC = 107.89 ± 5.85 μg/ml), DCM 0.02% (MIC = 60.17 ± 5.05 μg/ml; MBC = 106.98 ± 9.28 μg/ml) and PHMB 0.1% (MIC = 68.68 ± 4.2 μg/ml; MBC = 103.2 ± 12.88 μg/ml) showed the highest antimicrobial activity. The bactericidal effect of DCM 0.02% against clinical strains of *P. aeruginosa* significantly exceeded that of CHG—by 1.81 times ($p < 0.001$), OCT—by 1.45 times ($p = 0.01$). The bactericidal activity of PHMB was significantly higher than that of CHG by 1.88 times ($p < 0.01$), OCT—by 1.51 times ($p < 0.05$). The highest IAA values were determined for PHMB 0.1% (IAA = 16.0), OCT 0.1% (IAA = 20.0), DCM 0.1% (IAA = 21.34), PVP-I 10% (IAA = 46.74). The concentration of 0.01% MRM was too low to determine MBC, and the IAA value was below the threshold (IAA = 1.12).
Conclusion: The most active against MDR *P. aeruginosa* are antiseptics DCM 0.1%, PHMB 0.1%, OCT 0.1%, PVP-I 10%. The effectiveness of MRM 0.01% was found insufficient since IAA was below the threshold (< 4).

Disclosure of Interest
None declared.

P294

Activity of modern antiseptic agents against immature biofilms of multidrug-resistant strains of pseudomonas aeruginosa isolated from combat wounds

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P294

Introduction: The worldwide emergence of carbapenem-resistant *Pseudomonas aeruginosa* makes healthcare-associated infections caused by these pathogens virtually incurable. The high biofilm-forming ability of *P. aeruginosa* is an important pathogenicity factor, and also causes and increases resistance to antibiotics.
Objectives: To study the effectiveness of modern antiseptic agents against immature biofilms of multidrug-resistant (MDR) strains of *P. aeruginosa* isolated from combat wounds.
Methods: Antiseptics polyhexanide 0.1% (PHMB), octenidine 0.1% (OCT), chlorhexidine 0.5% (CHG), decamethoxin 0.1% (DCM), povidone-iodine 10% (PVP-I) and 43 MDR isolates of *P. aeruginosa* were used in the study. For each antiseptic and strain, minimum inhibitory (MIC) and minimum bactericidal (MBC) concentrations were determined by standard methods. To determine the biofilm-forming ability of *P. aeruginosa* isolates and the ability of antiseptics to inhibit immature biofilms, the Christensen microtiter test was used. Microorganisms were cultured in the presence of sub-MIC concentrations of antiseptics (1/2 of MIC). Then, a spectrophotometric assessment of the formation of biofilms was carried out in optical density units (ODU).

The results are presented as a percentage of biofilm formation compared to an intact positive control.
Results: All studied strains had high biofilm formation properties (average ODU = 0.415 ± 0.017). On average sub-MIC concentrations of antiseptics were 35.61 ± 2.10 µg/ml for PHMB, 42.33 ± 3.81 µg/ml for OCT, 47.87 ± 6.62 µg/ml for CHG, 31.62 ± 2.62 µg/ml for DCM, 1656.98 ± 184.73 µg/ml for PVP-I. All antiseptics significantly inhibited biofilm formation ($p < 0.001$). The percentage indicator of inhibitory effect was 75.2% for PHMB, 67.7% for OCT, 76.0% for CHG, 74.9% for DCM and 76.2% for PVP-I compared to the control (100%).
Conclusion: All tested antiseptics are effective against immature biofilms of MDR strains of *P. aeruginosa*. OCT at sub-MIC concentrations most effectively inhibited biofilm formation.

Disclosure of Interest
None declared.

Poster session: Antimicrobial use and stewardship 2

P295

Partnering with ICARS on intervention and implementation research to mitigate AMR

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P295

Introduction: While there are several evidence-based interventions to mitigate antimicrobial resistance (AMR), most have been developed and tested in high-income countries and cannot be directly translated to low and middle-income countries (LMICs). The International Centre for Antimicrobial Resistance Solutions (ICARS) takes a One Health approach in partnering with ministries, academia, and practitioners in LMICs to mitigate AMR by implementing locally adapted interventions and scalable solutions. Funded partnership and capacity building are provided to co-develop interventions and test tailored solutions.
Objectives: ICARS aims is to support low- and middle-income countries (LMICs) in their efforts to reduce drug-resistant infections.
Methods: The unique model of ICARS is the use of tailored intervention and implementation research to contextualize interventions and sustain solutions with proven impact. ICARS follows a top-down and bottom-up approach in which all stakeholders contribute to the co-development and implementation of the tested solution. Country teams define the priority AMR problem to be addressed in the project.
Results: In Georgia, ICARS works with the Ministry of Internally Displaced Persons from the Occupied Territories, Labour, Health and Social Affairs and the National Centre for Disease Control (NCDC) to foster the appropriate use of antibiotics for Surgical Antibiotic Prophylaxis (SAP) in selected departments of Georgian hospitals by implementing an antimicrobial stewardship program (ASP). The ASP consist of four elements: a) implementation of surveillance for surgical site infections (SSIs), b) development of context-specific guidelines for the management of SAP, c) education for healthcare personnel, and d) implementation of quality improvement methodology into daily practice. After 18 months, the inappropriate use of antibiotics has been reduced without an increase in the incidence of SSIs. All ICARS projects also include an economic evaluation and an assessment of barriers and enablers for widespread uptake of interventions.
Conclusion: ICARS provides a unique value proposition in LMICs to co-develop evidence-based, context-specific, cost-effective and sustainable solutions to combat AMR and advance the implementation of National Action Plans on AMR.

Disclosure of Interest
None declared.

P296

Pharmacist-led antimicrobial stewardship interventions on optimising compliance to cardiac surgical antibiotic prophylaxis in Malaysia: a quality improvement initiative

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Introduction: Adherence to surgical antibiotic prophylaxis (SAP) is commonly challenging and varies greatly with major studies showing 50% overall compliance. We observed a high frequency of inappropriate choice and dose of antibiotics, and duration of cardiac SAP at the National Heart Institute (NHI) of Malaysia. A multiphase, multifaceted improvement initiative was led by pharmacists to improve overall compliance.
Objectives: To improve compliance to hospital SAP guidelines in adult intensive care unit post cardiac surgery.
Methods: The choice and dose, and duration of antibiotics were audited against hospital SAP guidelines, from 2019 to 2022 in the adult intensive care unit, with a series of improvements implemented in a plan-do-study-act cycle. Multiphase improvements included complete documentation of indication, dose and duration of antibiotics on inpatient prescriptions, restricting supply of SAP to 48 h, engaging prescribers for their input on compliance issues, orientation of new prescribers to SAP, providing reminders to prescribers and revising SAP to include high-risk patients to reflect our patient population. Education and feedback sessions to the prescribers followed each intervention.
Results: Baseline data in 2019 showed compliance to antimicrobial choice and dose was 20%, duration 33% with total compliance to drug choice, dose and duration, 9%. Although compliance rates increased steadily with each intervention, significant increase was observed post implementation of revised SAP guidelines, in November 2021. Mean compliance to antimicrobial choice and dose rose to 86%, duration 96% with total compliance to drug choice, dose and duration, 84% in 2022.
Conclusion: Engagement, education, feedback and targeted multiphase improvements were successful in increasing compliance to hospital SAP guidelines. Continued audits and targeted improvements to further optimise present compliance are ongoing.

Disclosure of Interest
None declared.

P297

The role of nursing in antimicrobial stewardship programs: identifying research gaps in a middle-income country

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P297

Introduction: The Antimicrobial Stewardship Program (ASP) has become an important strategy in dealing with antimicrobial resistance (AMR). As a multidisplinary program, in some contexts there is still little approach to the role of nurses. Despite the growing number of international publications that identify the roles already performed by nurses as part of the ASP, in middle and low-income countries this theme is poorly researched.

Objectives: To identify research gaps in the Brazilian scenario on the role of nursing in ASP from the perspective of nursing professionals.
Methods: An online nominal group technique (NGT) was conducted with the participation of 26 nurses from various professional contexts. A workshop was organized with three meetings to carry out a series of activities: lectures to provide a background to the participants; presentation and clarification of the research questions proposed by the participants, followed by individual voting on priority ideas; discussion about potential research designs to enable answer the most voted questions.
Results: Firstly, 71 research questions were proposed and were classified in eight main themes categories: nursing knowledge, learning needs and formal education; nurses' attributions; nurses autonomy and leadership; barriers and facilitators for nurses' engagement; ASP implementation with active participation of nurses; evaluation of the results of nurses' participation in ASP; public policies to encourage the participation of nurses in ASP, and technological innovations. After the final voting process, three main research gaps were prioritized: nurses' attributions regarding ASP; implementation of nurses' activities in ASP; and digital technologies to support nursing contribution to ASP.
Conclusion: The NGT showed an effective methodology for surveying gaps in research on nurses' engagement in ASP. Prioritized gaps demonstrate that the evidences on the role of nurse in ASP in Brazil is still incipient.

Disclosure of Interest
None declared.

P298

Antibiotic self-medicating, adverse outcomes, and associated factors among Thai medical students

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Introduction: Antibiotic self-medicating can lead to emerging antibiotic resistance. However, data on antibiotic self-medicating and knowledge of antibiotic use and resistance among medical students are limited.
Objectives: To access antibiotic self-medicating, adverse outcomes, and associated factors among Thai medical students.
Methods: A survey study was conducted online from January to April 2023 among Thai medical students of the 2022 academic year. Knowledge of antibiotic use and resistance was assessed based on the correct responses to the 15 provided statements (total score of 15). Practices of antibiotic self-medicating and associations with knowledge and other factors were determined.
Results: Of the 313 participating students, 65% were preclinical-year students, and 56% were female. Most students (> 85%) did not self-initiate antibiotic for diarrhea, upper respiratory tract symptoms, and abrasion wound. Thirteen percent developed side effects from self-initiated antibiotics, 11% went to see a physician after no response to antibiotic treatment, and 26% were not given appropriate advice on antibiotic use from a pharmacy. The median knowledge score about antibiotic use and resistance was higher among clinical-year than preclinical-year students (12 vs. 9; $p < 0.001$). Less than 50% of all students correctly responded to statements "Use of antibiotics in animals can lead to antibiotic resistance in humans". Students who reported adherence to the recommended antibiotic treatment duration and indications had higher median knowledge score than those who did not ($P < 0.05$). In multivariable analysis, higher academic year was the protective factor for not completing a full course of antibiotic treatment [adjusted odds ratio (aOR) 0.52; $P = 0.01$)] and for initiating antibiotics with any upper respiratory tract symptoms (aOR 0.49; $P < 0.001$), while being female was associated with initiating antibiotics with any upper respiratory tract symptoms (aOR 2.34; $P = 0.03$).
Conclusion: This study describes the various practices, adverse outcomes, and associated factors of antibiotic self-medicating among medical students. Interventions based on these findings are needed to improve knowledge and practices of antibiotic use among these future physicians.

Disclosure of Interest
None declared.

P299

Prevalence and predictive factors of self-medication with antibiotic in Tunisian population

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P299

Introduction: Self-medication with antibiotics is defined as the acquisition of antibiotics and self-administering them with the aim of treating a perceived infection. This practice constitutes a worldwide issue not only in developing countries but also in developed countries.
Objectives: The current study aims to determine the prevalence of self-medication with antibiotics and to assess the factors associated with antibiotic misuse in the Tunisian population.
Methods: We carried out a cross-sectional study during January 2023 among the general Tunisian population, based on snowball sampling using a digitally administered pre-tested questionnaire. Data collected included socio-demographic characteristics, participants' attitudes towards self-medication, and characteristics of antibiotics consumed. Individuals under the age of 17 years were not eligible to participate in this study.
Results: A total of 450 individuals responded to the questionnaire. Women outnumbered men (sex ratio = 0.3). Almost all of them (91.6%) had a university educational attainment and (90.4%) a medium socio-economic level. More than three out of four participants (78.4%) were of urban origin. Almost half of the samples (47.3%) were Healthcare workers (HCW). Approximately all participants (96.2%) reported self-medication at least once. Self-medication with antibiotics was reported by (43.6%) of respondents. The majority (80%) affirmed having used antibiotics without medical advice. Male were more prone to self medicate with antibiotics (56.2% vs. 37.7%, $p = 0.001$). Similarly, self medication with antibiotics was significantly associated with low educational attainments and being of urban origin (57.9% vs. 40.5%, $p = 0.038$; 45.6% vs. 28.9%, $p = 0.003$ respectively). Additionally, being a HCW and having work experience were significantly less likely to self medicate with antibiotics (30.5% vs. 52.3%; 30.8% vs. 48.9% respectively, $p < 0.001$ for both).
Conclusion: The prevalence of self-medication with antibiotics in Tunisian population is alarming. A multidisciplinary approach based on awareness and appropriate education of Tunisian citizens in terms of self-medication must be conducted in order to limit this scourge and its effects on general population health.

Disclosure of Interest
None declared.

P300

Antimalarial stewardship practices for acute undifferentiated febrile illness patients in tertiary care hospitals: a prospective observational study

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P300

Introduction: Antimicrobial stewardship activities usually target antibiotics. However, in tropical countries, diseases like malaria, dengue also need stewardship. But, in literature, very few data is available in the literature.
Objectives: We aimed in our study, to observe the usage of antimalarial drugs in hospitalised patients and outpatients visiting 3 tertiary care hospitals in South India.
Methods: In this prospective observational study, between April 2023 and May 2023 at 3 tertiary care hospitals in south India, Patients hospitalized & visited out-patient departments with acute undifferentiated fever were included in this study. Demographic data, diagnosis, antimalarial and antibiotic usage, were extracted from case records using a validated audit tool, by Pharm.D Interns, under the guidance of an Infectious disease specialist. Simple statistics was used to analyze and the findings are tabulated.
Results: A total of 2997 patients data were analyzed during the study period, the obtained results are summarized in table-1 below.
Table-1: Antimalarial and antibiotics prescribing profile

Total number of patients (n) = 2997			
S.no		Frequency (n)	Percentage (%)
1	Patients receiving antibiotics	1559	52%
2	Patients receiving antimalarial	0	0

Conclusion: None of the patients received empiric antimalarial drugs for acute undifferentiated febrile illness in south India. But, 52% of the audited patients received empiric antibiotics for acute undifferentiated febrile illness. This finding should be confirmed in large multicentric studies across India in both inpatient and out patient settings.

Conflicts of interest:
None declared.

Disclosure of Interest
None declared.

P303

Beta lactam beta lactamase inhibitors stewardship practices of tertiary care hospitals in south India: a cross-sectional observational study

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Introduction: Western guidelines prefers carbapenem over beta lactam-beta lactamase inhibitor (BL-BLI) for extended spectrum beta lactamase (ESBL) producing organisms. But, in the developing world due to cost reasons & to reduce the carbapenem resistance BL-BLI's were commonly used. To be effective BL BLI's should be administered over prolonged infusion (3–4 h) and MIC values should be low. However, the administrative practices of BL-BLI were not studied well in developing world. Here we are reporting the BL-BLI stewardship practices of tertiary care hospitals in southern India.
Objectives: To observe the infusion practices of Bl BLI antibiotics of tertiary hospitals in south india.
Methods: This cross-sectional observational multi-centre study was conducted in multiple tertiary care hospitals during (November 2022 to April 2023) in south India by trained clinical pharmacist under the supervision of ID specialist. The data were collected by using an audit tool. The data was analysed using simple statistics.
Results: During the study period about 500 patients were prescribed with BL-BLI antibiotic. Cefoparazone-sulbactum (327), Piperacillin-tazobactum (173) are the prescribed BL-BLI in most of the department during the audit period. The audit details were summarized in table-1.

Table-1: BL-BLI stewardship audit findings

Variable	Total no. of patients receiving cefoparazone sulbactum	Total no. of patients receiving Piperacillin tazobactum	Total
IV Infusion practices	327	173	500
Indications			
Empirical	169	104	273
Definite	63	45	108
Prophylaxis	95	24	119
No. of MIC reported for definite therapy	14/63 (22.2%)	15/45 (33%)	29/108 (26.85%)
Time of infusion			
4 h	0	0	0
3 h	24	0	24
2 h	37	58	95
1 h	171	29	200
30 min	95	86	181
Source of Infection			
UTI & Intra-abdominal infections	104	34	138
Other infections	223	139	362

Conclusion: BL-BLI agents were mainly used (72.4%) for infections outside urinary and intra-abdominal infections. Prolonged (> 4 h) infusion of BL-BLIs were never practiced in Indian hospitals. MIC values of BL-BLI were reported on (26.85%) of the occasions and Hospitals, preferring BL-BLIs over carbapenem should follow good administrative stewardship policies for better treatment outcome in the future.

Disclosure of Interest
None declared.

P304

The economic impact of antimicrobial use for surgical prophylaxis: a prospective study

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P304

Introduction: Antibiotic prophylaxis is commonly used to prevent surgical site infections in patients. Excessive use of antibiotics can lead to ADR such as the development of AMR and increased healthcare costs. Unless there is a known infection prophylactic antibiotics should be discontinued within 24 h.

Objectives: This study aimed to evaluate the cost implications of antibiotic prophylaxis in patients who received prophylaxis for a duration longer than recommended by the WHO.
Methods: This prospective observational study was conducted in a tertiary care hospital in India for a period of two months. Data on patient demographics and Surgical antimicrobial usage were collected to surgical patient cases. Follow-up was performed to determine whether the antibiotics has been stopped after 24 h. Financial implications, such as increase in drug costs were documented when the surgical prophylaxis was continuing after 24 h. The necessity of antimicrobial usage and its cost effectiveness were analysed using basic statistical method.
Results: This study included 174 patients of surgical antimicrobial therapy. Out of these, 58 patients (33%) had their surgical antimicrobial therapy stopped after 24 h, while 116 patients (66%) continued to receive surgical antimicrobial therapy beyond the recommended duration. The data was then analysed, with a focus on the cost of the antimicrobial medication.

Total number of patients		**174**
Surgical Antibiotic Prophylaxis	Discontinuation after 24 h	58 (33%)
	Continuing more than 24 h	116 (66%0
Surgical Antibiotic Prophylaxis continuing more than 24 h	Total cost	₹ 6,03,917 (CHF 6584.09)
	Average increase in cost	₹ 5,206/person/day (CHF 56.76)

Conclusion: The study revealed that when SAP was administered for more than 24 h the average expenditure/person/day increased by ₹5206 (CHF 56.76). Additionally, patients who received antibiotic prophylaxis beyond the recommended duration incurred significantly higher costs than those who received prophylaxis for the recommended duration with the cost of antibiotics accounting for the majority of the excess expenditure. These findings emphasise the potential cost savings associated with reducing the duration of antibiotic prophylaxis to the recommended duration without compromising patient outcomes. Further research is necessary to evaluate the cost-effectiveness of implementing this practice.

Disclosure of Interest
None declared.

P305

Evaluating the financial implications of antimicrobial therapy in clinical settings: a prospective observational study

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P305

Introduction: Unnecessary antimicrobial use is a significant public health concern that can lead to AMR in hospitalised patients. The WHO defines the rational use of drugs as prescribing the right drug at an adequate dose for an appropriate duration based on the clinical needs of the patient and at the lowest cost possible. Inappropriate use of antimicrobials can lead to resistance and increase in drug costs.
Objectives: The aim of this study is to assess the irrational use of antibiotics and to analyse the cost effectiveness of antibiotic prescriptions for patients.
Methods: This prospective observational study was conducted in a tertiary care hospital in India for a period of 3 months. Data on patient demographics and antimicrobial usage were collected including escalation, de-escalation, discontinuation to therapy recommended by the hospital's ID in response to specific patient cases. Follow-up was performed to determine whether the ID opinion were followed. Financial implications such as an increase in drug costs were documented when the ID opinion was not followed. The necessity of antimicrobial usage and its cost effectiveness were analysed using basic statistical method.
Results: A total of 538 prescriptions for antimicrobial therapy were included in this study. Of these 349 prescriptions (64.8%) were in accordance with (ID) opinion, while 189 prescriptions (35.2%) were not in accordance with ID opinion. The data was analysed and correlated based on the cost of antimicrobial medication (Table 1).

Total number of prescriptions	**583**	
ID Opinion	Followed	349 (64.8%)
	Not followed	189 (35.2%)
Cost of prescriptions not following ID opinion		₹ 4,66,732 (CHF 5084.38)
Average cost of prescriptions not following ID opinion		₹ 2469/person/day (CHF 26.89)

Conclusion: The study found that prescriptions not following ID opinion incurred an average expenditure of ₹2469/person/day, indicating unnecessary drug expenditure and the risk of antimicrobial resistance. Moreover, patients with non-compliant prescriptions experienced longer hospital stays, resulting in additional healthcare costs. Implementing strategies like AMSP and promoting rational antibiotic use can reduce unnecessary spending and enhance patient outcomes. Further studies are required to assess the cost effectiveness of antimicrobial therapy in diverse clinical settings.

Disclosure of Interest
None declared.

P306

Anti-dengue stewardship practices in hospitalized patients of tertiary hospitals in South India

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Introduction: ***Background:*** Antibiotics are commonly prescribed for respiratory viral infections, including COVID–19 infections worldwide. However, in the developing world, tropical viral infections like dengue, chikungunya, and zika are common causes of outpatient visits and hospitalization throughout the year. But antibiotic prescribing behaviors for these infections were not studied well. Here, we are reporting the antibiotic prescribing practices for hospitalized patients with dengue in South India.
Objectives: Objectives: To analyse anti-dengue stewardship practices in South India.
Methods: We conducted a retrospective analysis during the period of October 2022 to April 2023 at multiple tertiary care hospitals, involving serologically confirmed dengue (NS-1 antigen positive) fever patients in South India. Demographic data, laboratory parameters, antibiotic prescribing practices, supportive care treatment like papaya leaf extract tablets, and antibiotics on discharge were recorded using an audit tool. Descriptive statistics were used to analyze the data and the results were tabulated.
Results: During the study period 298 patients were admitted with confirmed dengue fever, other findings are listed in Table 1

Total number of patients (n) = 298			
S. no		Frequency (n)	Percentage (%)
1	Patients receiving antibiotics	132	44.29%
2	Patients receiving Papaya leaf extract tablets	216	72.48%
3	Patients discharge with antibiotics	124	41.61%

Conclusion: ***Conclusions:*** Antibiotics were prescribed to 44% of hospitalized dengue patients and 41% of the patients were discharged with antibiotics. Doxycycline and cefixime were commonly prescribed antibiotics for the patients. Most (72%) of the dengue patients were receiving papaya leaf extract as a platelet-stimulating agent despite no evidence. In the future, antimicrobial stewardship practices in the developing world should focus on tropical infections apart from bacterial and fungal infections.

Disclosure of Interest
None declared.

P307

Antibiotics prescription patterns in six regional referral hospitals in Uganda, 2016–2022

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Introduction: Antibiotics have contributed to improved management of infectious diseases and reduced morbidity and mortality. However, Misuse and Overuse of antibiotics is linked to the development of Antimicrobial Resistance (AMR). We assessed antibiotic prescribing patterns in regional referral hospitals (RRHs) to inform public health Policy and programming.
Objectives: Assess antibiotic prescribing patterns in Six regional referral hospitals (RRHs).
Methods: A retrospective cross-sectional study was conducted between 2016 and 2022 in six RRHs based on the World Health Organization (WHO) prescribing indicators. These hospitals were purposively selected, and a systematic random sampling technique was used to select prescriptions from six wards/departments in each hospital. Trend analysis was done using the Mann–Kendall test.
Results: From 2016 to 2022, 89.6% of patients had at least one or more antibiotics prescribed in the six RRHs, for an average duration of 4.8 (SD = 2.1) days and only 7.2% of patients had a culture and sensitivity test done to guide patient care. A mean of, 1.6 (SD = 1.3) antibiotics were prescribed per patient. Most (92.3%) of prescribed antibiotics were on the formulary list. During the study period, 66.8% of critical antibiotics were in stock. There was no significant trend in the percentage of patients prescribed at least one antibiotic (p-value = 0.84) and no significant trend in the average number of antibiotics prescribed per patient (p-value = 0.850).
Conclusion: There were high rates of prescribing antibiotics in this analysis, and the pattern was consistent over 5 years. There is a need to strengthen antimicrobial stewardship programs in hospitals in Uganda to promote the rational use of antibiotics.

Disclosure of Interest
None declared.

P308

Antibiotic prescribing practices at Kitale County Hospital outpatient setting

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P308

Introduction: Antimicrobial resistance (AMR) is a global threat. The World Health Organization (WHO) recommends the use of antibiotics only when indicated; that 60% of antibiotics prescribed be from the access category of AWARE classification; and the avoidance of injectable antibiotics in outpatient settings. This study aimed to establish antibiotic prescribing practices at Kitale County Hospital (KCH) outpatient setting.
Objectives: The objectives of the study were to identify the proportion of antibiotics prescribed in the KCH outpatient setting from the Access category of AWARE classification; to establish the percentage of antibiotics prescribed with an injectable antibiotic and to determine the proportion of antibiotic prescriptions that were appropriately done.
Methods: Antibiotic prescription data from Kenya Health Information System (KHIS) for July-December 2022 were abstracted and analyzed. We focused on Ministry of Health (MOH) AMR priority indicators namely the proportion of antibiotics prescribed under the Access category; the proportion of prescriptions with an injectable antibiotic and the appropriateness of the prescriptions.
Results: A total of 3005 (16.1%) prescriptions had an antibiotic prescribed of which 75.9% were appropriate. Nearly all (95.2%) the antibiotics prescribed were from the Access category. Watch category constituted 4.7% whereas 1 Reserve antibiotic was prescribed. One prescription had an injectable antibiotic.
Conclusion: Antibiotic prescription practices at KCH have improved greatly. The majority of antibiotic prescribing was from the Access category as recommended by the WHO. Injectable antibiotics have been avoided in the outpatient setting. However, nearly a quarter of the antibiotic prescriptions were not appropriate.
We, therefore, recommend continuous laboratory-prescriber engagements to scale up the utilization of the microbiology laboratory to aid diagnosis before the initiation of antibiotic therapy. Similarly, frequent pharmacist-prescriber interactions would help in ensuring appropriate prescribing practices and judicious use of antibiotics in watch and reserve categories.

Disclosure of Interest
E. Mwengi Conflict with: No conflict of interest to declare, N. Koech Conflict with: No conflict of interest.

P309

A quantitative survey of antibiotic use at a hospital in Jambi Province Indonesia in three-month before and after implementation of antimicrobial resistance control program by Raspro concept

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Introduction: Based on Decree of Minister of Health Number 8/2015 in article 11 concerning quality indicators of Antimicrobial Resistance Control Program (ARCP)/*Program Pengendalian Resistensi Antimikroba (PPRA)* implementation in hospitals, it has been known that reduced quantity of antimicrobial use has become one of those indicators.
Objectives: This survey is a descriptive study using secondary data retrieved between July and September 2019 (3 months before implementation of *RASPRO* concept) as well as between October and December 2019 (3 months after the implementation), which was

aimed to evaluate impacts on implementing *Regulasi Antimikroba Sistem Prospektif (RASPRO)* concept at a hospital in Jambi province, Indonesia.
Methods: The survey was carried out by calculating the expenditure of 3 antibiotic classes, which were the most commonly used and usually given by injection in hospitals and Intensive Care Units (ICU)s, i.e. the beta-lactam, quinolones and carbapenem.
Results: We found reduced use of Ceftriaxone as many as 890 ampules (37.11%), for Cefotaxime the reduction was 580 ampules (67.13%); while the use of Cefoperazone reduced as many as 76 ampules (47.50%) and Ceftazidime reduced as many as 10 ampules (7.14%). The use of Ciprofloxacin reduced as many as 327 ampules (71.40%), but there was a drastic increase in the use of Levofloxacin as many as 59 ampules (>100%). The use of Carbapenems increased, which included 79 ampules (34.20%) for Meropenem; while the use of Imipenem increased as many as 9 ampules (100%). In three months after the implementation of *RASPRO* concept, 92.5% prophylaxis antibiotic had been given for appropriate indication and the antibiotic use of Cefazolin 71.3%. Within three months before and after the implementation of *RASPRO* concept, there was a total reduction of antibiotic use, which reached 1736 ampules (40.57%).
Conclusion: In conclusion, the implementation of *RASPRO* concept can be executed as an effort to reduce the quantity of antimicrobial use in hospitals. However, larger studies and longer monitoring are required in order to identify the impact of implementation of *RASPRO* concepts at a hospital.

Disclosure of Interest
None declared.

P310

A qualitative study of hospital pharmacists and antibiotic governance: negotiating interprofessional responsibilities, expertise, and resource constraints in Nepal

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Introduction: Antibiotic governance and efficient antibiotic stewardship are crucial in combating the global challenge of antimicrobial resistance (AMR). Hospital pharmacists play an important role in antibiotic governance, but their perspectives and experiences in Nepal, a low-resource setting, have received less attention and explored.
Objectives: This study takes a unique approach to delving into the world of hospital pharmacists in Nepal, shedding light on their roles in antibiotic governance and the problems they face while carrying out their duties.
Methods: This study examined the interprofessional dynamics, competence, and resource constraints of 27 senior hospital pharmacists from various tertiary level hospital settings using purposive sampling and thematic analysis.
Results: Hospital pharmacists in Nepal have emerged as ardent supporters of antibiotic governance, but their path is hampered by budget constraints, a lack of awareness among healthcare personnel and patients, and the ticking clock. Interprofessional collaboration arose as a critical feature, with pharmacists debating their roles and duties with other healthcare providers. Limited resources, such as availability to necessary antibiotics and diagnostic tools, hampered pharmacists' capacity to practice efficient antibiotic governance. The study highlights the importance of better resources, infrastructure, and support from healthcare administrators in order to maximize pharmacists' contributions to the fight against AMR. Educational campaigns aimed at healthcare professionals, patients, and the general public have been identified as critical for promoting safe antibiotic use and raising awareness about AMR.
Conclusion: This study examines hospital pharmacists' perceptions of their involvement in antibiotic governance and the issues they face in Nepal. It emphasizes the importance of comprehensive methods to address resource constraints, encourage interprofessional collaboration, and empower pharmacists to effectively administer antimicrobial stewardship programs.

Disclosure of Interest
None declared.

P311

Antibiotic use among under-five children with severe acute respiratory infection in tertiary-care hospitals according to the who aware classification in Bangladesh

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Introduction: Every four in five children with acute respiratory infection (ARI) are treated with antibiotics in low- and middle-income countries including Bangladesh, contributing the exponential growth of antimicrobial resistance (AMR). To promote rational use of antibiotic, the world health organization (WHO) introduced Access, Watch, and Reserve (AWaRe) classification.
Objectives: Investigate antibiotic use among under-five children with severe acute respiratory infection (SARI) according to the AWaRe classification in Bangladesh.
Methods: From January 2014–April 2023, we analyzed data for under-five children with SARI, collected from the ongoing hospital-based influenza surveillance platform at 14 tertiary-care hospitals in Bangladesh. Surveillance physicians identified inpatients meeting the WHO-SARI case definition and recorded patient demographics, and antibiotics received during hospitalization. Oropharyngeal and nasopharyngeal swabs were collected from these children and tested for influenza by rRT-PCR. We used descriptive statistics to summarize the data.
Results: We enrolled 10,311 children with SARI [median age: 7 months (IQR: 3–14); 65% male]. Of them, 834 (8%) had influenza virus. Of the enrolled children, 9,574 (93%) received at least one antibiotic and 3,759 (39%) received >1 different course of antibiotics. Among children with lab-confirmed influenza, 751 (90%) were treated with antibiotics. The most frequently used antibiotics were ceftriaxone (6,924, 51%), followed by amikacin (1,628, 12%), gentamicin (1,033, 8%), flucloxacillin (966, 7%) and cefuroxime (525, 4%). Most of the antibiotics prescribed were from Watch group (8,602, 68%) followed by Access group (4,136, 32%) and none from Reserve group. Among children aged <1 year, 3,110 (47%) received Access and 5,924 (90%) received Watch group of antibiotics. Meanwhile, among children aged 1–5 years, 1,026 (35%) received Access and 2,678 (90%) received Watch group of antibiotics.
Conclusion: Watch group antibiotic use was predominant among under-five children. It is imperative to strengthen antimicrobial management in accordance with the ARI guidelines of the integrated management of childhood illness (IMCI) to promote empiric antibiotic use and curtail AMR.

Disclosure of Interest
None declared.

P312

Self-medication with antibiotics among non-pregnant women in one of the largest cities in Tunisia

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P312

Introduction: Self-medication has been a common practice for a long time and has become a universal phenomenon that threatens public health, especially concerning antibiotics, which is one of the factors contributing to the emergence of antibiotic resistance.
Objectives: The objective of our study is to determine the prevalence of self-medication with antibiotics among a sample of non-pregnant women and also assess their knowledge of antibiotic resistance.
Methods: A questionnaire was administered through face-to-face interviews with 100 randomly selected non-pregnant women consulting in our department.
Results: The patients had various levels of education, with the majority being housewives. The average age of the patients was 34.5 years (18 to 55 years).
19 women reported having consumed at least one antibiotic without a doctor's prescription in the past three years. The most widely used antibiotics were the combination of Amoxicillin-Clavulanic Acid (19 women), followed by Ciprofloxacin (8 women), and Cefixime (3 women).
The most common reason for self-medication with antibiotics was to manage flu symptoms associated with fever or sore throat (19 women), and 8 women stated that they took antibiotics to treat urinary tract infections.
Seventeen of the interviewed women admitted to using antibiotics for only two days. This was either due to an improvement in their general condition or because they forgot to take the medication 88 of the interviewed women never gave antibiotics to their children without a doctor's prescription.
Most of the interviewed women (56 women) were aware that using antibiotics without a medical prescription can lead to antibiotic resistance 44 women had never heard of antibiotic resistance.
Conclusion: The findings of our study have helped characterize the extent of self-medication with antibiotics.

Disclosure of Interest
None declared.

P313

The practice of pregnant women self-medicating with antibiotics can lead to issues with antibiotic resistance

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P313

Introduction: Self-medication is the use of medication without the prescription or guidance of a healthcare professional.
Objectives: Our survey aims to assess the prevalence and profile of antibiotic self-medication in a pregnant woman population. We were also interested in the information given to this vulnerable population by health providers.
Methods: A face-to-face interview technique was employed to administer a questionnaire to 70 pregnant women in their third trimester.
Results: A total of 70 pregnant women were interviewed, with primigravidae accounting for 60% of the overall group investigated. All of the ladies polled (100%) stated that they had been warned by their attending physician not to utilize any treatment without first consulting with their doctor.
Of the 70 pregnant women interviewed, 26 (37.1%) reported self-medicating with antibiotics during their pregnancy, with 50% taking amoxicillin with clavulanic acid, 27.8% taking ciprofloxacin, and 11.1% taking cefixime.
In 65.4% of cases (17 women), the main reason for taking medication was to treat flu symptoms, and in 34.6% of cases (9 women), it was to relieve burning during urinating. Twenty women (75.92%) who received antibiotics said that they followed the duration and dosage of antibiotic therapy.
However, 6 women did not adhere to the treatment duration, and the reasons for non-compliance were primarily due to general improvement (5 women) and forgetfulness (1 woman).
Half of the women (13 women) reported to reusing amoxicillin coupled with clavulanic acid during their current pregnancy.
Of the women who self-medicated with antibiotics, 50% (13 women) obtained them from a family member or friend's pharmacy cabinet, 23.7% (6 women) purchased them at a pharmacy, and 26.3% (7 women) used an old prescription prescribed by their doctor.
All the women declared that they did not experience any adverse effects of antibiotic therapy during or after use. The reason for not consulting a doctor before using antibiotic therapy was mainly due to the high cost of medical consultations (23.07%, 6 women) and the distance from health establishments (25.92%, 7 women). The remaining 50% (13 women) declared that they were advised and reassured by a family member or friend.
Conclusion: Our study showed a high rate of pregnant women self-medicating with antibiotics.

Disclosure of Interest
None declared.

Poster session: Outbreaks and emerging pathogens

P314

Review of IPC activities during outbreak response deployments in 2022 by UK-public health rapid support team

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P314

Introduction: The UK-PHRST is a multidisciplinary team that responds to requests for assistance from Overseas Development Assistance eligible countries. IPC specialists deployed four times during 2022 to areas affected by outbreaks in WPRO and AFRO regions.
Objectives: Here we evaluate the nature and scope of IPC activities conducted during this period to inform preparation of team members and communication with partners.
Methods: We conducted a retrospective review of situation and mission reports to identify activities. We categorised these using the UK-PHRST capacity strengthening conceptual framework which classifies types of tasks during outbreak response, recovery and preparedness, including scale and operational level. Data was tabulated in Excel and scores allocated to each activity based on time invested. We conducted a descriptive statistical analysis of data.
Results: We reported 75 separate activities across all deployments. Work at the organisational level such as developing implementation tools, strategy, policy, protocol, and guidelines were most frequently reported and where most time was invested. Individual level activities included training, education and mentoring and the least time was spent operating at this level. We delivered fewer activities at the broader level of the enabling environment, in tasks such as developing networks and partnerships, but this accounted for a greater amount of time than individual level activities. Frequency of reporting did not always reflect the time invested in a particular area of work. Activity at the individual level was rare when deployed through the Global Outbreak and Response Network but more frequently reported when partnered with Emergency Medical Teams.

Conclusion: Our use of existing data to commence this review has highlighted that reporting may not reflect the intensity of work in specific areas and that IPC specialists may operate at multiple levels of the health system. We intend to triangulate these findings with partner surveys to explore the perspectives of colleagues and subsequently refine the training and preparation of team members.

Disclosure of Interest
None declared.

P315

Containment of an outbreak in critical care (ICU): an incident report of a multispecialty hospital in developing world

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P315

Introduction: Varicella-zoster virus (VZV) infection in healthcare organisations, especially in ICUs, is of serious concern, primarily having admitted critical and immunocompromised patients. This poses threat to healthcare workers (HCW) working in such critical areas also.
Objectives: The case report defines the transmission and infection control measures undertaken to curtail spread of VZV infection in Trauma ICU of a multispecialty hospital of North India.
Methods: -
Results: At the infection outset, a HCW posted in ICU had fever followed by vesicular lesions on face, chest, and back, which later spread to whole body. She was quarantined after clinically diagnosed to have varicella. At that time, there were 12 critical patients on ventilatory support in ICU. And, 54 HCWs were posted (24 × 7) to manage them.
An VZV outbreak was confirmed and all susceptible patients as well as HCW were isolated for microbiological assessments and post-exposure vaccinations of susceptible HCW. Antiviral chemoprophylaxis was initiated in critically ill patients, found susceptible to VZV as evidenced by VZV seronegative IgG levels.
Fresh intake of patients were restricted. Out of the total, 14 (25.92%) HCW were found susceptible (as per protective VZV IgG titres) and were vaccinated. Out of the 12 patients admitted none of the patient got infected. Seven patients were discharged, four patients expired due to their critical illness, while one patient remained till incubation period was over and TICU was opened for fresh admissions. Epidemiologically, line listing for index case reporting was done. The efficacy of control measures was re-evaluated to strengthen existing infection control practices and general measures viz. strict hand washing, adherence to aseptic protocols and intensification of environmental cleaning.
Conclusion: Established varicella surveillance measures ensure VZV outbreaks are identified in a timely manner and control measures implemented to prevent further transmission. Also, vaccination policy among HCWs is utmost requirement despite having huge financial implications.

Disclosure of Interest
None declared.

P316

Control of a prolonged outbreak of MRSA in a Dutch nursing home

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P316

Introduction: In the Netherlands, outbreaks of methicillin-resistant Staphylococcus aureus (MRSA) sporadically occur in hospitals and most of them are relatively easy to control. However, outbreak control is much more difficult in nursing homes (NHs) due to patient characteristics, prolonged length of stay and difficulties with the implementation of isolation measures.
Objectives: This abstract describes the course of a large, long lasting MRSA outbreak in a Dutch NH that was first recognised in September 2014 when a client of a NH developed a urinary tract infection caused by MRSA.
Methods: MRSA screening was performed in all NH clients and health care workers (HCWs). MRSA-positive HCWs were suspended from work until MRSA was eradicated. A separated ward was created within the NH in order to cohort MRSA-positive clients that failed eradication. Control measures to prevent spread included contact precautions when delivering care and deployment of dedicated staff for the cohort. After eradication cohort staff was screened for MRSA colonisation every four weeks. Clients on the ward adjacent to the cohort were screened every three months in order to monitor the effect of control measures, until the last MRSA positive client died.
Results: Initial contact tracing revealed that 17/20 (85%) clients and 13/94 (14%) HCW's were MRSA-positive. MLVA typing indicated two types, MT0237-MC0008 and MT0491-MC0022.
All 13 colonised HCWs were eradicated successfully, but 6/17 clients remained MRSA-positive despite repeated treatments. These six MRSA-positive clients were housed in the separated ward to form a MRSA-positive cohort. Screening of HCW for 8 years indicated that no further transmission occurred. In Oktober 2022 the last MRSA-positive client died and the cohort was discontinued.
Conclusion: This case revealed an extensive outbreak in a Dutch NH. The high rate of colonisation among clients was likely caused by a prolonged period of unrecognised transmission in the NH. The creation of a physically separated cohort with dedicated staff most likely contributed to the control of the outbreak without further transmissions despite the fact that care was given to one or more MRSA-positive clients for more than 8 years.

Disclosure of Interest
None declared.

P317

Cluster of a community—acquired methicillin resistant staphylococcus aureus in a neonatal intensive care unit

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P317

Introduction: The NICU of Geneva University Hospitals is non-endemic for methicillin resistant *Staphylococcus aureus* (MRSA) with no clinical specimens positive for MRSA in the previous 12 months.
Objectives: We report the investigation of a community-acquired (CA)-MRSA cluster in a neonatal intensive care unit (NICU) that occurred in March 2023.
Methods: The NICU is a 28-bed unit. MRSA screening was performed in neonates. A neonate was considered colonised with MRSA if t one of the screening specimens was positive for MRSA. A neonate was considered infected if a clinical sample was positive in culture for MRSA. MRSA isolates were examined by multi-locus variable number (MLVA) analysis.
Results: The index cases were two very preterm twins who presented with conjunctivitis at 32 days of life. The CA-MRSA strains carries the Toxic Shock Syndrome Toxin 1 (TSST-1) gene and the Staphylococcal cassette chromosome *mec* IV. The mother was subsequently identified as an MRSA carrier. Two weeks later, another neonate in the adjacent room presented with an MRSA bloodstream infection. A unit-wide prevalence screening (n = 27) identified two additional MRSA carriers. Retrospective review of clinical samples from the NICU over the past

three months did not identify additional cases. Contact precautions and dedicated teams were introduced. MLVA revealed that one of the newly identified carriers was colonised by a different strain carrying leucocidin Panton-Valentin toxin. No screening among healthcare workers was performed. Targeted MRSA decolonisation was performed for neonates colonised by MRSA who reached age and weight requirements for chlorhexidine bathing. A weekly prevalence screening was performed for one month (118 screening performed on 50 neonates in total) and did not identify additional cases.
Conclusion: Two different CA-MRSA strains were introduced in the NICU. NICU are particularly exposed to the introduction of CA-MRSA due to frequent contact with the community through parents. MRSA regular screening of neonates or in case of transfer to/from another NICU should be considered in setting with high CA-MRSA prevalence in the population. Screening of the family of a newly identify cases should also be considered.

Disclosure of Interest
None declared.

P318

A carbapenemase-producing enterobacteriaceae outbreak in an intensive care hematology department due to a persistent wastewater reservoir in one room, 2019–2022

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P318

Introduction: The hematology intensive care unit faced a prolonged outbreak of carbapenemase-producing *Enterobacteriaceae* (CPE) due to a persistent environmental contamination.
Objectives: The purpose of this work is to share the experience of CPE outbreak management.
Methods: We performed the study in a 20-bed ward where patients with allogeneic hematopoietic stem cell transplantation and CAR-T cell therapy are admitted. Systematic rectal screening for multi-drug resistant organisms was performed by using rectal swabs for all patients admitted in the care unit within 48 h after admission and once weekly thereafter.
Results: We discovered the two first OXA-48 *Citrobacter farmeri* cases in April 2019 (thanks to weekly rectal screenings) and no secondary cases were identified. The cases had only one thing in common. They stayed in the same hematology department's room four months apart. We screened the five patients who stayed in this room between the two cases and identified a third case. Few months later, we discovered five new cases (four colonization and one infection that led to the patient's death) between August 2019 and September 2022. All were admitted in this same room. Rooms' environmental investigations identified positive drains on shower, sink's siphons and wastewater drainage. Molecular typing confirmed that all the positive isolates (environmental and cases' rectal swabs) belonged to the same clone.
Conclusion: Despite bundle environmental approaches to control the spread (disinfection; siphon, toilets, wastewater drain replacement and negative controls afater each actions), the clone persisted in the system, which resulted strains' transmission to naive patients. After technical investigations, design defect at the wastewater drains could be the origin of the biofilm's persistence and proliferation. We decided after the 8th case's discovery, when the drainpipe had been replaced, to completely replace all the plumbing elements in the room's bathroom.

Disclosure of Interest
None declared.

P319

Successful control of an outbreak of pseudomonas aeruginosa producing vim carbapenemase by implementation of waterless patient care

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P319

Introduction: Optimal strategies for controlling outbreaks of multidrug-resistant organisms (MDROs) associated with hospital water reservoirs remain controversial.
Objectives: To describe a *Pseudomonas aeruginosa* producing VIM carbapenemase (PA-VIM) outbreak and its management in three COVID-19 units at Geneva University Hospitals.
Methods: From 21 December 2020 to 18 January 2021, 4 cases of PA-VIM were detected from clinical and screening samples in a COVID-19 intermediate care unit (IMCU). Systematic weekly screening for digestive carriage of carbapenem resistant PA was performed on all patients admitted to this unit. Respiratory and urine specimens, when available, were also analyzed. Other initial infection control measures included: contact isolation of PA-VIM carriers, increased daily cleaning and disinfection of patient rooms. Sinks from positive patient rooms were sealed off. Environmental samples were collected from sinks and toilets.
Results: Until 11 May 2021, 5 additional PA-VIM acquisitions were identified in the 3 COVID-19 units. Of the 9 cases, 6 were detected in clinical and 3 in screening samples. In addition to weekly screening (rectal swabs) of all hospitalized patients in the IMCU and 2 adjacent units, other mitigation measures included: educational rounds to reinforce hand hygiene compliance and proper use of gloves, and antimicrobial stewardship. Of the 92 environmental samples collected, 16 (17%) grew PA-VIM in sinks traps and drains. The investigations suggested an epidemiological link between clinical and environmental PA-VIM isolates. Following implementation of a waterless patient care in the 3 units, weekly screening of hospitalized patients was continued, and no new PA-VIM acquisition was detected within 2 years of follow-up.
Conclusion: Implementation of waterless patient care together with other infection control measures were successful in controlling a PA-VIM outbreak probably linked to environmental water sources. However, waterless care is unlikely to be sustainable outside intensive or IMCU settings. Alternative solutions should be considered to mitigate the environmental risk of acquiring MDROs.

Disclosure of Interest
None declared.

P320

Control of an NDM-1 *Acinetobacter baumannii* outbreak in a tertiary care hospital

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P320

Introduction: NDM-producing carbapenem-resistant *Acinetobacter baumannii* (CRAb) are associated with nosocomial outbreaks, but rarely in Germany.
Objectives: To investigate a CRAb outbreak, determine the source and routes of transmission, and successfully eliminate the pathogen from the hospital environment.

Methods: 10 patients from different internal medicine wards were infected or colonized with CRAb. Antimicrobial susceptibility of the isolates was tested by Vitek2/Etest (bioMérieux), genomes were sequenced using MiSeq (Illumina) and MinION (Nanopore) platforms, and were genotyped using core-genome MLST (cgMLST) (Ridom) and resistome identified (Resfinder). Additionally, 6 CRAb isolates were obtained through extended environmental screening of high-touch surfaces and medical equipment.
Results: The index patient, repatriated from a hospital in Egypt, presented with a CRAb bloodstream infection on admission. Although all hygiene measures were followed, 4 weeks later 2 more patients became infected with CRAb on other wards without prior contact with the index patient. Extensive screening of contact-patients on the affected wards revealed further 7 CRAb-positive patients. Environmental sampling uncovered diverse transmission reservoirs, i.e. electrical socket, electrocardiogram leads. All patient isolates and 4 environmental samples belonged to ST570 and encoded both $bla_{\text{NDM-1}}$ and $bla_{\text{OXA-23}}$ on the chromosome. By cgMLST the $bla_{\text{OXA-23}}$/$bla_{\text{NDM-1}}$ isolates from 9 of the 10 patients including the index patient and the environmental samples differed only in ≤ 3 alleles, indicating inter-ward transmission. Weekly screening of inpatients, a two-stage cleaning of the affected wards performed independently by two different cleaners, combined with microbiological control and improved hand-hygiene compliance of the staff resulted in complete eradication and ended the outbreak.
Conclusion: This study describes the transmission of a $bla_{\text{NDM-1}}$-positive CRAb on internal medicine wards. The outbreak source identified after environmental screening was eradicated through strict infection control measures. The combination of high-resolution molecular surveillance, improved compliance of hand disinfection, extensive environmental screening, and thorough cleaning and disinfection, can effectively prevent further pathogen transmission in hospitals.

Disclosure of Interest
None declared.

P321

Containment of a multidrug-resistant *Acinetobacter baumannii* outbreak in a SARS-COV-2 designated hospital in the United Arab Emirates

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P321

Introduction: Outbreaks of multidrug-resistant organisms (MDRO) have been worldwide reported during the SARS-COV-2 pandemic. These organisms cause healthcare-associated infections associated with high case fatality rate.
Objectives: The aim of this project was to describe the investigation of an outbreak of multidrug-resistant *Acinetobacter baumannii* (MDR-ACB) during the SARS-COV-2 pandemic and the control measures implemented.
Methods: FOCUS-PDSA quality improvement approach was implemented following the increase in MDR-ACB cases in May and June 2020 in our SARS-COV-2 designated hospital. The surge followed the rising in SARS-COV-2 incidence in the United Arab Emirates during the same period. A multidisciplinary team supported by leadership was formed to speed the implementation of the infection control interventions and to contain the outbreak. An action plan was executed following root cause analysis. Planning, implementing, monitoring and sustaining infection control practices as well as antimicrobial stewardship guidelines were led by physicians, infection control, nursing, pharmacy, quality and housekeeping staff.
Results: 35 cases of MDR-ACB were identified between 2020 and 2021. Most of them were isolated from respiratory samples (63%), followed by blood (34%) and urine (3%). The highest number of MDR-ACB (21/35, 60%) was noted in May and June 2020 followed by zero cases sustained for 7 consecutive months. 15/35 (43%) patients were transferred from other facilities with MDR-ACB while 20/35 (57%) cases were acquired in our hospital. The case fatality rate was 71%.
Conclusion: Reinforced infection control measures and antimicrobial stewardship program proved effective in containing the MDR-ACB outbreak during the SARS-COV-2 pandemic. Moreover, quality improvement models and multidisciplinary approach are a valuable tool to improve patient safety by reducing the risk of infection to patients, families, healthcare workers and therefore, the community.

Disclosure of Interest
None declared.

P322

Outbreak of *Serratia marcescens* in a radiology unit: investigation, control and prevention

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P322

Introduction: Serratia marcescens is an opportunistic pathogen capable of causing healthcare-associated outbreaks. Hospital outbreaks have been linked to contaminated nebulizers, intravenous injection fluids and, disinfectants.
Objectives: This study aimed to identify the origin of the outbreak and delineate the infection control measures implemented.
Methods: Between February-May 2022, 32 cases of S. marcescens bacteremia occurred. The percentage of S. marcescens bacteremia increased up to 15% in April 2022 compared to previous months (0.7–3.0%). An outbreak investigation was launched, with environmental sampling.
Results: During the outbreak, a total of 43 patients were identified with S. marcescens bacteremia. Patients were in various wards, indicating a common outbreak from a single source. The median time from admission to blood culture was 3 days (1–11). 91% of patients underwent contrast-enhanced computed tomography (CT) before bacteremia, a median of 3 (2–8) days prior. Therefore, the CT unit was evaluated for a source, and environmental samples were taken. The IV line that used to introduce contrast material, serum physiological fluid to dilute the contrast material, the waste bin that excess fluid was disposed of, and gloved and ungloved hand cultures S. marcescens. The infection control team recommended stopping the use of IV contrast fluid, implementing safe disposal measures, proper hand hygiene, and glove use practices. The outbreak ended after implementing these measures.
Conclusion: Based on the results, it was found that S. marcescens contaminated materials were present in the CT unit, and the microorganism was transmitted to the contrast lines inserted into patient, leading to bacteremia. Infection control observations also revealed failure to change gloves, lack of hand hygiene, and inadequate aseptic technique in IV-line management.

Disclosure of Interest
None declared.

P323

Infection control and hospital epidemiology of *Candida auris* outbreak

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P323

Introduction: *C. auris* is an emerging pathogen quickly spreading, resistant to multiple classes of antifungal drugs and causing severe difficult to treat infections with high mortality rates. Health authorities issued a warning on *C. auris* as an urgent threat. Identification of *C. auris* with standard microbiological methods is challenging. Hospitalized patients in acute and long-term healthcare facilities appear to be at highest risk.
Objectives: To report the management and control of a *C. auris* outbreak in a large acute-care hospital in Israel.
Methods: *C. auris* was cultured from a pressure sore of a patient hospitalized in an internal medicine department. Six other patients were exposed in the same room without physical separation between patients. Contact isolation and rounds of contact screening were conducted. Axilla, groin and sputum culture were taken. Two contacts were found positive within a week. Readmitted exposed patients were identified and screened, leading to a new positive result for another patient. The outbreak room was closed for new admissions. We increased observations of hand hygiene compliance by infection control staff and raised awareness of hand hygiene among the department teams. Daily cleaning and disinfection was implemented of mobile equipment that is shared between patients such as glucometers, temperature probes, ultrasound machines, and crash carts. We continue weekly screening of contacts that are still in hospitalization.
Results: 213 screen tests for Candida were obtained, 103 rectal, 66 skin, 16 urine and 25 sputum. Candida was positive in 44 (66%) skin samples (30 patients) of them five patients (16%) were positive for *C. auris*. Among 21 patients with positive Candida results, 4 (19%) rectal swabs grew *C. auris*, and all were positive also in the skin. Six patients were screened in urine and sputum; *C. auris* was found in one patient in sputum and never found in urine cultures.
Conclusion: It can be concluded that indeed Candida auris has a high infection rate. It is possible in the context of a multi-bed room without separation between beds and low staffing ratio caring critical and intensive patients in interanal departments.

Disclosure of Interest
None declared.

P324

Early inpatient screening helped identify Ebola Sudan virus disease cases during the 2022 outbreak

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Introduction: In September 2022, a Sudan Ebola Virus Disease (SUDV) outbreak was declared in Uganda following a 25-year-old man from Madudu sub-county in Mubende district testing positive for the virus. He had been admitted to the hospital four days before being confirmed positive. He had also visited two other health facilities earlier. We describe how early screening of inpatients supported efforts to limit the spread of SUDV at Mubende RRH.
Objectives: To describe the role of early inpatient screening and safe isolation in disease outbreaks.
Methods: The hospital team interviewed all patients admitted to the Emergency, Internal medicine, and pediatric wards and initiated daily inpatient screening for SUDV; moving forward in these three wards, hospital staff were oriented to support daily inpatient screening based on the case definition. The interview covered questions on the history of symptoms of Ebola, place of residence, history of attending burials, history of unexplained deaths in the family or area of residence, and health centers visited before coming to the regional referral. Patients whose responses had an epidemiologic or clinical link to the SUDV outbreak were isolated immediately, and the beds and rooms they occupied were disinfected and closed.
Results: Ten patients were identified as having symptoms consistent with SUDV from the various wards. Of these, all had a history of fever and other symptoms consistent with EVD symptoms, five resided in the affected area, and two resided in neighboring sub-counties. These patients were immediately safely isolated, and their samples were sent for SUDV testing. 8/10 tested positive for SUDV. Of the 8 confirmed cases, 3/8 were from the internal medicine ward, 4/8 were from the accident and emergency ward, and 1/10 were from the pediatric ward. These patients were initiated on supportive treatment in the Ebola Treatment Unit.
Conclusion: Inpatient screening and safe isolation of suspected cases should be initiated very early in outbreak response to ensure limited spread of the virus to health workers and other patients in the hospital wards.

Disclosure of Interest
None declared.

P325

Mixed methods study assessing valuation and contextual factors related to infection prevention and control measures for Ebola disease

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Introduction: The World Health Organization is developing guidelines on infection prevention and control measures for Ebola and Marburg focusing on disinfection and personal protective equipment (PPE). Guidelines are based on evidence undermining factors influencing implementation.
Objectives: This study focused on the experiential evidence from stakeholders on these measures by examining:

1. Valuation of 3 outcomes: virus transmission, chlorine and PPE side-effects.
2. Contextual factors guided by the Evidence to Decision framework.

Methods: Mixed-methods approach based on online quantitative survey and in-depth interviews with health workers. Convenience and snowball sampling were utilized. Approved by WHO Research Ethics Review Committee. Data collection from October to December, 2022.

Descriptive analyses and framework thematic analytical approaches were used.
Results: 90% of survey participants valued virus transmission outcome, concurring with interview participants indicating that virus transmission is viewed as more critical than chlorine and PPE side-effects. 62% raised equity concerns using disposable versus reusable PPE. 68% accepted the use of disposable PPEs as they were '*safer, lighter, easier to manage*'. 67% considered disposable PPE more feasible as they were '*more comfortable*' and risk of transmission is reduced. 45% indicated that using alcohol-based hand rub (ABHR) was acceptable compared to 34% for chlorine. 38% and 37% indicated more feasibility for ABHR and chlorine respectively. Those who preferred ABHR

indicated it was *'easy to use, portable, available, can be made locally, and does not need running water'*. 57% considered spraying less acceptable as it *'can increase the risk of virus transmission potentially harming health care workers if no protection to mucous membranes'* and according to some *'if doffing is done properly, there is no need to spray, hence no added value'*.
Conclusion: This study highlighted variability in feasibility of the guidelines delineating operational factors that need to be taken into consideration during implementation and shed light on factors that cause inequity. By addressing contextual factors influencing implementation, guidelines are more applicable and acceptable to end users.

Disclosure of Interest
None declared.

P326

Establishing infection prevention and control capacity in an Ebola treatment unit within the first seven days of the 2022 Sudan virus disease outbreak in Uganda

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Introduction: During an outbreak, robust strategies to build Infection Prevention and Control (IPC) capacity are vital for strengthening healthcare worker (HCW) safety. We highlight strategies to establish IPC capacity at an Ebola Treatment Unit (ETU) within the first week of Uganda's 2022 Sudan Virus Disease Outbreak.
Objectives: Building local IPC capacity for improved health outcomes in early outbreak days.
Methods: Leveraging hospital staff to enhance IPC capacity, we met with the hospital leadership to streamline coordination. Using the *WHO IPC Assessment for Isolation Unit tool*, we quantified the HCW and ETU needs. Results were disseminated to the hospital and the National Case Management Pillar, providing daily updates for coordination and financial support.
Results: In the assessment, the critical need was IPC training of the ETU staff. A team with advanced IPC experience were deployed as Safety Shift Leads to handle the critical ETU areas, including staff screening, chlorine mixing, donning and doffing, and staff advanced IPC training using Standard Operating Procedures (SOPs). 179 staff were trained on hand hygiene, donning and doffing, chlorine mixing, waste and spill management, safe patient transfer, ambulance decontamination, and dead body management. We conducted mandatory daily start and end of shift staff screening. Hand hygiene stations were placed in all critical areas. HCW workflow was streamlined by demarcating the ETU Green and Red zones with plastic scaffolding fences and clear labelling. Information Education and Communication materials were pinned. In the Red zone, unidirectional staff flow was encouraged, moving from dry to wet patients and proper waste management and hand hygiene stations placed at patient beds. A Safety Shift Lead supervised donning and doffing of all Staff from the Red zone using SOPs. The same strategies were scaled to the general hospital non-ETU staff, leveraging daily staff meetings.
Conclusion: Early implementation of robust IPC strategies using a Safety Shift Lead approach at the ETU during the initial response days is crucial for improved health outcomes in an outbreak.

Disclosure of Interest
None declared.

P327

Scorecard validation assessment for infection prevention and control in health facilities during an Ebola or Marburg disease outbreak

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Introduction: The scorecard is a tool for evaluating the IPC practices in health facilities during an Ebola or Marburg disease outbreak. It has been piloted in West Africa, DRC, Guinea, and Uganda. The tool targets high-risk facilities and consists of 15 thematic areas, representative of the core elements of IPC for health facilities (HF) to ensure safe care. Persons conducting the assessments may have limited IPC knowledge, therefore, a validation protocol was developed to assess the reliability, validity, sufficiency, authenticity and the currency as proxy of precision and accuracy.
Objectives: To validate a tool to assess IPC capacity and minimum requirements at HFs during an EVD or Marburg disease outbreak.
Methods: Using a mixed method approach which includes a descriptive study of health facilities through surveys for quantitative data collection and a qualitative process involving in-depth Interviews (IDI) or facilitated group discussion (FGD), trained IPC assessors will use the IPC scorecard to collect data using Kobo collect. Three independent assessments will be conducted for each targeted facility. Sample sizes will be calculated using **standard statistical tools**. The target is a minimum 44 health facilities ($r = 0.41$, $\alpha = 0.05$, $\beta = 0.2$, two-sided alternative) that meet identified inclusion criteria. All assessors should participate IDI or FGD for a qualitative review of the assessment process and scorecard questions. IDI or FGD are conducted by an external reviewer or assessor that was not involved in the quantitative data process.
Results: This validation process is currently in progress and results are expected by June 15 2023. Analysis will take place with preliminary results anticipated August 30 2023.
Conclusion: This process will provide insight into the reliability, validity, sufficiency, authenticity and currency of this tool used in low-income settings where resources and access to IPC professionals may be limited during an outbreak of Ebola or Marburg disease. Confidence in the use of the tool as a measure of HF capacity to implement or maintain core identified IPC measures can help countries to identify where and how to allocate much needed resources.

Disclosure of Interest
None declared.

P328

Research priorities for infection prevention and control for Ebola disease and Marburg disease

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Introduction: There are numerous gaps in the scientific evidence to support infection prevention and control (IPC) measures during Ebola Disease (EDOB) and Marburg Disease (MARD) outbreaks.
Objectives: To describe a research prioritization exercise aiming to collecting and identifying research priorities for further studies.

Methods: A modified Delphi technique using three steps: i) preliminary virtual meeting to collect potential research questions; ii) first round to establish research questions to be prioritized; iii) second round aiming to define a score and consequential prioritization category for each research question. For this exercise 41 participants were invited from the IPC EBOD and MARD disease Guideline Development Group and IPC Public Health Emergencies Working Group within the Global Infection Prevention and Control Network. The first and second round used online surveys. Participants were asked to use a five-point Likert-type scale, from 1 (lowest priority) to 5 (highest priority) based on six pre-defined criteria. The sum of each research question's total score and individual criteria score were calculated. Finally, the percentile distribution of the sum of the scores was used to stratify the scores based on pre-defined cut-offs.
Results: Among invited members 43.9% (n = 18) participated in the exercise. In the first round, participants assessed a set of 45 research questions organized in 11 thematic categories, of which 36 questions were retained for the second round. Nine research questions were ranked higher priority, 18 intermediate, and the remaining nine lower priority. The higher priority research questions were from the following categories: glove disinfection, healthcare workers' EBOD/MARD occupational risk, methodological issues of study designs, and personal protective equipment (PPE) indication for use, reuse, and donning/doffing.
Conclusion: These results demonstrate participants' concern related to the uncertainty of the evidence regarding health workers protection and PPE use in the context of Ebola and Marburg disease outbreaks.

Disclosure of Interest
None declared.

Poster session: Hand Hygiene 3: Hand colonization and innovations in alcohol-based handrubs use and effectiveness

P330

Operating room: improve environmental control to prevent infection risk

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Introduction: In the operating rooms (OR), environmental cleaning is a daily challenge to prevent the risk of infection. The OR medical devices (MD) and hand hygiene (HH) compliance through monitoring is an early diagnosis of the interdisciplinary organisation and contamination risk level. Moreover, the OR quality indicator and feedback could be a useful educational tool for the surgical team.
Objectives: To monitor and improve MD cleaning in a Swiss university hospital operating theatre.
Methods: The assessment was done in the 8 operating theatres for 7 months. Firstly, we adapted the WHO concept of patient zone in the OR and accompanied it with training session. Then, we assessed the HH compliance rate to provide a dynamic trend of 80 opportunities per month according to the WHO methodology and calculated the mean of the proportion and its 95% CI.
MD disinfection was assessed on critical surfaces in the patient zone after cleaning using two different methods: The first method was aerobic mesophilic colony enumeration in CFU per plate (10cm2) according to EN 171411 guidelines. The second method was a molecular biological technique that measures the level of adenosine triphosphate (ATP). The test is considered negative if the value is ≤ than 3500 eq.bact/cm^2 according to HUG guidelines. Respectively 48 biomass test and 32 CFU sample per months was done to each surgery theatre.
Results: HH compliance rate improved from 33% (95% CI 22.8% to 43.2) to 62% (95% CI 50.8% to 73.2) n = 581. MD ATP positive tests decreased from 39.5% to 17% n = 384 and from 37 to 22 CFU for microbiological sampling n = 128. Trends in rates of correct disinfection were graphically described and transmitted to the team. 30 training sessions were held.
Conclusion: Microbiological MD contamination decreases while HH compliance improves thanks to the development of a shared mental model of the patient area. These reports need to be accompanied by environmental indicators and related training.

Disclosure of Interest
None declared.

P331

Bacteria carried on the hands of healthcare workers at the Yaounde University Teaching Hospital: phenotypic characterization and susceptibility

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Introduction: Hospital-acquired infections (HAIs) result in urinary tract, surgical site, lower respiratory tract infections. They are a major reason for prolonged hospital stay, long-term disability, increased morbidity and mortality.
Objectives: This study aimed to assess the microbial flora carried on the hands of Health Care Workers (HCWs) at the Yaoundé University Teaching Hospital (YUTH).
Methods: A cross sectional descriptive study was carried out from June to August 2021. A structured self-administered questionnaire was used to collect data from 60 HCWs from different clinical services of the YUTH. Specimens were collected from the hands, doors and surfaces using sterile swaps. They were cultured on mannitol salt agar, EMB and Sabouraud + chloramphenicol agar. Identification was done using standard procedures. The antimicrobial susceptibility testing was done using the Kirby-Bauer Disk Diffusion method using EUCAST 2020 as reference. Data analysis was done using EPI info version 7 and excel 2010.
Results: Of the 60 study participants, nurses 16.7% were the most represented followed by medical students (10%) and resident doctors (10%). The most prevalent bacteria were Citrobacter, Esherichia, Pantoea, and Pasturella with a prevalent rate of 10.4%. Pseudomonas, Salmonella, Serratia, Shigella, and Proteus were less frequent (4.2%). The bacterial isolates were most resistant to amoxicillin and amoxicillin + clavulanic acid (55%), followed by chloramphenicol and ticarcillin (50%). Levofloxacin was the most effective with 17% resistance. More than half (53.3%) of the isolates were multi-drug resistant (MDR). Some of these Gram negative bacteria (13.33%) were resistant to all the 22 antibiotics tested (superbugs).
Conclusion: Bacterial isolated from the hands, fomites inclusive of doors' handles and surfaces yielded a rich bacterial flora, 13 genera. The microbial flora had low and middle level susceptibility to common antibiotics. Multidrug resistant isolates accounted for 53.3%. there is a need to reinforce the implementation of infection control in the study healthcare setting and beyond.

Disclosure of Interest
None declared.

P332

New protocol for monitoring the consumption of alcohol based handrub: results of the pilot phase

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Introduction: Disparities between hand hygiene compliance and consumption of alcohol based handrub (ABH) have been identified in the past in nursing homes (NH) of Vaud. For this reason, a new protocol for monitoring ABH consumption in NHs was introduced by the Cantonal infection prevention and control unit (HPCi-VD) in 2022. Here, we present the results of the pilot phase of this new protocol.
Objectives: The objective was to propose a new ABH monitoring indicator for NH, tailored to each of them, by determining an individual target to be reached. The objective of the pilot phase was to evaluate the feasibility of the new protocol in a small number of volunteers NHs.
Methods: The pilot phase included 10 NHs in 2022. Depending on the size on their size, we took samples of 10, 15 or 20 random residents per NH. The selection procedure was as follows: an anonymized list of residents and their PLAISIR score (care burden measurement, higher scores reflecting a higher care load) were provided by the NH. The proportions of residents with PLAISIR 1–3, 4–6, 7–9 and 10–12 were calculated. The corresponding proportions of residents in each class were also represented in the sample. A grid with the hand hygiene opportunities according to the 24-h care schedule provided to the selected residents was completed for each. This allowed for an assessment of the average number of hand hygiene opportunities/day/resident for each NH. At the same time, the NH monitored their ABH consumption over 3 months. The consumption in liters was divided by the number of residents, then by the number of days. The result was then translated into the number of disinfections by estimating that on average 3 ml per hand disinfection is required.
Results: The average opportunities were 14 to 29 disinfections/day/resident (median: 16) while the actual number recorded was 1 to 11 (median:5). ABH consumption in liters over 3 months ranged from 13 to 198 L (median: 54). The ratio of this result to the individual target to be achieved ranged from 8 to 51% (median:31%).
Conclusion: The pilot phase confirmed the feasibility of the new protocol. Each NH can now determine a tailored target and have a first result with recommendations for improvement. The protocol will be applied to all NHs of Vaud, with implementation starting in 2023.

Disclosure of Interest
None declared.

P335

Hand hygiene effectiveness among healthcare workers in Ukraine in 2022

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Introduction: Although the WHO recommended hand hygiene technique (HHT) has been formally approved in Ukraine since 2010, there was no multimodal strategy to hand hygiene (HH) implementation and no HH surveillance system, making it impossible to discover gaps in HH compliance among healthcare workers (HCW).
Objectives: To assess the effectiveness of medical workers`hands hygiene using the WHO guide.
Methods: Effectiveness of hand rubbing with WHO recommended hand-rub formulation (80% ethanol) was assessed. Escherichia coli K-12 test culture was used for hands contamination, number of viable bacteria were counted after performing various combinations WHO-recommended steps of HHT using methodology described in standard EN 13727:2019. Knowledge of HH practices was assessed by random selection of 407 HCW, physicians and nurses, from 9 health care facilities and evaluation of their understanding of HH indications and their ability to perform HHT using standard protocol.
Results: The high bactericidal activity of the WHO recommended hand-rub formulation was demonstrated (logarithm reduction of viable microorganisms (lg R) = 5.31). Conducting all steps of WHO recommended HHT contributes to a significant reduction of contamination of the hands during 30 s, lg R = 3.33; and 15 s, lg R = 3.03. When completing not al recommended HHT steps, lg R ranged from 1.854 (1 stage at 15 s) to 2.814 (5 stages at 30 s). As a result of skills and knowledge assessment 55.7% of healthcare workers did six steps of HHT, 11% performed $\leq$3 steps. Six steps were completed by 52.9% of doctors and 57.26% of nurses. The HH rubbing lasted between 7 and 73 s, with a median of 25. 49.5% of respondents named five basic indications for hand hygiene, 90.7% stated the need for HH before contact with the patient, fifth moment of HH was missed by the most HCW. There was no correlation between age, hand rubbing skills, and awareness for HH indications ($r = -0.06$).
Conclusion: The effectiveness of HH are related to duration and performing of all stages of hand rubbing. In Ukraine, 44.3% of HCW don`t have the hand rubbing skills, and more than half are unaware of all 5 moments of HH. The results show that teaching HCW on HH practices, regardless of age or specialty, is important step in infection prevention and control program strengthening at facility level.

Disclosure of Interest
None declared.

P336

Correlation between hand size and efficacy evaluation of alcohol-based handrubs in terms of application amount

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Introduction: The WHO (World Health Organization) and CDC (Centers for Disease Control and Prevention) Hand Hygiene Guidelines indicated that hand hygiene is an important cornerstone of healthcare-associated infection control in healthcare facilities, and that alcohol-based handrubs (ABHR) have become the first choice for hand hygiene due to their efficacy, quick drying and tolerability. Regarding the amount of handrub to be used, while previously mentioned guidelines indicate that the amount should be sufficient to be used for at least 15 s, they did not indicate the amount of handrub that should be applied. This was because hand size, which varies from person to person, determines the minimum amount of ABHR required.
Objectives: The purpose of this study was to measure the efficacy and rubbing time in terms of change in amount of ABHR application, and to evaluate their correlation with hand size.
Methods: Rubbing time and efficacy were evaluated when subjects applied different amounts of ABHR. Efficacy was evaluated using the glove juice method in accordance with ASTM E2755. Regarding the criteria for efficacy, it was decided that a minimum of 2.5 Log_{10} reduction should be satisfied, referring to the proposed rules issued by the FDA (US Food and Drug Administration) in 2015. The evaluation results were then compared with the size of each subject's hand, which had been measured in advance, to confirm the correlation. In addition, in

this study, healthy subjects were targeted, and evaluation was performed using ABHR method used in Japanese medical facilities.
Results: There was a positive correlation between rubbing time and efficacy of ABHR. In addition, as a result of evaluating the correlation between efficacy and hand size, it was found there was a tendency that the larger the hand size, the greater the amount of ABHR required to ensure efficacy.
Conclusion: Study results suggest that the amount of handrub required to ensure efficacy differs depends on the size of the hand. In the future, the researchers plan to investigate the amount of handrub applied that is effective even for people with large hands. They would also like to work on the development of a dispenser that automatically detects the hand size and changes the amount of ABHR applied so that healthcare workers can perform more appropriate hand hygiene.

Disclosure of Interest
None declared.

P337

Validation of the volume of alcohol-based hand rub per hand hygiene moment

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Introduction: Hand hygiene is one of the core elements of infection prevention. The World Health Organisation (WHO) recommends direct observations to increase compliance, but these observations are labour-intensive and biased. Measurement of alcohol-based hand rub (ABHR) consumption is used as a convenient surrogate measure of hand hygiene compliance.
Objectives: Since 2017, Amphia Hospital has been using ABHR usage as a surrogate measure of hand hygiene compliance. Per ward, the amount of used ABHR (ml) is divided by the number of patient-days, divided by the amount of ABHR that is delivered per hand hygiene moment. This results in an estimate of the number of hand hygiene moments per patient day. Up to now, an amount of 3 ml ABHR per hand hygiene moment was assumed. The ideal volume of ABHR is not known, or is the actual volume per hand hygiene moment. This study aimed to validate the volume of ABHR being used per hand hygiene moment.
Methods: Hand hygiene observations were made for 4 days at the distribution point of the uniforms. The bottle of ABHR was weighed before and after each day of observations. Health care workers were observed performing hand hygiene with ABHR and the number of hand hygiene moments was recorded. The total volume of ABHR used per day was calculated: volume of ABHR used (ml) = difference in weight per measurement/density of the product (0.851 g/ml). The average volume of ABHR being used per hand hygiene moment was determined by dividing the total volume by the number of hand hygiene moments registered.
Results: A total of 4 measurements were carried out in which a total of 426 uses of hand alcohol were registered and 494 ml of ABHR was used. Table 1: results of measurements ABHR moments.

Day	Weight (g)	Weight after ABHR (g)	Difference (g)	Volume (ml)	Hand hygiene moments (n)	volume of ABHR used per hand hygiene moment (ml/mom)
1	459	386	73	86	75	1.2
2	386	262	124	146	120	1.2
3	262	120	142	167	140	1.2
4	120	39	81	95	91	1.0
Total			420	**494**	**426**	**1.2**

Conclusion: On average, 1.2 ml of ABHR is used per hand hygiene moment, less than the generally assumed and often recommended 3 ml. When ABHR consumption is used as a surrogate measure of hand hygiene compliance it's important to take into account the amount of hand alcohol that's used per hand hygiene moment in advance.

Disclosure of Interest
None declared.

P338

Evidence-based hand hygiene: investigating personalised ABHR volume

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Introduction: A successful hand hygiene event has only three requirements: good technique, a proper alcohol-based handrub (ABHR), and sufficient volume. Optimal dosing is critical to ensure the overall outcome. The necessity of personalized ABHR volume has been a highly disputed question in the literature. The only solution? A multimodal study examining all critical parameters involved aiming to optimise hand hygiene performance in the clinics.
Objectives: The objective of the study was to examine and attempt to optimise all parameters which affect the outcome of a hand hygiene event.
Methods: Preliminary investigation was performed with respect to the applicable ABHR volume. 700 hand hygiene events were examined. Different ABHR volumes (1.5–3 ml) and formulations (foam, liquid, gel) were examined. We performed a comprehensive investigation which included coverage, application time, spillage and volume awareness. Hand coverage by ABHR was assessed by the Semmelweis Hand Hygiene System. Furthermore, by utilising an entirely electroninc automated method. Hand sizes and relative volumes were calculated. Application time, volume awareness was self-reported, spillage was examined by UV photography. Subsequently, personalised investigations were conducted with 12 volunteers. Microbiological investigation of the selected personalised volumes was also performed examining microbial reduction.
Results: Personalised volumes proved highly efficient. According to our results 3–4 µl/cm^2 provide sufficient coverage with appropriate decrease in spillage (See Table) while also providing efficient microbial reduction.

Relative volume	Drying time	Spillage	Relative handrub concentration calibrated with the spillage	n
3 µl/cm^2	43.2 ± 2.5 s	12.7 ± 2.4%	2.6 ± 0.1 µl/cm^2	22
4 µl/cm^2	48.5 ± 2.7 s	21.5 ± 2.8%	3.1 ± 0.1 µl/cm^2	22
5 µl/cm^2	65.8 ± 4.1 s	24.2 ± 2.3%	3.8 ± 0.1 µl/cm^2	22

Conclusion: Personalised volumes can be calculated for different hand sizes. This volume improves application in both terms of coverage, spillage and application time.

Disclosure of Interest
None declared.

P339

How the predetermined volume of touch-free automatic ABHR dispensers influences the quality of hand hygiene

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Introduction: Alcohol-based handrubs (ABHRs) are the standard of care for hand hygiene and ABHR delivery via touch-free dispensers continues to increase. Touch-free dispensers deliver a consistent predetermined dose. Numerous studies have shown that the amount of ABHR used has a strong influence on the quality of hand hygiene.
Objectives: This study aims to compare the quality and acceptability of 3 popular dispensers, widely used in clinical settings, to determine whether the dispensed volume of the ABHR is sufficient to cover the entire hand surface.
Methods: 43 medical students participated voluntarily. Approximately half of them (n = 20) applied 1 dose (as per factory preset) from each ABHR dispenser and the other cohort (n = 23) applied 2 doses. Each participant used all three dispensers on different days, without knowledge of ABHR dispense volumes. Drying time was self-reported. Hand coverage by ABHR was measured by the Semmelweis System. For each dispenser, the manufacturer's new ABHR refills were used with 20 ml/liter fluorescent concentrate (Visirub) added to each.
Results: 129 hand hygiene events were recorded. Table 1 summarizes the results. When less than 1 ml ABHR was used, ≥ 10% of hand surface was missed. One dispenser design ("green") resulted in < 2% of missed hand surface with a single dose. The other two dispensers ("blue" and "yellow") required two doses to reach similar results (> 95% hand coverage). The generally accepted 20–30 s ABHR drying time was achieved with 1.3, 1.4, and 1.6 ml dispense volumes.
Table 1: Experimental settings and measured parameters (average ± standard error).

Test article and settings		Dispensed volume (ml)	Drying time (sec)	Uncovered hand surface (%)
Blue dispenser	**1 dose**	**0.7 ± 0.0**	**17.0 ± 1.4**	**11.5 ± 2.6**
Green dispenser	1 dose	1.3 ± 0.0	28.9 ± 2.3	1.4 ± 0.3
Yellow dispenser	1 dose	0.8 ± 0.0	18.7 ± 1.3	9.9 ± 1.7
Blue dispenser	2 doses	1.4 ± 0.0	24.7 ± 1.5	1.6 ± 0.4
Green dispenser	2 doses	2.6 ± 0.0	45.6 ± 3.6	0.7 ± 0.5
Yellow dispenser	2 doses	1.6 ± 0.0	29.5 ± 1.8	4.5 ± 2.1

Conclusion: Dispensed dose strongly determines both drying time and hand coverage, thus this should be a key indicator of quality when dispensers are selected.

Disclosure of Interest
S. Bansaghi Grant/Research support from: Study was financed by the manufacturer of one of the investigated dispensers., S. Aljomaa Grant/Research support from: Study was financed by the manufacturer of one of the investigated dispensers., M. S. Akhter Grant/Research support from: Study was financed by the manufacturer of one of the investigated dispensers., C. Voniatis Grant/Research support from: Study was financed by the manufacturer of one of the investigated dispensers., N. M. Smith Employee of: the manufacturer of one of the investigated dispensers., J. J. McNulty Employee of: the manufacturer of one of the investigated dispensers., J. W. Arbogast Employee of: the manufacturer of one of the investigated dispensers., T. Haidegger Grant/Research support from: Study was financed by the manufacturer of one of the investigated dispensers.

P340

Comparison of dispensers dosing consistency using different format (foam and gel) handrub

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Introduction: Alcohol-based handrubs (ABHRs) are typically distributed via dispensers in hospitals. ABHRs are available in different delivery formats (gel, liquid, and foam). There is evidence formulation (ingredient selection) is important to antimicrobial efficacy. However, there is no consistent evidence on dosing levels delivered or needed by product format. Most ABHR manufacturers employ the same dispensers for different format refills.
Objectives: The aim of this study was to compare how the same dispenser works when foam or gel format refills are used.
Methods: Four popular, automatic dispensers were selected and tested with their own healthcare market gel and foam format refills. A novel delivery system *(Dispenser #E)* was also tested. Three dispensers for each system type were tested, with a maximum of 3 new refills of each type per dispenser. For each refill, the dispensed volume of 50 doses were measured (after priming the refill).
Results: Table 1 summarize the dispensed volumes. In the case of *Dispenser #A* and *#B*, there was a remarkable difference between the volume of a dose when a gel or a foam refill was used. In the case of *Dispenser #C* and *#D*, the dispensed volumes were almost the same (< 0.10 ml difference) with the different formats. In all cases dispensing was more consistent when gel refills were used.

Table 1 Dispensed volumes using gel or foam refills. Data represents average ± standard deviation (and sample size)

Delivery system	Dispensed volume (ml)	
	Foam	Gel
Dispenser #A*	0.59 ± 0.10 (n = 400)	0.94 ± 0.02 (n = 450)
Dispenser #B	0.78 ± 0.06 (n = 450)	1.23 ± 0.04 (n = 450)
Dispenser #C	1.27 ± 0.07 (n = 450)	1.24 ± 0.03 (n = 449)
Dispenser #D	1.26 ± 0.09 (n = 450)	1.33 ± 0.02 (n = 450)
Dispenser #E	1.37 ± 0.07 (n = 450)	1.20 ± 0.03 (n = 450)

* These dispensers can be set at two different levels. In our study the lower level was tested

Conclusion: Format-related variance in dispensed volume seems to be an infection prevention risk factor. To support the proper clinical application of the handrub, product description should label the dispensed volume separately for different product formats and associated formulations.

Disclosure of Interest
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P341

Visualizing skin hydration of a hand disinfectant

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Introduction: Skin health among professional users of hand disinfectants relies on the use of skin friendly products. Application compliance, however, might benefit from an intuitive, illustrative, and more convincing means of assessing and presenting positive product properties.
Objectives: The scope of this study was to establish capacitive contact imaging (CCI) as method to assess and illustrate skin hydration in comparison to conventional corneometry. Further assessed were TEWL, pH, objective and subjective dermatological tolerability assessments, and a subject questionnaire, in the efficacy of a hand disinfectant.
Methods: The test product was a proprietary topical leave-on hand disinfectant. 24 subjects (60% females and 40% males) were recruited onto this 2-week Exploratory, Open label, Randomised study. The study was executed under GCP and Ethics Approval. Consenting subjects with healthy or unhealthy skin (at least 30% with atopic predisposition and/or a history of contact allergy and/or self-perceived sensitive skin and/or rosacea) on the hands and forearms were included. Product was applied 20 times daily at home to both hands and one volar forearm. On Days 1 (Baseline), 15 and 16, skin pH (pH-meter), skin hydration (Corneometer), skin permittivity and hydration (CCI) were measured. Tolerability of the disinfectant was assessed objectively by a physician Day 1 and 15, and subject questionnaire after 2-weeks use.
Results: Compared to baseline, significantly higher skin capacitance (hydration) values were obtained at all post-treatment times. Skin capacitance increased compared to Day 1. Hydration levels (Days 15 and 16), remained slightly above or equal to Day 1. This finding correlated with CCI which showed a similar increase in permittivity and hydration compared to Day 1. Skin pH values (5.0) remained stable. In Physician evaluations the disinfectant was found non-irritating and well-tolerated. These findings were in line with user subjective sensory and performance evaluations (90–100% agreement).
Conclusion: Skin hydration assessment by CCI yielded equivalent results to conventional gold standard corneometry, with the added benefit of illustrating the effect. The tested product showed a consistent skin hydrating effect and very good tolerability with repeated use.

Disclosure of Interest
T. Sadowski Employee of: Conflict lies between the duty of loyalty to the employer and scientific accuracy., C. Müller Employee of: Conflict lies between the duty of loyalty to the employer and scientific accuracy., H. Gerdes Employee of: Conflict lies between the duty of loyalty to the employer and scientific accuracy.

P342

A national survey of skin health in nursing personnel

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Introduction: Nurses suffer increased risk of skin disease due to frequent hand washing and prolonged glove use. Regular and consistent use of hand cream is a key preventative and measure. The prevention and management of occupational skin disease remains a persistent challenge in the healthcare setting.
Objectives: To explore skin health in nursing staff across different nursing roles and work settings. Develop recommendations to promote good skincare at work.
Methods: A cross-sectional online survey comprising basic demographics, job role; general skin health; current and past skin problems, sickness absence and work adjustments; organisational support and awareness of the RCN Glove Awareness campaign and suggested skin care strategies. Compliance with different hand hygiene practices as well as use of hand cream were explored. Data from 1,545 surveys was analysed.
Results: 46% percent of nurses reported 'poor' skin health 93% experienced at least one skin problem over the previous 12 months with only 22% seeking help from their employer 2% took time off work due to skin problems, many expressing concerns that sick leave would be viewed negatively. 53% had reduced or stopped using AHBR and soap, and 18% had reduced glove use.
Most respondents used hand cream and over half used products they had purchased themselves.
42% received skincare information from employers, with 26% receiving training on how to identify early signs of skin disease. 16% had access to skin surveillance.
26% of respondents were aware of the support offered by their professional nursing association.
Suggestions for improving skin health included increasing publicity concerning the importance of skin health, improving access to and better quality hand creams, enhanced education and training more involvement from Occupational Health (OH).
Conclusion: Poor skin health remains a persistent problem for nurses. Employers could do more to promote skin health. Nurses need more awareness of the support offered by professional bodies.

Our findings further strengthen the case for embedding routine workplace skin surveillance with OH oversight into workforce practices.

Disclosure of Interest
K. Ormandy Employee of: SC Johnson Professional, V. Parsons: None declared, D. Gould: None declared, R. Gallagher: None declared, K. Sunley: None declared, G. Oxley Employee of: SC Johnson Professional, J. Hines Employee of: SC Johnson Professional, C. Fellows Employee of: SC Johnson Professional.

P343

Alcohol-based hand sanitizer 74% ethanol in vitro broad virucidal activity

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P343

Introduction: Hands are the most common vector for transmitting infections in medical facilities and the public awareness on the importance of hand sanitization during this pandemic is likely to have long term effects on hygiene habits across the world. The user is likely to endure the routine use of hand disinfectant, even beyond the CoVID-19 era, as a new norm of self-hygiene. The Alcohol-based hand sanitizer **(**ABHS) 74% ethanol (Amuchina gel × germ) is highly effective hygienic hand rub since it passes EN 14476:2019 on required virus types.
Objectives: The present study is designed to verify disinfectant effectiveness in vitro of ABHS (Amuchina gel × germ) against clinically relevant virus types, not included in EN 14476:2019 required list such as some viruses causing respiratory infections, viruses causing blood-borne infections and viruses causing other virus infections.
Methods: Each virus types such as Influenza A virus (H1N1 and H3N2), Human Respiratory Syncytial Virus, Bovine viral diarrhea virus, Duck Hepatitis B Virus, Human Herpesvirus 1 and 2, Human Immunodeficiency Virus type I, Rotavirus A and Human coxsackievirus B5, was exposed to ABHS (Amuchina gel × germ) in the presence of 0.3 g/l Bovine Albumin Serum (BSA) for 30 and 60 s. An aliquot of the reaction mixture neutralized, serially diluted, was inoculated onto cells to evaluate cytopathic effect. The 50% tissue culture infective dose per mL (TCID50/mL) was calculated by the Spearman-Karber method and converted to log10 TCID50 viral load.
Results: When tested in suspension according to EN 14476:2019, ABHS (Amuchina gel × germ) reduced the virus titer count, greater than 4 log after 30 and/or 60 s exposure. ABHS (Amuchina gel × germ) has virucidal activity against the tested viruses meeting the requirement of EN 14476:2019, with > 4 $\log_{10}$ reduction in the virus, within a short contact time.
Conclusion: The results obtained in this study, regarding the virucidal activity of ABHS (Amuchina gel × germ), support the effectiveness of this alcohol-based formulation to prevent broad range of viral infections. Hand sanitizers could be used to break the chain of virus infections, reducing the burden both in healthcare and public institutions.

Disclosure of Interest
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P345

Hydroalcoholic gel formulation prevents skin reinfection from P. aeruginosa and S. aureus for at least 2 hours

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P345

Introduction: Biocides are intensively used for disinfecting surfaces, water, equipment, antisepsis and also medical devices or medicinal products, but they have limited duration and efficacy. The use of antibiofilm agents to complement the current biocides would enhance their efficacy.
Cannabidiol has demonstrated antibacterial and antibiofilm properties against Gram-positive and Gram-negative bacteria such as MRSA and *P. aeruginosa*, and it does not affect the skin microflora. All these properties make it a potential candidate for hand sanitizer.
Objectives: The aim of this report is to evaluate the efficacy of the product "PSEUDOMA", hydroalcoholic gel containing natural cannabidiol, developed by Pharmotech SA and more specifically, its persistent biocidal activity after application on hands.
Methods: *aeruginosa* and *S. aureus* suspensions (1.5 and 5.0 × 10^8 CFU/mL) were used to inoculate the stainless-steel surfaces and left until dry (less than 1 h at 36 °C).
The test was run on 10 panellists. Each panellist washed, disinfected and dried his hands at the beginning of the study. The test product was applied to the hands and spread until dry. At T0, T1 hour or T2 hours, the panellist maintained contact with the inoculated surface for 5 s and wait for 1 min before eluting the fingertips with the neutralizer solution. Appropriate dilutions were performed, plated and cultured.
Water control was performed using water instead of the test product.
Results: Table 1. Percentage and log10 reduction of the tested microorganisms.

	P. aeruginosa	*S. aureus*
T0 hours	99.99% (R > 4)	99.99% (R > 4)
T1 hour	99.26% (R = 2.13)	99.88% (R = 2.91)
T2 hours	98.74% (R = 1.90)	98.85% (R = 1.94)

R = logarithmic reduction

Conclusion: The methodology used to evaluate the bactericidal activity after reinfection is suitable for the purpose and adapted to reflect the regular practice. According to the results, immediate efficacy is clear and in addition, the product presents high bactericidal efficacy up to 2 h after application. This would greatly reduce the reinfection potential.
PSEUDOMA has demonstrated its persistent bactericidal activity for 2 h, including Gram-positive and negative bacteria e.g. *P. aeruginosa* and *S. aureus*.

Disclosure of Interest
C. Serna Jiménez Employee of: Pharmotech, R. Aeschbach Shareholder of: Pharmotech.

P346

A 0.05% sodium hypochlorite-based antiseptic and wound cleanser solution: in vitro study on SARS-COV-2

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P346

Introduction: A 0.05% sodium hypochlorite-based solution (Amukine Med® 0.05%, Angelini S.p.A.; hereafter termed NaClO 0.05% solution) is an antiseptic, isotonic (0.9%) solution at pH 9.5. NaClO 0.05% solution has been shown to effectively reduce wounds bacterial infections; similarly, during the recent pandemic, its virucidal activity against the SARS-CoV-2 virus was shown.
Objectives: A study protocol was conducted in order to evaluate the virucidal activity of NaClO 0.05% solution skin and wound cleanser solution against SARS-CoV-2.
Methods: Protocol activities were conducted at Laboratory of Clinical Microbiology, Virology and Biomergencies of L. Sacco University Hospital in Milan in BSL-3 conditions. NaClO 0.05% solution was evaluated against a SARS-CoV-2 virus stock prepared propagating a virus isolate (GenBank accession number: MW000351) in Vero E6 cell (DMEM at 2% FBS and 1% Pen-Strep).
Virus was exposed to NaClO 0.05% solution for 30 s, 1 and 5 min. After each time-point an aliquot of the reaction mixture was collected, serially tenfold diluted with DMEM at 2% FBS and 1% Pen-Strep, inoculated on Vero E6 cells and incubated at 37 °C and 5% of CO_2 for 72 h. The 50% tissue culture infectious dose per mL (TCID50/mL) was calculated by the Spearman-Karber method and converted to log10 TCID50 viral load. Virus control assay as well as cytopathic effect by NaClO 0.05% on Vero cells were evaluated.
Results: NaClO 0.05% was effective in reducing the SARS-CoV-2 virus titre greater than 4 log already just after 30 s of exposure. The results are reported in Table 1. Cytotoxicity was observed only on the first tenfold dilution, affecting the limit of detection by 1 log.
Table 1: Experimental results.

SARS-CoV-2 titration

Virus	Treatment	Time of exposure	TCID50
	Virus control	/	$10^{9.5}$/mL
SARS-CoV-2 (MW000351)		30 s	$10^{5.4}$/mL
	0.05% NaClO	1 min	$10^{5.3}$/mL
		5 min	$10^{3.9}$/mL

Conclusion: Protocol results support the use of NaClO 0.05% antiseptic and cleanser solution to inactivate SARS-CoV-2 and to reduce the risk of infection.

Disclosure of Interest
D. Mileto: None declared, A. Capezzone de Joannon Employee of: Angelini Pharma S.p.A., A. Mancon: None declared, L. Corio: None declared, L. Ragni: None declared, A. Cattaneo Employee of: Angelini Pharma S.p.A, M. R. Gismondo: None declared.

P347

Capacity building on local production of alcohol-based handrub: evaluation of a virtual practical course

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Introduction: Digital and communication technologies have evolved in recent years, enabling virtual training which facilitates effective capacity building of healthcare workers.
Objectives: To design and evaluate the relevance, practicality, and acceptability of the ABHR production curriculum content and its delivery.
Methods: Between January and December 2022, the Infectious Diseases Institute and Centers for Disease Control and Prevention led in designing and evaluating an eight-module interactive ABHR production virtual curriculum based on WHO protocols. To enhance knowledge gain and retention, we provided learners with a demonstration video showing stepwise guidance to produce ABHR, WHO hand hygiene (HH) posters, research papers, a padlet wall, a WhatsApp group, discussion forums, and live Zoom sessions.
Results: All participants (n = 10) successfully completed the course and associated quizzes, the virtual questionnaire, and the in-person qualitative evaluation. The mean quiz score was 80% (range, 72–88%. Awarding a course certificate that authenticated the participants' skillset was perceived as an incentive for course completion. The mean time for completion of all eight modules, captured as the time the participants were logged on, was 105 h (range: 60–187 h). All participants strongly agreed that the allocated period of four weeks was sufficient for course completion. All participants stated that they obtained new knowledge and skills by taking this course, in particular, ABHR production in different volumes and quality control. All participants mentioned that they valued the degree of involvement of instructors in the teaching and learning processes. With the internet access we provided, participants didn't have any challenges accessing all course materials.
Conclusion: The virtual delivery of the ABHR local production training is feasible and acceptable and provides a low-cost alternative to traditional, lecture-style capacity building in low-resource settings. Future efforts should aim at expanding access to the course by collaborating with training organizations and integrating with existing courses and beyond Uganda, adapting to each local context. In the long run, knowledge retention follow-ups, including the quality of ABHR produced by the trainees, should also be assessed to evaluate the effectiveness of the virtual training.

Disclosure of Interest
None declared.

P348

A second life for empty bottles of hydro-alcoholic solution

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Introduction: The hospital Hygiene Team suggests that health professionals keep the empty bottles of Alcohol-based Handrubs (ABHR) and liquid soap (500 ml bottles with pump) for a second use, rather than disposing of them in the waste stream.

Objectives:
Methods: The Hygiene Team collected and stored empty ABHR bottles, washed them, disinfected them according to the procedure proposed by the WHO (bottle and pump immersed for 5 min in a 0.12% Ca-chlorine solution) and packed them into 30 units-boxes, ready to be sent to healthcare establishments that produce their own ABHR or soap, but do not have suitable containers. At the same time, we contacted dozens of humanitarian associations, non-governmental organizations (NGOs) and health establishments in various countries, and mobilized the network of hygienists and IPC professionals to find addresses of establishments likely to be interested in these bottles.

Results: Our team has already collected several hundreds empty ABHR bottles. The washed and disinfected bottles are packaged and ready to be given to interested parties. Last summer, student nurses from our hospital brought three boxes of ABHR bottles to young Togolese members of an association that produces liquid soap sold to benefit summer camps. The Humatem Association, which provided logistics and supplies medical equipment for other NGOs, received several boxes. Lastly, our colleagues from cardiology sent a container

of medical equipment to their Senegalese colleagues; cartons of empty ABHR bottles will be added considering that our hygiene and IPC colleagues on site are indeed interested.
Conclusion: The boxes of empty ABHR bottles are ready to be delivered, but we still have to overcome two major difficulties: first, we have to identify the establishments, teams, dispensaries, associations or individuals who really need them; second, we have to find the most cost-effective way of transporting the boxes, using existing networks and departure of containers in the context of humanitarian mission. Information is circulating, links are gradually being forged and our hospital ABHR empty bottles will certainly find new uses in an eco-responsible humanitarian approach.

Disclosure of Interest
None declared.

Poster session: Hand hygiene 4: Educational technologies, gaming and behavioral intervention

P349

Educational technologies for teaching hand hygiene: systematic literature review

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Introduction: Using technology to teach hand hygiene can benefit both healthcare professionals and patients. It helps standardize and improve the quality of hand hygiene education.
Objectives: To gather available scientific evidence on technologies used in teaching hand hygiene among professional and lay populations.
Methods: This is a systematic literature review (https://osf.io/38rst/). The search used electronic databases: Cochrane Library, Cinahl, *Embase*, *Lilacs*, PubMed, Scopus, Web of Science, Google Scholar and ProQuest. The results were exported to the artificial intelligence-powered Rayyan. After the descriptive analysis, the studies were subjected to critical evaluation of their methodological quality using JBI tools.
Results: Six studies were included, addressing various methods for teaching hand hygiene using different technological resources, such as audiovisual electronic devices, videos, virtual reality and gamification using tablets and smartphones, in different populations.
Conclusion: Using technologies to teach hand hygiene considerably helps patients, visitors, and relatives in learning the procedures and efficiently improves hand hygiene compliance rates among healthcare professionals, creating evidence-based repetitive learning opportunities for patients and caregivers.

Disclosure of Interest
None declared.

P350

Health belief model on hand hygiene compliance of intensive care unit (ICU) nurses at Indonesian red cross hospital with the risk of healthcare acquired infections (HAS)

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Introduction: Patient morbidity and mortality in hospitals caused by Healthcare Acquired Infections can be prevented by instituting hand hygiene as a global problem. HAIs are a major cause of mortality and increased morbidity, imposing a substantial economic and social burden. Given the severity of Healthcare Acquired Infections, infection prevention measures are necessary. It is important to investigate the factors that influence the implementation of hand hygiene, particularly in Intensive Care Units with the highest risk of Healthcare Acquired Infections.
Objectives: This study aimed to determine the effect of each perception and modifying variable on hand hygiene compliance in nurses.
Methods: This type of research is quantitative with a cross-sectional design through a survey approach. The research subjects were 30 nurses who worked in the Intensive Care Unit (ICU). The object of research is the behaviour of applying hand hygiene, perceptions and staff modification variables.
Results: In this study, nurse compliance with hand hygiene was 44%. This condition is by the average compliance with international hand hygiene (40%). In this study, significant differences were found based on the level of education and history of infection prevention and control training. On the other hand, there are significant differences in hand hygiene compliance based on patient-body fluid contact.
Conclusion: Based on the study results, the workplace influences compliance with hand hygiene, where Intensive Care Unit (ICU) nurses are more obedient than other wards. There were significant differences in the compliance of female staff, Intensive Care Unit (ICU) staff, and those who had contact with fluids, which was higher than male staff. Further research is needed with a larger sample and methods that can measure staff perceptions in more depth and examine other factors more broadly.

Disclosure of Interest
None declared.

P351

The relationship between health belief model perception and hand hygiene behavior in preventing COVID-19 transmission in inpatient family members at the Indonesian Red Cross Hospital

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Introduction: COVID-19 has spread across the globe, leaving virtually no territory unaffected. The rapid spread and alarming mortality rate of COVID-19 has prompted many nations to implement preventative measures, including the practice of hand washing. Hand washing is a simple preventative measure that most individuals can perform independently. However, there is substantial evidence that hand cleansing among healthcare workers and patient families must be implemented more effectively.
Objectives: This research was conducted to determine the relationship between perceptions based on the Health Belief Model and hand hygiene behaviour in preventing the transmission of COVID-19 in the patient's family members in the inpatient ward of the Indonesian Red Cross Hospital.
Methods: This is descriptive correlational research with a sample size of 100 patient family members selected using a technique of purposive sampling. This research employs instruments that refer to the Health Belief Model. Using the chi-square correlation test, the collected data were analyzed.

Results: The results of the study indicate that there is no relationship; the self-efficacy aspect must be a concern for health workers, particularly community nurses, to convince the patient's family that they are capable of performing hand hygiene because if the patient's family has felt the severity of the disease, feels at risk, feels the benefits of hand hygiene behaviour, and does not feel any obstacles in performing hand hygiene, but is unsure of their ability to perform hand hygiene, they will not perform hand hygiene.
Conclusion: Most of the patient's family members (97.9%) hold positive views regarding the role of hand hygiene in averting the spread of COVID-19. Based on hand hygiene behaviour and hand hygiene behaviour in preventing transmission of COVID-19 to patient families at the Indonesian Red Cross Hospital, it is known that most patient family members (62.9%) do not practice hand hygiene.

Disclosure of Interest
None declared.

P352

Hand hygiene escape room

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Introduction: World Health Organization launched the global challenge for patient safety and hand hygiene (HH) was and still is a priority objective of this strategy. Contaminated hands are the most common source of transmission of Health Care Associated Infections (HAIs). The decrease in the rate of compliance of HH has led us to do more innovative training. In escape rooms people can develop various activities: solving tests and problems, as well as testing participant's knowledge. Usin methodologies based on gamification, in the educational environment.
Objectives: To train health personnel in HH and to implement a new educational model in healthcare setting.
Methods: Infection control program nurses (ICI) worked on the scenario with related material and clues in a skills classroom. Teamwork, communication and knowledge are what we work on. The training activity consists of 2 parts: theoretical, where documents and protocols must be reviewed; and a practical part: the Escape Room. Professionals carry out a conceptual evaluation questionnaire and a Liker scale satisfaction questionnaire (1–5). We made groups of 6–8 people from different professional categories and work shifts. Two ICIs are in charge of carrying out the session: 1 manages the audiovisuals part of the stage and the other informs the team about the rule and guides the activity.
Results: Regarding satisfaction, survey showed that 65% of professionals rate the clear content of the training with a maximum score of 5, while 35% rated it with a 4. Almost 90% of the professionals agree that they have learned new concepts (score 4–5), 71% of the professionals rated the recommendation of this training and the escape room format with the highest score. The average grade of all professionals in the conceptual evaluation questionnaire was 9.1.
Conclusion: The results of the pilot training, in terms of the evaluation of knowledge and the satisfaction of the escape room training, have been very positive and well valued. It has helped us to innovate in our trainings and that they are better accepted. The knowledge of the professionals is all very clear, but in front of the stage, where they are the protagonists with the patient, their acquired habits prevail, despite having the knowledge. This leads us to question the following: how can we make these habits of healthcare professionals change and what should be our new strategy?

Disclosure of Interest
None declared.

P353

The who "5 Moments: The Game"—Designing and developing a serious game for hand hygiene

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Introduction: Hand hygiene (HH) is a core infection prevention and control activity. The WHO 'My 5 moments for hand hygiene' is a globally adopted concept to identify when HH is necessary to interrupt microbial transmission during patient care. Serious games are a valuable educational tool, integrating entertainment and learning to facilitate skills acquisition through interactive and immersive experiences.
Objectives: To describe the design and development of a novel serious game for "My 5 Moments for HH".
Methods: We used an authentic problem-based approach where players engage in HH during the '5 Moments' in a clinical-based scenario. The development process consisted of a design thinking approach, brainstorming and ideation sessions, conducting empathy mapping, user personas and focus groups with the target audience, reviewing game design models, story ideation, and iterative review of the co-developed design document. A vendor developed the game under the guidance of game designers, learning designers, subject matter experts (SMEs), and additional specialists.
Results: A compassionate serious game was developed. Players must look after their alien patients and keep Earth and the aliens safe by identifying and performing HH at the right moments. Players must correctly identify the patient and healthcare zone, HH moments, actions, and complete objectives while encountering complex obstacles. The game consists of 5 progressively complex levels, each representing different HCWs and settings. We sought to balance engaging and empathetic elements with the scientific and theoretical approaches to HH improvement. For the inclusivity of a global user population, we set the game in an International Alien Hospital 200 years in the future. Continuous prototyping, short production cycles and agile planning emerged as productive and accelerating elements.
Conclusion: The game offers an immersive experience and highlights the importance of collaboration between SMEs, game designers, learning designers, developers and other stakeholders to meet the audience's diverse needs.

Disclosure of Interest
None declared.

P354

Design and validation of simulation scenarios for hand hygiene observation in hospitalization

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Introduction: Clinical simulation is a powerful methodology for acquiring and training technical and non-technical skills. To achieve the maximum possible accuracy and reproducibility, the different components of the proposed scenario must be correctly defined, planed and validated by experts.
Objectives: Plan, design and validate real clinical situations to train participants in hand hygiene observation through simulation.

Validate the simulated clinical scenarios by analyzing the level of agreement among expert observers.
Methods: 6 hospitalization scenarios were designed in the year 2021: (1) Nursing assistant, placement of thermometers (2) Orderly, transferring a patient (3) Nurse, repeated contact with the patient (4) Nurse, contact with the environment (5) Nurse, blood sample collection (6) Doctor, nurse and doctor, medical visit.
The clinical situations, the environment and the role that each participant would play in the simulation center were described and recreated. Once the scenes were recorded, they were audited to assess hand hygiene compliance with the WHO methodology by a panel of expert nurses certified as trainers in the "1st Train the Trainers Course in Hand Hygiene Monitoring", endorsed by The World Health Organization Collaborating Center on Patient Safety Infection Control & Improving Practice, and with extensive experience in observation. Each expert observer audited the scenarios and sent their conclusions to the course coordinator.
Results: 6 scenarios of the hospitalization area were recorded. 18 opportunities were identified across all in the 6 scenarios. There was 100% agreement among the observers in scenarios 1 to 4 and 6. In scenario 5 two experts did not identify an opportunity and in scenario 6, differences were detected in the indication of one of the opportunities.
Conclusion: The simulation of realistic scenarios from routine clinical practice can promote more effective training programs. Expert validation of these scenarios is key in detecting potential discrepancies and increasing the quality of training results.

Disclosure of Interest
None declared.

P355

Evaluation of the impact of training in the management of a double epidemic of extensively drug-resistant bacteria in an intensive care unit

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Introduction: Two outbreaks of extensively drug-resistant (XDR) bacteria occurred in the burn-ICU of a French University Hospital between 2021 and 2023. Therefore, extensive investigation was carried-out completed by implementation of reinforced infection prevention control (IPC) measures to reduce the risk of cross-transmission. Three audits (one qualitative and two quantitative) were carried out over a period of 10 months by the department of hygiene and infection control (HIC) and revealed deviations from standard and complementary precautions. In addition to these audits, several training sessions were organized.
Objectives: The objective of this work was to evaluate the impact of these trainings in improvement of these precautions.
Methods: The HIC first conducted a training based on reminder sessions of good practice and the hand hygiene training "light box" cabinet, followed by a training by simulation. Then, audits were conducted to evaluate the impact on hand hygiene compliance (opportunity and quality).
Results: In the 155 observations of the first audit: hand hygiene by friction was done in 61% of cases and only 31% of them were judged satisfactory (moments and time). In 23% of cases, hand hygiene was not performed despite the epidemic context.
The hand hygiene opportunities were respected differently depending on patients' nfectious status (58% for patients with contact precautions versus 68% for patients with standard precautions).
The second audit of post-training by simulation showed a significant improvement of hand hygiene compliance. The proportion of incomplete friction decreased from 32 to 10% and the absence of hand hygiene decreased by 43% (23% before vs 13% after).
Conclusion: Our study shows the importance of training choices in improving practice in health care settings. Compliance with appropriate hand hygiene practices is the most efficient and cost-effective intervention to reduce the risk of cross-transmission. However, it is important to develop technics to modify the behaviors of professionals in order to achieve the objectives of good practices.

Disclosure of Interest
None declared.

P356

Hand hygiene among medical students: a quasi-experimental study evaluating two training methods

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Introduction: Capacity building by training is recommended as a core component for an effective infection prevention and control program by the World Health Organization. Several studies revealed that medical students have low HH performance levels. However, there have been limited interventions directed at young students targeting HH enhancement.
Objectives: We aimed at assessing HH knowledge among medical students after two training methods.
Methods: We performed a quasi-experimental study during the academic year 2021–2022, including fifth-year medical students enrolled in the faculty of Medicine of Monastir (Tunisia). We relied on a conventional training based on presentations guided by the teacher and a student-centred training method based on courses and simulated exercises prepared by students. We used the WHO HH Knowledge Questionnaire.
Results: A total of 203 medical students were included (105 in the control group and 98 in the experimental group) with a mean age of 23 ± 0.7 years.
We found a statistically significant increase in post-test scores for both training methods. A higher post-test mean score was noted for student-centred method (14.1 ± 1.9 vs 13.9 ± 2.3).
The overall improvement in good HH knowledge rates was greater after student-centred method compared to conventional training (40.5% vs 25%). Poor knowledge levels decreased from 23.1% to 2.8% ($p < 0.001$) after conventional training and from 29.3% to 0% ($p < 0.001$) after SCL method.
Conclusion: Active training courses for medical students combined to a continuous supervision of practices in health care settings are mandatory to enhance HH performance level.

Disclosure of Interest
None declared.

P357

Hand hygiene awareness and practices among patient service assistants in tertiary care hospitals in South India: a multi centre cross sectional study

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Introduction: In health care settings, appropriate hand hygiene techniques can go a long way in reducing nosocomial infections, cross-transmission of microorganisms and the risk of occupational exposure to infectious diseases. World Health Organisation (WHO) has taken an incredible approach called "My Five Moments for Hand Hygiene" which defines the key moments when health-care workers should perform hand hygiene.
Objectives: Patient service assistants in a hospital are a group of healthcare workers who has a significant direct interaction with patients and are often forgotten in many infection control surveys and education programmes. Thus we carried out a survey to assess knowledge of hand hygiene practices among patient service assistants in two large tertiary care institutes of south India.
Methods: A multicentre cross-sectional survey was conducted in two large tertiary care hospitals of south India among 348 patient service assistants. The questionnaire used was adapted from the WHO hand hygiene knowledge questionnaire for health-care workers and was distributed both, in print and online formats. The response to each question was examined using percentages.
Results: Nearly 34% (n = 348) of patient service assistants who participated in this study did not receive any formal training in hand hygiene. Only 21% participants knew that the most frequent source of germs responsible for health-care associated infections were the germs already present on or within the patient. Nearly 79% participants were unaware of the sequence of hand washing and hand rubbing. Although 68% participants claimed that they use an alcohol-based hand rub routinely, only 25% participants knew the time required for a hand rub to kill the germs on the hands. Overall hand hygiene knowledge was low in 18%, moderate in 71% and good in 11% of respondents.
Conclusion: The awareness about hand hygiene practices among patient service assistants is alarmingly low. Proper and periodic training in the form of workshops and small group skill sections needed periodically.

Disclosure of Interest
None declared.

P358

Knowledge, perception, barrier, adherence of general hand hygiene adherence and it's affecting factors of sterile or non-sterile personnel working at operating room

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Introduction: General hand hygiene (gHH) was required for non-sterile personnel as well as sterile personnel working at operating room (OR), not to reservoir pathogenic agent on their hands. Numerous and various procedures would be conducted in OR and resulted in healthcare-associated infection regarding surgery.
Objectives: This study was carried out to investigate the level of knowledge, perception, barrier, and adherence of gHH, and also to identify the affecting factor of gHH for operating room personnel.
Methods: This study was cross-sectional study. A total of 244 personnel working at operating room (OR) was enrolled and a self-administered survey was distributed regarding knowledge, perception, and barrier as well as adherence of gHH, conducting a direct-observation of gHH concurrently.
Results: A total of 159 survey sheets were retrieved, and 438 opportunities of gHH was collected using a direct-observation. The gHH adherence was differed from the method using a self-administration or a direct observation. The gHH adherence was 83.4% on self-administration, but 68.5% on direct observation with statistical significance ($p < 0.001$), presented confirmative results in surgeon and anesthesiologist (85.4% vs 52.5%). The gHH of sterile personnel (85.8%) was significantly higher than that of non-sterile personnel (76.0%). Hierarchical linear regression was constructed by 3 models of demographic factors in 1st model, and demographic and occupational factors in 2nd model, demographic, occupational, and motivational factor in 3rd model. It revealed that perception, barrier, type of personnel (sterile vs non-sterile), and year of career were affecting factors of the gHH adherence.
Conclusion: The gHH adherence of non-sterile personnel was lower than that of sterile personnel, presenting wide gap between self-administration method and direct-observational method. As perception increases or barrier decreases, adherence of gHH increases. Therefore, improvement on perception and decrease of the barrier of gHH is necessary to prevent healthcare associated infection in OR. Additionally, direct-observational method for gHH would be preferred for surgeon and anesthesiologist than self-administered method.

Disclosure of Interest
None declared.

P359

Development of an electronic survey for the measurement of adherence to hand hygiene in a community hospital

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Introduction: Hand Hygiene (HH) is the most economical, simple and effective measure to reduce the risk of acquiring healthcare associated infections (HAI). The hands become a vehicle and contact transmission mechanism for various microorganisms, therefore ensuring adherence to HH is irreplaceable.
The participation of patients and caregivers is a strategy that optimizes their care, since it could positively influence adherence to HH.
Objectives: To describe the experience of incorporating an electronic survey (ES) to patients and/or caregivers as a contribution to measuring adherence to HH in non-critical areas.
Methods: Observational, descriptive study was carried out in a high complexity hospital with 625 non-critical beds areas with single and double rooms, in the period between May 15, 2022 and March 31, 2023. An electronic survey (ES) was designed within an institutional application which the patient and/or their caregiver can access during their hospital stay. Possibilities of answers (YES/NO) to the HH opportunities for moments before and/or after contact with the patient were included. The responses were also categorized into: physician, nurse and other professionals.
The dissemination for the use of the ES was carried out through notifications to users and an educational video. Infection control members trained patients and their caregivers and invited them to participate. The patients did not provide feedback to the health personnel.
Results: In the period analyzed, 1564 responses were received. The global adherence was 93.4% (CI 92.1;94.5). Adherence according to category was: 93.7% in physicians (CI 91.3;95.5), nurses 94.3% (CI 92;95.9) and others 92.5% (CI 89.8;94.5).
Conclusion: The incorporation of ES will collaborate in the inclusion of patients and caregivers in their health care due to the positive impact on adherence to HH, in addition to obtaining a greater number of continuous observations and extended over time.

Disclosure of Interest
None declared.

P360

Factors affecting hand hygiene adherence of inpatients in Korea

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Introduction: Hand hygiene (HH) of inpatients is also important to prevent healthcare-associated infections.
Objectives: This study aimed to identify factors affecting hand hygiene adherence in patients during hospitalization.
Methods: This study was a descriptive cross-sectional survey. A total of 169 patients who admitted to a tertiary hospital in Daegu participated in this study. Data were collected using a self-administrated questionnaire consisted of general characteristics, knowledge, attitude and adherence of HH from March 6 to 14, 2023. Data were analyzed using descriptive statistics, correlation analysis, and multiple regression analysis with SPSS/WIN 27.0 software.
Results: The mean age of participants was 56.8 years (range: 20–89), and the correct answer rate for HH knowledge was 75.2%. The attitude towards HH among inpatients was somewhat positive, with a mean score of 1.66 ± 0.92 point (range: − 3 to 3). In addition, pre-admission HH adherence (β = 0.667, $p < 0.001$) and caregiver 's HH adherence (β = 0.013, $p = 0.001$) were found to significantly influence HH adherence during hospitalization. The explanatory power of the factors identified in this study was 47.8%.
Conclusion: This study reveals that HH habits in daily life is the greatst impact on HH adherence during hospitalization. This highlights the importance of HH education for the general public, and the need for continuous public awareness campaigns.

Disclosure of Interest
None declared.

P361

Assessment of healthcare workers' hand hygiene knowledge and compliance in a Tunisian teaching hospital on the world hand hygiene day 2023

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Introduction: Healthcare-associated infections have significant impacts on patients and healthcare workers (HCW), leading to morbidity, mortality, and financial burdens.
Objectives: This study assessed hand hygiene (HH) knowledge and compliance among HCW in a university hospital to address suboptimal practices worldwide.
Methods: The program for the day included four workshops: registration, HH Quiz, HH pre-requisites audit, and hand rub technique audit. Participants signed up for activities during the registration workshop. The HH Quiz reinforced the 5 indications for HH and highlighted the importance of hand rub. The HH pre-requisites audit aimed to assess adherence to requirements such as appropriate clothing and jewelry removal. The hand rub technique audit evaluated the quality of the technique and provided a demonstration. Participants who answered the quiz correctly, followed HH pre-requisites, and performed the hand rub correctly received a certificate of appreciation.
Results: Globally 226 HCW participated in our event, nursing staff represented 65.5% of the total.
Regarding knowledge on the duration and product for handwashing, the rate of correct responses was 56.1% and 51.7% respectively.
Only 50% of the participants recognized the superiority of hand rubbing compared to hand washing and 41.7% identified the five essential indications for HH.
The pre-requisites for HH, were fully recognized by 67.8% of HCW.
Among the participants, 196 (86.7%) took part in the practical test for hand rub technique. Compliance with all pre-requisites for HH was observed within 42.3% of participants. Regarding the quality of hand rub technique, respect of the duration and steps were observed in 39.7% and 19.9% respectively.
Conclusion: In light of this assessment, there is a need to integrate HH into continuous professional development initiatives. Although, this evaluation and celebration activities are essential for reviving the multimodal strategy for HH improvement, implemented in the hospital since 2015.

Disclosure of Interest
None declared.

P362

Hand hygiene knowledge among healthcare workers in antiretroviral therapy clinics in north central Nigeria

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Introduction: Hand hygiene (HH) compliance among healthcare workers (HCWs), which is influenced by their HH knowledge, is a critical preventive measure for healthcare-associated infections (HAIs).
Objectives: To assess baseline HH knowledge among HCWs in antiretroviral therapy (ART) clinics in Nigeria to inform targets for IPC interventions.
Methods: A cross-sectional study was conducted in 30 ART clinics. HCWs with direct contact with patients or their environments were targeted (n = 525); 95% consented and were assessed using WHO's standardized self-administered HCW HH knowledge tool. All 25 questions were scored (1 for correct responses, 0 for incorrect/missing responses). Total scores were presented as percentages and grouped as good (> 75%), moderate (50–74.9%), and poor (< 50%). Descriptive and bivariate analyses were performed. Multivariable binary logistic regression assessed likelihood of moderate-to-good knowledge. Statistical significance was set to 5%.
Results: We assessed 500 HCWs; 15.0% were doctors, 38.0% nurses, 9.0% pharmacists, 8.0% laboratory scientists, 27.4% clinical assistants (CAs), and 2.6% cleaners/environmental hygienists. The mean knowledge score was 60.3% ± 3.1, with doctors scoring highest (64.6% ± 2.69) and CAs lowest (57.2% ± 2.93). Most HCWs (71.2%) demonstrated moderate knowledge of HH, 10.8% good knowledge, and 18.0% poor knowledge. HCW cadre and receipt of formal training on HH in the last three years were associated with HH knowledge (p-value = 0.018 and 0.006, respectively). Doctors were four times more likely (AOR = 4.0; 95% CI 1.6–10.1) and nurses over twice as likely (AOR = 2.2; 95% CI 1.3–3.9) to have moderate-to-good HH knowledge compared to CAs. Over 70% of HCWs responded incorrectly to questions on sources of germs responsible for HAIs and justifications for the five HH moments.
Conclusion: Our findings highlighted gaps in HH knowledge among HCWs in ART clinics. These gaps can be addressed with cadre-specific HH trainings, particularly emphasizing the chain of infection transmission and the five HH moments, as part of a broader improvement intervention.

Disclosure of Interest
None declared.

P363

Patient involvement in hand hygiene: perception of the multidisciplinary team through a focus group

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Introduction: Hand hygiene (HH) is considered the most effective measure to prevent and control healthcare-associated infections (HAIs), but improving HH remains a challenge. The World Health Organization (WHO) recommends that patients and families observe and comment on HH as a strategy to stimulate HCPs to perform this practice as a safety measure and part of their self-care. However, both the patient and the HCP may feel uncomfortable in this process. Thus, the guiding question of this research was: what is the HCP's perception of this HH patient engagement strategy?
Objectives: To evaluate the perception of the multi-professional team about patient engagement in the process of HH as a strategy to improve HCP adherence to this practice.
Methods: Qualitative research was conducted using the Focus Group (FG) technique with selected HCPs working in a 44-bed Step-down Unit from a private 700-bed hospital. The recorded data were analyzed using thematic content-modality analysis.
Results: In two FG sessions with 13 HCPs (mainly nursing staff), the professionals' perceptions were grouped into four central themes: patient involvement, adherence to HH, approach method, barriers, and suggestions. It was found that there is a significant difference in the acceptance of this strategy and that, depending on how the patient approaches the HCP, they may feel embarrassed or insulted. However, HCPs agree that the patient engagement strategy can significantly impact better HH practices. They suggested effective communication between HCPs and patients, awareness, and education strategies for HCPs and patients, including different materials such as pamphlets, videos, and posters.
Conclusion: These results showed that patients' involvement strategy is promising to improve HH. However, it is necessary to first engage professionals in this process and strengthen the organizational culture of patient safety to allow HCPs and patients' active participation to improve HH adherence, prevent HAI, and ensure the quality of care.

Disclosure of Interest
None declared.

Poster session: Standard precautions at the core of infection prevention and control

P364

Nursing students knowledge about standard precautions: a cross sectional research study

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Introduction: Healthcare-associated infection is a worldwide public health problem, and one of the key strategies for prevention, is the implementation of standard precautions. Like nurses, student nurses also perform multiple clinical procedures making them potential agents of cross-transmission of microorganisms and exposing them to occupational hazards.
Objectives: To assess the nursing students' knowledge of standard precautions.
Methods: A cross-sectional study was conducted with a convenience sample of nursing students. A self-administered online questionnaire, concerning basic infection control precautions, based on international recommendations (CDC), was made available to nursing students. The instrument contained two sections. The first section included sociodemographic data (e.g., age, gender, working student, and clinical practice carried out to date). The second section addressed the knowledge component, standard precaution (SP) for infection control, with a total of 19 questions. The SP domains studied were i) moments and time of hand hygiene, ii) respiratory hygiene/cough etiquette, iii) personal protective equipment, iv) cleaning and disinfection of patient care equipment and instruments/devices, v) hospital waste handling, vi) textiles and laundry, vii) safe injection practices, and viii) respiratory protective equipment.
Before data collection, a pre-test was carried out to assess the appropriateness of the questions using the oral reflection technique. Approval was obtained from the school's Ethics Committee.
Results: 152 nursing students were included in the sample. Of these, 78.3% were female, with a mean age of 21.58 years (SD = 3.37; Min of 19 and Max of 40 years). More than half of the students perceived their level of knowledge as "Good" (52.6%), and close to half (45.7%) reported having "Sufficient" knowledge. A strong correlation $r = 0.94$, positive and significant, $p = 0.006$ was found in the relationship between the overall level of knowledge and the number of internships.
Conclusion: Clinical practice settings should be safe places for patients and professionals. Thus, investing in training, improving knowledge, and implementing multimodal strategies are pivotal for nursing students and nurses to adhere to good infection control practices.

Disclosure of Interest
None declared.

P365

A multimodal strategy for standard precautions promotion at the core of prevention and control of infection in a teaching hospital of Tunisia: from formalization to implementation

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Introduction: Standard precautions (SP) are a set of measures that form the basis for preventing cross infections.
Objectives: This study aims to describe the dynamics of implementation of a multimodal strategy for promoting SP in a 700 beds teaching hospital of Tunisia between 2020 and 2022.
Methods: The implementation of the strategy was traced through the formalization of quality procedures and protocols, a pre-implementation practices assessment by direct observation and the training of healthcare workers (HCW). Then a post-implementation assessment was conducted, and feedback on the results was provided. These steps will be carried out in a recurring cycle.
Results: In 2020, a comprehensive quality procedure for SP was developed. A pre-implementation assessment was followed by a training program for department heads, supervisors, and quality representatives, including theoretical and practical sessions. Additionally, HCW received on-site training. Six months later, a post implementation assessment was conducted. The main results were as follows: hand hygiene compliance was 57.1% at pre-Implementation and 34.4% at post Implementation. Similarly, the use of gloves was 77.6% then 71.6%. Regarding personal protective equipment,

facial protection (surgical masks and face shields) decreased from 23.8% to 0.7% at post Implementation and gown protection decreased from 55.8% to 39.4%. As for respiratory hygiene, compliance decreased from 69.6% to 61.3%. The prevention of sharps injuries decreased from 79.4% to 65.9%. The highest compliance was observed in excreta management, however it decreased from 87.2% to 80.8%. Finally, environmental management improved, increasing from 68.1% to 71.5% at post implementation.
Conclusion: This paper did not intend to compare the practice of SP before and after implementation, but rather to assess the implementation process. The sustainability of this implementation is itself a real challenge in a context of developing countries with limited resources.

Disclosure of Interest
None declared.

P366

A road map of nudges in infection prevention and control

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Introduction: Nudges may play an important role in improving infection prevention and control (IPC) in hospitals.
Objectives: This study aims to provide an overview of different objectives, strategies and methods of the nudge framework implemented in hospitals to promote IPC targeting healthcare workers (HCW).
Methods: The databases Pubmed, Epistemonikos, Web of Science and PsycInfo were searched on two occasions. The initial search yielded 9 hits. Consequently, we opted to broaden the search criteria and conducted a second search. We expanded the concept of nudge by introducing "nudge sensu lato (s. l.)", which incorporates insights and approaches from sources beyond the traditional nudge framework "nudge sensu stricto (s. str.)" while maintaining the same objectives, strategies, and methods. During the second search abstracts were screened and selected papers were read fully to confirm suitability by three independent reviewers from an interdisciplinary team.
Results: 5.706 unique primary studies were found and 67 met the inclusion criteria. Only 4 (6%) articles were listed as nudges s. str. and focused on changing HCW behavior related to hand hygiene (HH). Among the remaining 63 nudge s. l. articles, 52 (83%) also had the primary objective of changing HCW behavior related to HH, while 9 (14%) focused on adherence to guidelines and 2 (3%) on the disinfection of equipment. Regarding the association between objectives and strategies, it was observed that all 29 "Environmental cueing and priming" interventions followed the goal of increasing HH, while no strategy using accountable justification was used for this objective. In contrast to the previous finding. Furthermore, the strategy of "Alerts and reminders" was utilized for all goals in the interventions.
Conclusion: The proposed extension of the nudge frameworks enriches the concept by incorporating valuable information. The data displays a few clear pathways between intervention objectives, strategies and mediums leading us to the conclusion that there is under the nudge framework specific well suited combinations of nudge strategies and mediums for each distinct objective. Further development of our nudge roadmap has the potential to enhance the capacity of the IPC community in implementing more effective nudge interventions.

Disclosure of Interest
None declared.

P367

Hygiene practices when connecting and disconnecting patients on arteriovenous fistula in hemodialysis: an audit by direct observation in central Tunisia 2022

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Introduction: The complexity and technicality in hemodialysis increase the risk of cross infection. The standard precautions are the basis of the prevention of cross-transmission of microorganisms.
Objectives: The objective of this work was to describe hygiene practices when connecting and disconnecting patients on arteriovenous fistula in the hemodialysis structures in 2022.
Methods: This is an Audit of hygiene practices by direct observation of healthcare workers during the connection and disconnection of patients on arteriovenous fistula in the hemodialysis centers of Monastir; a governorate in central Tunisia.
Results: We conducted 120 observations (50 in two state centers and 70 in 5 private centers). The main deficiencies were related to non-compliance with blood exposure accident prevention practices with eye protection less than 1% and correct handling of sharp objects not exceeding 12.5%. Dollies and/or products (drugs or medical devices, fields), were moving from one station to another in 93.3% of the observations. Drugs were prepared in non-specific areas in 95.8% of the observations. The 4-step cutaneous preparation of the puncture site area (detersion, rinsing, antisepsis, drying) and the upper arm down was done correctly in less than 2% of the observations. Cleaning of the patient's arm after disconnection was observed in only 3.3% of situations.
Conclusion: In the light of these findings it appears that additional training sessions are needed: patient education, the use of safety equipment, compliance with care procedures and the application of "standard" precautions effectively. For this, all the stakeholders are asked to be engaged and the national level represented by the Ministry of Health should take the initiative to facilitate this challenge.

Disclosure of Interest
None declared.

P368

Infection control practices and knowledge of antibiotic use and infection control among Thai medical students

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Introduction: Infection control measures are vital for preventing infectious diseases transmission. However, data on infection control practices among medical students and their association with knowledge of antibiotic use and infection control are limited.
Objectives: To assess infection control practices and their associations with knowledge of antibiotic use and infection control among medical students.
Methods: An online survey was conducted from January to April 2023 among clinical-year medical students from a Thai public university. Knowledge of antibiotic use and infection control was assessed based on the correct responses to the 18 provided statements (total score of 18).

Results: Of the 111 participating students, 51% were females, 31%, 32%, and 37% were 4th, 5th, and 6th year medical students, respectively. Most students reported always washing their hands after contact with patient blood or body fluid (93%) and before performing aseptic procedures (73%), while 55%, 34%, and 23% reported always washing their hands after examining patients, or contacting patient surroundings, and before examining patients, respectively. Only 36% indicated they had not worn the same unwashed white coat multiple times, 23% never placed a patient's chart on the patient's bed or surroundings, and 18% reported always cleaning their stethoscopes before examining new patients. The median knowledge score was 14 and was comparable between students of each academic year. Students who almost or always washed their hands after contact with patient blood or body fluid had higher median knowledge score than those who did not (14 vs. 10; $p < 0.001$). In multivariable analysis, graduating from an international high school was associated with washing hands properly less than half of the time (adjusted odds ratio 3.34; $P = 0.02$).
Conclusion: The study reveals inadequate adherence to infection control measures, including the five moments of hand hygiene, gown changing and stethoscope cleaning among the students. These findings and the associations between infection control practices, knowledge, and other factors should be considered for improving infection control practices and relevant knowledge among these future physicians.

Disclosure of Interest
None declared.

P369

Impact of COVID-19 pandemic on healthcare workers behaviour to infection prevention and control in healthcare facilities in Nigeria: a qualitative study

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Introduction: Despite the high burden of infectious diseases in Nigeria, best practices of infection prevention and control (IPC) by healthcare workers remain sub-optimal. Consequently, the cross-transmission of avoidable infections in the patient care continuum remains high and calls for the need to understand the underlying factors. Recognising the dynamics and complexity of human behaviour, a growing number of studies have used behavioural theories to understand the factors that influence healthcare workers behaviour towards IPC. However, the available evidence is mainly from western countries, with limited evidence from Nigeria.
Objectives: To assess healthcare workers knowledge, perception and practice of IPC before and during the covid-19 pandemic in healthcare facilities in Nigeria.
To use a Theoretical Domains Framework (TDF) based on the Capability, Opportunity and motivation for Behaviour (COM-B) to identify enablers and barriers to compliance with IPC.
Methods: A descriptive qualitative study design. Focus groups were conducted via Microsoft Teams using a semi-structured guide. By applying an inductive thematic analysis, the audio files were transcribed verbatim and data was coded. Then, through sorting, organising of codes and examining emerging patterns in the data, sub-themes were identified and thereafter broader overarching themes were conceptualised and reviewed for validity. Sub-themes appearing ≥ 3 times were highlighted as either an enabler or a barrier to compliance with IPC practice.
Results: As described by participants in this study ($n = 20$), four main enablers to compliance with IPC were: education and training on IPC, availability of resources/supplies for IPC, perceived threat to life and leadership buy-in. Three main barriers to compliance include: the lack of resources, shortage of personnel, ambiguous and changing guidelines.
Conclusion: The Covid-19 pandemic improved knowledge, perception and practice of IPC among healthcare workers in Nigeria. This study enriches the evidence on impact of Covid-19 on healthcare workers behaviour towards IPC and deepens the understanding of important factors that influence these behaviours, which is valuable to inform and design future intervention strategies for improved compliance and patient safety.

Disclosure of Interest
None declared.

P370

Effectiveness of multimodal intervention to improve blood culture contamination rate in a tertiary care hospital in South India

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Introduction: Blood cultures are critical investigations performed in a Clinical Microbiology laboratory in a patient with suspected sepsis. The accuracy and reliability of culture results depends on the proper collection, handling, and processing of blood samples. Among these steps sample collection is a very critical step as improper skin asepsis may result in contamination with the normal skin flora or environmental contaminants. Such contamination can lead to false-positive results. To address this issue, a multimodal intervention was conducted by the HIPC to reduce blood culture contamination rates.
Objectives: To reduce the Blood culture contamination rate within the acceptable limit of CLSI which is < 3%.
Methods: Sample size: All the blood culture specimens received during the study period.
Timeframe: 6-month study period from August 2022–January 2023. It is again split into two phases of 3 months each:

Pre-intervention group—August 2022–October 2022
Intervention group—November 2022–January 2023
The blood culture contamination rate: Was defined as
All the blood culture bottles growing the above-mentioned contaminants * 100.
Total number of blood cultures received during the period.

Based on the results of the pre-intervention group, an action plan was developed which involved developing or revising standard protocols, providing staff training on proper blood culture collection techniques.

Results: Risk factors contributing to the high Blood Culture contamination and other additional factors are depicted in a fishbone diagram. The study collected a total of 3883 blood culture bottles from 1851 patients during a 6-month period. The preintervention group consisted of 1743 bottles from 897 patients, and the intervention group consisted of 2140 bottles from 954 patients. In the Preintervention group total of 97 contaminants were identified out of 1743 bottles and in the Intervention group 55 contaminants were identified from 2140 bottles.
The study found that the contamination rate of BC specimens was reduced from 5.5% (97/1743*100) in the pre-intervention group to 2.5% (55/2140*100) in the intervention group (p-value < 0.05).
Conclusion: Clinical microbiology laboratories should be preemptive in instituting policies and providing direction to the clinical team with respect to optimizing the BC collection protocol.

Disclosure of Interest
None declared.

P371

Nurses perceptions and attitudes regarding oral hygiene in hospitalized patients

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Introduction: Oral hygiene protocols have been shown to reduce nosocomial pneumonia as well as other systemic diseases. Oral health in hospitalized patients tends to be poor, nursing care practices may be inadequate and do not reflect recent advances in knowledge.
Objectives: The purpose of this study is to explore and discover nurses' attitudes towards oral hygiene care of adults admitted to hospital.
Methods: This is a descriptive cross-sectional study with a convenience sample. Data were collected through a self-administered questionnaire to nurses in a hospital in northern Portugal from 15 to 24 May 2023.
Results: The sample consisted of 122 individuals of which 86.60% (n = 102) were female and 13.4% (n = 20) were male. Ages 87.7% (n = 107) have more than 30 yeas old and 58.17 (n = 71) have more than 15 years of work experience. 36.06% (n = 44) were nurse specialists. On a numerical scale (1 to 5) of importance of oral hygiene care, 0.82% (n = 1) responded 3, 17.21% (n = 21) responded 4 and 81.97% (n = 100) responded 5. 49.18% (n = 60) were aware of the hospital protocol on oral care but of these only 45% (n = 27) of these report that they comply with it. The difficulties encountered in implementing the oral care protocol were lack of time, lack of material resources, lack of training and others. In relation to oral hygiene training, 56.56% (69) had no training during basic nursing graduation, 78.69 (n = 96) had no specific training during their professional practice and 68.85 (n = 84) reported that they did not have sufficient knowledge to provide adequate care.
Conclusion: Nursing staff consider oral care to be very important, but more than half were not aware of the existing hospital protocol. A large majority did not apply it. Among the difficulties encountered, the lack of training and time dedicated to oral care seem to be the most important. There is a significant lack of training for most of the individuals in the sample, both in basic and postgraduate training in oral hygiene care.
The results of the sample show the importance of promoting and raising awareness of the importance of oral hygiene care in hospitalized patients among nursing staff.

Disclosure of Interest
None declared.

Poster session: Healthcare workers safety and public health issues

P372

Infection prevention and control (IPC) public health emergencies working group

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Introduction: Experiences with recent and ongoing public health emergencies (PHE) highlight the critical role of IPC in preparedness, operational readiness, and response efforts for emerging and re-emerging pathogens. Given the increasing need for prompt expert advice in the context of emerging pathogens to enable rapid and effective response to PHE, an IPC working group (WG) was established in August 2020 under the leadership of WHO secretariat.
Objectives: To describe the objectives, composition, and preliminary achievements of the IPC-PHE-WG.
Methods: The IPC-PHE-WG is a sub group of the Global Infection Prevention and Control Network (GIPCN). The objectives of the IPC-PHE WG is to support Member States IPC response efforts in the event of a PHE (this includes outbreaks, disasters, conflicts), through provision of: i) timely advice in the context of emerging or re-emerging public health threats; ii) peer review and dissemination of rapid advice guidance; iii) facilitate collaboration across existing response networks; iv) contribution to defining IPC research priorities in the context of PHE. The membership is composed of a core group and Ad Hoc members that will be invited according to expertise needs depending on threat.
Results: Since established, the IPC-PHE WG has met five times (virtual and on site). It has provided support for the Sudan Virus Disease (SVD) Outbreak in Uganda through provision of advice regarding decontamination timelines and appropriate personal protective equipement use in community settings, management of infectious liquid waste in non-treatment unit, and validation of an SVD treatment unit IPC assessment checklist. Related to the multi-country Cholera outbreak the IPC-PHE-WG defined indicators for healthcare-associated infection surveillance and quality of care, and supported development of IPC standard operational procedures. Rapid evidence review to support IPC guidelines were performed for Monkeypox disinfection and cholera surveillance. The IPC-PHE-WG participated in a research prioritization exercise related to IPC in the context of Ebola Disease and Marburg Disease outbreaks.
Conclusion: The achievements of the IPC PHE WG in a relative short period demonstrate its potential to support worldwide evidence-based implementation of IPC practices in the context of outbreaks.

Disclosure of Interest
None declared.

P373

Difficulties and errors using different types of personal protective equipment: randomized crossover trial

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Introduction: Personal protective equipment (PPE) can affect communication, cognitive functioning, and individual or teamwork performance of health workers (HW).
Objectives: This study describes errors in technique, PPE readjustments, and communication challenges while wearing diverse PPE models.
Methods: A randomized crossover trial, performed in São Paulo, Brazil and Bologna, Italy (respectively, 45 and 42 participants) (June-November/2021). HW were observed while performing tasks in two types of settings: high-fidelity simulation (pre-defined tasks) and intensive care units (routine care). Each study site compared a lightweight powered air purifying respirator (L-PAPR) against a control: the N95 respirator plus face shield (N95 + FS)—in São Paulo—and a traditional powered air purifying respirator (T-PAPR)—in Bologna. The sequence of PPE type was randomized and cross-over.

Results: In the simulation, the main errors observed were incorrect donning and doffing techniques; hand hygiene failure following doffing, and incomplete decontamination of reusable PPE. The errors occurred mainly during auscultation and proning. In routine care, the average number of errors observed were: N95 + FS = 3.61; L-PAPR = 3.03; T-PAPR = 1.65. Breaches in donning were similar for N95 + FS (n = 29) and L-PAPR (n = 29); breaches in doffing were more frequent for N95 + FS (n = 43) when compared with L-PAPR (n = 30). No doffing breaches were observed for T-PAPR. Errors when performing tasks were more frequent using L-PAPR (n = 930/307) than with comparators (n = 762/266). The recurring breaches were touching facial visor of L-PAPR in the care environment and the L-PAPR touching chin or shoulder during patient care. Additionally, readjustments and spoken communication difficulties were more frequent with L-PAPR.
Conclusion: Design improvements in L-PAPR as well as training programs are required to reduce errors in PPE performance.

Disclosure of Interest
None declared.

P374

Identification of antimicrobials related to medication errors and adverse reactions when administered to hospitalized patients during the COVID-19 pandemic

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Introduction: COVID-19 has contributed to the indiscriminate use of antimicrobial drugs (AM).
Objectives: The present study aimed to investigate AM most frequently associated with medication errors (ME) and adverse drug reactions (ADRs) when administered to hospitalized patients during the pandemic, and related risk factors.
Methods: This was a cross-sectional pharmacoepidemiological study. We retrospectively evaluated the medical records of all admitted patients who received AMs considered restricted by the study facility in 2020 to identify possible ME and ADRs. Data were analyzed using the STATA program. We applied univariate (two-tailed Fisher's exact test) and multivariate (logistic regression model) analyses to investigate potential risk factors for ME and ADRs.
Results: Among 359 patients included, 25.07% (90/359) experienced at least one ME, while 27.58% (99/359) experienced one or more ADR. The main AM involved in ME were benzylpenicillin potassium, vancomycin, ertapenem, and acyclovir. The principal ADR identified was nephrotoxicity. Amphotericin B-deoxycholate, ganciclovir, sulfamethoxazole + trimethoprim, and vancomycin were the main AM associated with ADRs. Most patients did not experience injury from ME, but from ADRs, with nephrotoxicity being predominant.
On the multivariable analysis, ME was independently associated with age (OR 1.02; 95% CI 1.00–1.03), dementia (OR 0.21; 95% CI 0.06–0.72), and the number of AM prescribed (OR 1.3; 95% CI 1.15–1.47). On the other hand, ADR was independently associated only with the number of AM prescribed (OR 1.71; 95% CI 1.49–1.97).
Conclusion: During the pandemic period, a quarter admitted patients experienced at least one ME and almost one third of them experienced at least one ADR, associated with AM prescriptions. Our findings highlight the clinical relevance of AM stewardship programs in the acute-care hospital setting.

Disclosure of Interest
None declared.

P375

Infections screening and vaccination status of food handlers working in the tertiary care hospital in south India—a report

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Introduction: Globally, food safety is a major concern for consumers, food service institutions and regulatory authorities. The risk of death from hospital foodborne outbreaks were estimated to be three times higher than in other settings. Majority of the foodborne diseases are prevented by appropriate screening, pre-employement vaccination and regular follow up vaccinations. However there is very limited data available regarding infection screening practices and pre-employement vaccination of food handlers working in hospitals across the tertiary care hospitals in South India. In this study we aimed to assess the infection screening & vaccination practices of foodhandlers working in tertiary care hospitals across South India.
Objectives: To assess the infections screening and vaccination status of food handlers working in the tertiary care hospital in South India.
Methods: This prospective observational cross sectional study was conductied during the month of May 2023 among food handlers working in tertiary care hospitals in South India. Data regarding demographics, category of staff, work experience, vaccination details, Annual health checks and medical leave particulars were collected using validated tool by infection control team. The results are analyzed using excel sheet with simple statistics.
Results: During this study 62 food handlers data was collected and analyzed as shown in the Table -1 & Table -2 below.
Table-1 Category of food handlers

Employee	Numbers
Chefs	14
Adminstration staff	14
Steward	28
Kitchen aid	6
Total	62

Table 2.
Table -2 Vaccinations and infection screening of food handlers.

Infection screening and vaccination status	Percentage
Hepatitis A vaccination	32%
Hepatitis A Ig G screening	17%
Typhoid vaccination	64%
Stool culture for Typhoid carrier state	32%

Conclusion: Nearly 65% of the food handlers were vaccinated for typhoid, however vaccination for Hepatitis A, stool cultures and serological screening for immunity against Hepatitis A was very low among the food handlers in this study. Henceforth hospital infection control teams should periodically monitor these parameters to avoid outbreaks of infections in hospitals.

Disclosure of Interest
None declared.

P376

Current practices regarding preparation of injectable medication

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Introduction: The cause of nosocomial bloodstream infections is multifactorial. The preparation of intravenous medication is one of the factors that gain relevance in this type of infection, due to the several non-conformities that can happen in this process. These non-compliances, committed by nurses, contribute to the occurrence of this type of infection.
Objectives: To characterize nurses` clinical practices regarding preparation of intravenous medication.
Methods: Observational, cross-sectional and descriptive study, with a quantitative approach. The non-probability sampling type snowball includes nurses from clinical practice. We used a questionnaire in the "google forms" tool that allowed for sociodemographic and professional characterisation and questions on the principles for safe practices in the preparation of intravenous medication. Descriptive statistics were used to analyse data and meet the objective.
The study has already been approved by the Ethics Committee of the Nursing School of Porto (ADHOC_3 2021). Participants only have access to fill in the questionnaire after giving their free and informed consent. Participants will be guaranteed data confidentiality and anonymity, by assigning a code known only to the researcher.
Results: There were 237 nurses surveyed. According to the recommendations for safe preparation of intravenous medication, these nurses commit several non-conformities. Most of them prepare the medication in a space that is not used exclusively for this act (68.8%), that is not completely free (72.2%) and where there is circulation of people (68.8%). Regarding hand washing, only 3.8% of the nurses always do it before preparing the medication; a minimum percentage of participants always disinfect the vial access diaphragm (1.3%) or ampule neck (0.4%); 6.3% always use the aseptic technique; 2.1% disinfect the tray and only 0.8% carry the medication on it.
Conclusion: The preparation of intravenous medication is nurses' responsibility and patient safety depends on the quality of health care. To ensure safe practice, nurses should always perform each of the guidelines. We believe our results are fundamental for promoting behaviour change strategies regarding this procedure.

Disclosure of Interest
None declared.

P377

Nepal's effort towards improved patient safety and infection prevention and control

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Introduction: The constitution of Nepal 2015 has promised basic health services as a fundamental right of the Nepalese. After remarkable success in achieving the targets of MDGs, Government of Nepal has been initiating various interventions to achieve the health-related SDGs. Nepal has recognized patient safety and infection prevention and control as one of the priorities in health sector policies.
Objectives: The objective of this paper is to describe the current situation of patient safety, infection prevention and control at the federal, provincial, and local levels government in Nepal. This paper aims to analyze the progress, government efforts to adopt and implement Global Patient Safety Action Plan in local context.
Methods: Various national reports, plan, act, policies and guideline developed by Government of Nepal were retrieved and analyzed to prepare this paper. This paper was prepared by reviewing secondary data sources available on internet webpages, journals, reports and articles.
Results: Government of Nepal has committed to ensure the patient safety at each level of service delivery points. National Health Policy, Public health service act, regulations, Periodic plan and health sector strategies are directed towards achieving the UHC through improving access on quality health services. Country has endorsed National action plan on AMR inline with the global strategy as well as the development and update of the patient safety roadmap, clinical audit, and participatory social audit have been initiated. Similarly, minimum service standards, quality improvement tools, standard treatment protocols have been developed and is in practice at each level of healthcare facilities.
Conclusion: Despite of various legislative and programmatic efforts, there are several gaps to be addressed in Nepal. Our review indicates that developing, implementing, and monitoring patient safety standards across health care facilities at all levels must be initiated. A proper mechanism should be established to monitor the client satisfaction and address the identified issues at all level to adopt the global patient safety actions for further strengthen national efforts.

Disclosure of Interest
None declared.

P378

Strategies on safe handling and disposal of cytotoxic products in preventing infection and improving infection control among health care works in MTRH_Kenya

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Introduction: Hemato-Oncology Clinics (H/O) in sub-Saharan Africa pose health risks for Health Care Workers handling cytotoxic drugs. Moi Teaching and Referral Hospital provide specialized care for hematology/oncology patients in Kenya. HCWs at MTRH are at high risk of exposure to cytotoxic products, which require safe handling/disposal for infection control.
Objectives: This study aimed to develop and assess the effectiveness of a safe handling and disposal model for cytotoxic products in preventing infection and improving infection control for HCWs.
Methods: A study on 57 HCWs in MTRH's H/O Clinic (Aug-Dec 2019) used pre/post-intervention design. Educational program included lectures, demos, exercises, and feedback. It taught HCWs about risks of cytotoxic drugs and safe handling/disposal practices. Administrative, engineering, and PPE measures used to reduce hazards to workers.
Results: Results showed that educational programs effectively improved HCWs' knowledge, attitudes, and practices towards safe handling and disposal of cytotoxic products. There was a significant improvement in the mean score of knowledge, attitude, and practice. Compliance with the recommended personal protective equipment was higher after the intervention, with a significant increase in the use of gloves, gowns, and masks. Use of appropriate disinfectants and spill management techniques also increased significantly after the intervention.

Knowledge mean score improved from 13.6 to 18.9 $p < 0.001$, attitude mean score from 25.6 to 27.93 $p < 0.001$, and practice mean score from 7.28 to 8.46 $p < 0.001$. Changes observed in HCWs' knowledge/practices towards PPEs, disinfection, spill management. Compliance with recommended PPEs was higher post-intervention: gloves $p = 0.001$, gowns $p < 0.001$, masks $p < 0.001$. Use of appropriate disinfectants/techniques increased significantly $p < 0.05$. HCWs' practices towards spill management significantly improved.
Conclusion: Implementing this model improves safety and health of HCWs, patients & visitors, maintaining a safe environment in the H/O Clinic at MTRH. It emphasizes educating HCWs to handle/dispose cytotoxic products safely. Success can serve as blueprint for other healthcare facilities.

Disclosure of Interest
None declared.

P379

Assessing safety culture in maternity and Gynecology Center of a Tunisian Tertiary Hospital: a census survey using HSOPSC tool

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P379

Introduction: Patient safety culture is an increasingly important and decisive concept in the field of healthcare.
Objectives: To evaluate patients safety culture among health professionals working.
Methods: A cross-sectional study was conducted among health professionals.
Data was collected using a self-administered questionnaire. This questionnaire consists of two parts: the first part consists of the collection of socio-demographic and professional characteristics. The second part consists of the validated version in French of the Hospital Survey on Patient Safety Culture (HSOPSC) questionnaire.
Results: A total of 142 questionnaires were approved with a response rate of 74.8%. The professional's perception of safety was judged as acceptable in 57.0% of cases. Only the "Teamwork" dimension of the CSS scored above 75%, while two dimensions scored below 50% and require improvement. Healthcare professionals with less than five years of experience exhibited more positive responses to the "Experience Staffing and Work Pace" and "Hospital Management Support for Patient Safety" dimensions ($p = 0.04$ and 0.01, respectively). A statistically significant difference in positive responses between medical and paramedical staff was found for the dimensions: "Response to Error" "Communication About Error"; "Hospital Management Support for Patient Safety", "Handoffs and Information Exchange" and "Overall Perception of Safety" ($p = 0.02$; 0.05; 0.04; 0.02 and0.04 respectively). The impact of participation on risk management committees on patient safety culture remains controversial. On one hand, committee participants showed significant advantages in dimensions such as "Teamwork," "Communication Openness," and "Hospital Management Support for Patient Safety" (p-values of 0.05, 0.01, and < 0.0001, respectively). On the other hand, their scores were lower in certain dimensions, including "Organizational Learning—Continuous Improvement" "Response to Error" and "Overall Perception of Safety" ($p = 0.01$; $p < 10^{-3}$ and $p = 0.05$ respectively).
Conclusion: Through this study, we were able to obtain a comprehensive overview of the current state of our healthcare system and identify areas that require improvement.

Disclosure of Interest
None declared.

P380

Influence of different fistulas cannulation techniques on the incidence of dialysis events: buttonhole and rope-ladder

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Introduction: Hemodialysis (HD) patients are often in immunocompromised status and require frequent or long-term vascular access and they are therefore at risk for developing infections, leading to increased mortality, prolonged hospitalization, and elevated health care costs. The buttonhole (BH) technique is an alternative method of cannulating the fistula. However, the balance of risks and benefits of the BH compared with the rope-ladder (RL) technique is uncertain.
Objectives: Our study aimed to investigate the influence of different puncture methods on HD patients with fistulas, through comparing the rates of dialysis events (DEs).
Methods: A total of 175 outpatient hemodialysis patients with fistulas in a large teaching hospital from July 2021 to July 2022 were selected, including 63 cases in BH technique group and 112 cases in RL technique group. The occurrence of DEs in the two groups were compared and analyzed. DEs were monitored using the dialysis event protocol developed by National Healthcare Safety Network of CDC in the United States. Three types of DEs including IV antimicrobial start, positive blood culture, and pus, redness, or increased swelling at the vascular access site were monitored throughout the entire month.
Results: The mean age of BH group was (55.71 ± 13.829) years old, and the dwell time of fistula was (2343.15 ± 1586.262) days. The mean age of the RL group was (57.79 ± 14.290) years old, and the dwell time of fistula use was (1827.05 ± 1669.880) days. There was no significant difference between the two groups. A total of 4 cases of DEs occurred, including 1 case of IV antimicrobial start, and 3 cases of pus, redness, or increased swelling at the vascular access site, all of which occurred in the BH group. There was statistical significance in the incidence of DEs between the two groups ($p = 0.016$); there was no statistical significance in the rate of IV antimicrobial start between the two groups ($p = 0.360$); there was statistical significance in the occurrence of pus, redness, or increased swelling at the vascular access site between the two groups ($p = 0.045$).
Conclusion: Compared with RL technique, BH technique has a higher incidence of DEs in patients with fistulas. It is very important to adopt RL technique and change puncture points in a planned way to prolong the service life of fistulas and reduce the occurrence of DEs.

Disclosure of Interest
None declared.

P381

A root-cause analysis of in-hospital exposure to tuberculosis at a tertiary hospital in Korea

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Introduction: Substantial healthcare personnel and hospitalized patients continue to face significant exposure to active tuberculosis (TB) patients in Korea.
Objectives: This study aims to investigate the root causes of in-hospital TB exposure events and approaches to mitigate them.
Methods: We retrospectively reviewed medical records of patients diagnosed with pulmonary TB at a tertiary hospital in Korea between January 2016 and March 2021. Using multivariate logistic regression analysis, which included demographic and clinical variables, we

analyzed the risk factors associated with significant in-hospital TB exposures. An independent expert panel conducted a root-cause analysis to assess the preventability and the underlying cause of each TB exposure event.
Results: Among 1,106 patients diagnosed with pulmonary TB, 356 were classified as significantly infectious cases. Of these, 59 (16.6%) in-hospital exposure events occurred. The independent risk factors for significant exposures were failure to suspect TB on an imaging study (adjusted odds ratio [aOR], 5.16; 95% confidence interval [CI], 2.69–10.26; $P < 0.001$) and department affiliation other than infectious disease or pulmonology (aOR, 6.88; 95% CI, 3.56–14.01, $P < 0.001$). In the root-cause analysis, 32 (54.2%) of the exposure events were deemed unpreventable, 20 (33.9%) were possibly preventable, and 6 (10.2%) were preventable. Failure to follow appropriate precautions after suspecting pulmonary TB and misinterpretation of imaging results were identified as the main errors in preventable cases.
Conclusion: Current TB control policies have not effectively prevented significant in-hospital TB exposures, with over half of the exposure events being unpreventable. To reduce the risk of TB exposure in hospitals, early suspicion followed by appropriate preventive measures should be prioritized. Additionally, infrastructure adjustments such as reducing shared rooms should be implemented.

Disclosure of Interest
None declared.

P382

Epidemiological preparation in the monkey pox epidemic

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Introduction: The recent global outbreak of the monkey pox virus in humans was declared a public health emergency by the World Health Organization in July 2022.
Due to its characteristic's' most of the high risk population was located in Tel Aviv district.
Clalit health care organization has prepared to provide a quick response from an epidemiological point of view, to locate the population, establish sampling sites and carry out vaccinations according to predetermined criteria. An adjustment in infection prevention processes was required for the new epidemic among the population.
Objectives: Locating the population for monkey pox sampling and vaccination.
Training teams for Injection prevention.
Methods: The Tel Aviv district opened 10 sampling centers and 5 vaccination centers that responded to the population that met the criteria. Infection prevention training was carried out, which included means of detection in case of suspected infection and protective actions.
Skilled personnel were recruited who underwent training and guidance and provided daily assistance in the various centers.
Results: The two-dose regimen vaccine was provided to high-risk groups that was characterized by sociodemographic and clinical risk factors. In an analysis of 2,054 male individuals who met vaccine eligibility criteria, 1,037 (50%) were vaccinated during the study recruitment period and completed at least 90 days of follow-up.
Conclusion: Six months after the initial worldwide spread of monkey pox, the outbreak contained, mainly attributed to vaccination efforts and behavioral changes. The covid-19 epidemic that preceded the monkey pox, helped the organization to prepare quickly and provide an optimal response.

Disclosure of Interest
None declared.

Poster session: Healthcare worker education: How to improve?

P383

Professional challenges for infection prevention and control (IPC) teams associated with managing resistance, emotions, and task ambiguity: results of a national survey on associations with work strain

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Introduction: IPC teams are constantly confronted with intense emotions in their daily work, as they are significantly involved in many change processes with frontline staff, e.g., when promoting compliance with basic IPC measures. In addition, they are particularly confronted with contradictions due to their role as interface communicators.
Objectives: To identify IPC team members' perceptions of work strain and interpersonal challenges (managing emotions, resistance, and task ambiguity) in hospitals in Germany. In addition, the aim was to identify their needs in terms of further education.
Methods: In the **IP-POWER** study (**I**nfection **P**revention with head and heart: Psychological em**power**ment of infection prevention and control teams, German Clinical Trial Register ID DRKS00031879), a nationwide online survey was conducted among IPC team members in hospitals in autumn 2022. Contact data were compiled on the basis of a directory of hospitals published by the Federal Statistical Office of Germany. Customized items for the online survey were developed within the project.
Results: N = 465 IPC team members from hospitals in all 16 federal states participated. Overall, work strain was relatively low (mean of 2.4 on a scale of 1 to 6), while role clarity and self-efficacy in managing the emotions/motivation of frontline staff, and resistance to IPC interventions were higher (means between 4 and 5). Multiple linear regressions showed that for both physicians and nurses, self-efficacy in dealing with resistance had a stronger protective effect on work strain than in dealing with emotions (physicians: $\beta = -0.41$, $p < 0.001$, vs. -0.03, ns; nurses: $\beta = -0.33$, $p < 0.001$, vs. -0.13, $p = 0.02$), whereas task ambiguity was a risk factor ($\beta = 0.34$ and 0.27, $p < 0.001$). The greatest need for further education was reported for managing resistance and emotions, whereas it was least for IPC skills training.
Conclusion: IPC team members in German hospitals report substantial task ambiguity. Work strain is strongly affected by lack of self-efficacy to deal with frontline staff resistance, followed by task ambiguity. Based on these findings, implications for the IP-POWER intervention are derived.

Disclosure of Interest
None declared.

P384

Effectiveness of a mentored E-learning course to develop competencies in IPC supervision and management

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Introduction: The AMR Learning Initiative is a learning program developed by the Médecins Sans Frontières Academy for Healthcare and the British Society of Antimicrobial Chemotherapy with the aim of addressing the global challenge of antimicrobial resistance, reducing the spread of healthcare-associated infections and improving the management of infectious diseases. The IPC Supervision and Management Course of this initiative focuses on strengthening the knowledge and skills of the IPC professionals working in MSF-supported healthcare facilities.
The course is delivered essentially online with a provision of individual mentoring by expert IPC professionals. Two cohorts of participants have already taken place graduating fifty-eight participants.
Objectives: Pre- and post-course evaluations assess the course's effectiveness to build competencies and transfer skills. It details the interventions that participants are managing to implement from their enrolment in the course as well as the obstacles that they're facing. It also collects recommendations for better learning transfer to working practice from the course participants and stakeholders.
Methods: A Competency Gap Assessment assessing knowledge, skills, and confidence is run before and after the course. Secondly, six months after graduation, an online survey is sent to all graduated participants, their line managers, and their headquarters advisors. Each participant who completed the survey is then interviewed to get specific insights and recommendations.
Results: Based on the CGA the confidence level of the participant to perform IPC supervision tasks increases considerably. In terms of IPC interventions that the course participants manage to implement in their healthcare facilities as a benefit of the course: the majority have a functional IPC Committee and an action plan. They are regularly conducting assessments and audits, including HAI surveillance or hand hygiene compliance. They also train and educate healthcare staff, contributing to IPC guidelines implementation. Finally, more than a third have been managing an HAI outbreak.
Conclusion: This IPC Supervision and Management Course represents a significant step towards building capacity and expertise in IPC. By equipping IPC professionals with the necessary knowledge and skills, the course plays a crucial role in enhancing the quality of care and safeguarding the effectiveness of antimicrobial agents.

Disclosure of Interest
S. Daho Employee of: I'm an employee of Médecins Sans Frontières.

P385

A bilingual competency self-assessment tool for infection preventionists: development and content validation

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Introduction: Specific competencies are essential for infection preventionists to achieve the best outcomes of infection prevention and control programs.
Objectives: To develop and validate the content and the response process of a bilingual tool for self-assessment of infection preventionists´ competencies**.**
Methods: The conceptual structure and generation of items in Portuguese and English followed the World Health Organization' Core Competencies for Infection Prevention and Control Professionals. Content validity was evaluated by a panel of Portuguese or English native speakers with expertise in the subject studied. The experts received, via email, an invitation letter with the guidelines and concepts to be used, and an Excel® spreadsheet version of the tool. The assessed aspects of the tool content were: clarity, pertinence, and relevance. In addition, each expert was asked to rate each of the items as "essential", "useful", or "not necessary". To test response process, 30 Portuguese speakers and 30 English speakers' infection preventionists participated and informed whether the tool was understandable. Analysis was performed by calculating the Content Validity Ratio (CVR). In this study, a significance level of 0.05 was adopted, resulting in a minimum critical CVR value of 0.769. This study was approved by the institutional Research Ethics Committee.
Results: The first Portuguese and English version of the tool had 118 items organized in five areas and 16 domains. The tool was evaluated by 13 Portuguese and 13 English speaker experts. The analysis showed that 63 items (74.3%) in Portuguese version and 70 items (82.6%) of the English version was considered "essential" and presented CVR equal or above the stipulated value of 0.769. In the response process, all participants agreed the self-assessment tool items were easy understandable.
Conclusion: Portuguese and English versions of the tool presented evidence of content and response process validity. Currently both versions are under the psychometric analysis to test their internal structure.

Disclosure of Interest
None declared.

P386

Board game to support learning of health workers on the elements of infection prevention and control (IPC) standard and transmission-based precautions at the facility level

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Introduction: Adequate and timely application of IPC standard precautions (SP) and transmission-based precautions (TBP) remains a challenge in many healthcare settings. Often trainings of healthcare practitioners on the implementation of SP or TBP IPC precautions are conducted through lectures or case studies. These methods are often not interactive or tailored for specific setting.
Objectives: Develop and pilot board game to improve knowledge of healthcare providers on SP and TBP IPC precautions and skills to implement them at the facility level including in resource-limited settings.
Methods: The board game was developed based on the WHO aide memoires for SP and TBP IPC precautions. The board game was pilot tested with 10 groups of IPC specialists (32 specialists in total). A survey to assess individual preferences of training methods was conducted.
Results: The results of the survey revealed that the board game was suitable method of learning. When compared with traditional methods of IPC training delivery, the use of board games creates a safer environment for creativity and rational thinking, and strengthen teamwork spirit. The developed board game allows to design different types of departments and select number of patients for whom SP and TBP IPC precautions should be implemented. Based on implemented measures, risk for infection transmission is calculated. In case all WHO recommended measures are applied, risk of transmission will be minimal, in case some measures or staff/patient ratio are inappropriate, risk of infections will be high. All participants answered that rules of the game were clear, and that the game was interactive and encourage decision making. 90.6% of participants noted that the board game improved their knowledge in SP and TBP, and management of healthcare-associated outbreaks. 75% of participants answered that the board game improved their skills to manage IPC supplies and resources. 29 IPC specialists rated the bard game as great and three as good and all participants would recommend their peers to play the board game.
Conclusion: Board game can be considered as a useful tool for improvement of knowledge and skills on implementation of SP and TBP at the facility level.

Disclosure of Interest
None declared.

P387

How to teach medical and dental students about infection prevention and control? Comparison of two learning methods

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Introduction: COVID-19 pandemics confirmed the fundamental role of standard and transmission-based precautions in the prevention of cross transmission of hospital-acquired infections. SARS-CoV-2 outbreak also confirmed the need for HCWs to know and use appropriate personal protective equipment (PPE) for the healthcare workers (HCWs) and patients' protection. Medical students are less knowledgeable than other HCWs about IPC.
Objectives: The aims were to evaluate medical and dental students' evolution of knowledge and satisfaction after an infection prevention and control (IPC) teaching using two methods.
Methods: We enrolled second-year medical and dental students, naive of IPC knowledge. Students were randomly assigned to two groups: classrooms with practices or conference room with interactive capability and videos. Only experienced IPC physicians were involved. The participants filled a standardized questionnaire about IPC before and after teaching interventions to determine changing of knowledge. Participants were also asked to fill out a satisfaction survey.
Results: 226 s-year medical and dental students were enrolled. Students improved significantly their scores of knowledge between pre- and post-test in both groups ($p < 0.0001$). Relative change of knowledge between the pre- and post-test was not significantly different between the two groups in global and per topics scores ($p > 0.05$). Satisfaction was significantly higher in the classroom group than the conference group on global dimensions ($p = 0.02$) and specifically learning objectives ($p < 0.001$) and interest ($p = 0.03$).
Conclusion: The two learning methods are effective in improving students' knowledge about IPC. These results suggest that, for IPC teaching and for students who are not yet comfortable with care, face-to-face practices in small groups are more appreciated.

Disclosure of Interest
None declared.

P388

Impact of structured training program about prevention & control of hospital acquired infections on knowledge of the health care workers at a tertiary care academic medical institution—an interventional study

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P388

Introduction: There are huge knowledge gaps among Health Care Workers regarding various aspects related to Prevention & control of Hospital Acquired Infections (HAIs).
Objectives: To assess the prevailing knowledge and to evaluate the impact of structured training programme about Prevention & control of Hospital Acquired Infections among Health care Workers.
Methods: It was a single-group pre-post intervention study of Health Care Workers at a 2280-bed tertiary care, research, referral, and academic medical college hospital in Haryana, India ($n = 308$). The participants received a structured training programme that included theme lectures, case-based learning, and demonstrations on overview of HAI, biomedical waste management, hand hygiene, universal precautions, ICU infection control, Operation Theatre infection control and Disinfection & environmental surveillance in Hospital settings. A semi-structured English questionnaire investigated the impact of training on HAI prevention and control knowledge. Participants gave informed consent before using the study tool.
Results: It was found that 26% participants were in the age group of 51–55 years, 62% were females, 88% were married and 70% had no formal training on Prevention & control of Hospital Acquired Infections. The Paired Sample T-test was used to compare the mean scores between pre-test (Mean Score = 55.94, SD = 16.450) and post-test groups (Mean Score = 77.64, SD = 17.044). This difference was statistically highly significant (p value = 0.000). The Repeated Measures ANOVA Test depicts highly significant statistical difference among various categories of HCWs in pre-test and post-test scores (p value < 0.01).
Conclusion: The structured training program or educational intervention proved useful for enhancing HCWs understanding of various aspects related to prevention and control of HAIs which will undoubtedly enhance their skills in prevention and control of HAIs while performing their duties in different hospital areas.

Disclosure of Interest
None declared.

P389

Establishing a training program for infection prevention and control (IPC) professionals in West Africa: the Nigerian case study

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Introduction: The 2014–2016 West Africa Ebola outbreak highlighted the lack of IPC professionals in Nigeria. To fill this gap, the College of Medicine, University of Lagos, Nigeria, developed one of the first Diploma in IPC (DIPC) training programs in Africa.
Objectives: To grow a cadre of IPC professionals that will strengthen IPC programs at all levels.
Methods: The program uses a modular approach consisting of three sequential course levels (Basic, Intermediate, Advanced) spanning six months, followed by a six-month mentorship period. Program development began in 2016 and included identification of subject matter experts, baseline survey of IPC situation in Nigeria, development of DIPC training curriculum and review and external validation of the curriculum. Program was piloted level-by-level prior to full implementation. Implementation began in 2018 and is ongoing. Program was evaluated in 2022.
Results: Course summaries are given in Table 1. Among the first health facility (HF)-based graduates of the DIPC program ($n = 20$) surveyed as part of the program evaluation, all reported implementing multiple IPC activities within their HFs. Almost all (90%) had carried out a baseline IPC assessment, 80% engaged with HF management using

baseline data, 75% developed an IPC action plan, 70% were carrying out HF IPC improvement programs, and 95% trained healthcare workers on IPC practices. Graduates noted lack of dedicated budgets and time for IPC activities as barriers.

Table 1: Summary of CMUL's DIPC Training Program by Course Level, 2018–2022

	Course level		
	Basic	**Intermediate**	**Advanced**
Award received	Certificate	Certificate	Diploma in IPC
Start year	2018	2021	2021
Number of cohorts trained	5	2	2
Total number of participants trained	144[1]	64	34

[1] Includes pilot

Conclusion: Graduates of Nigeria's DIPC program have successfully implemented IPC improvement activities in their HFs. Next steps to expand the cadre of IPC professionals in Nigeria include further scaling of program delivery and continued advocacy for a career path for IPC professionals.

Disclosure of Interest
None declared.

P390

Nurses' practice in the administration of intravenous medication via a peripheral venous cateter

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Introduction: Peripheral intravenous cateter (PIVC) are the most commonly used vascular access device that allows administration of intravenous (IV) therapy. There is a great variability in nursing practices regarding the administration of IV medication, as well as managing PIVC. A lack of standardization measures can potentially be compromising patient safety.
Objectives: Knowing the practice of administering intravenous medication via the peripheral venous catheter; Understand the reasons that explain the practice of nurses in the administration of intravenous medication, via the peripheral venous catheter.
Methods: Descriptive-correlational study, with a network sample composed of 200 nurses, predominantly female (87.9%), aged between 22 and 57 years (M = 32.6) and professional experience mean length of 9 years. A self-completion questionnaire with 9 items on a five-point Likert scale was used for data collection: "never" (1), "rarely" (2), "sometimes" (3), "almost always" (4) and "always" (5). A pre-test was previously applied to 9 nurses using the spoken reflection technique. Data analysis was performed using the Software Statistical Package for Social Sciences tool. The study was approved by the Ethics Committee.
Results: The results show low adherence to safe practice by nurses in the administration of IV medication through the PIVC (M = 3.8; DP = 0.57). The least scored items (M ≤ 3.4), marked mainly in the "sometimes" option, were: "transport medication in a tray after preparation", "disinfect the PIVC access portal" and "disinfect a 3-way faucet". Using Pearson correlation coeficiente we found a small and positive correlation between the item "disinfection of the PIVC access portal" and age ($r = 0.172$, $p < 0.05$) and professional experience ($r = 0.180$, $p < 0.05$), with older age and longer professional experience, associated with higher "disinfection of the PIVC access portal" compliance.
Conclusion: Reported practices are not in line with guidelines. The study highlights the need to complement the information with interviews and nursing practices observations in order to plan an intervention that can aggregate educational strategies to promote behavioural change and facilitate adherence to safe practices.

Disclosure of Interest
None declared.

P391

Impact of health education on knowledge of hospital staff regarding peripheral vein catheter placement: a pilot study in a Tunisian Tertiary Hospital

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Introduction: Peripheral vein catheterization is a common clinical practice, but if not performed using the appropriate procedures, it can result in adverse events associated with care.
Objectives: The objective of this study was to evaluate the knowledge of healthcare professionals before and after a training session on good practices of peripheral vein catheter placement.
Methods: Methods: A pre-experimental study was conducted in December 2022 at Sahloul University Hospital to assess the impact of an intervention program on the knowledge and practice of healthcare professionals regarding peripheral vein catheter placement. The same questionnaire was used in the pre-test and post-test.
Results: A total of 20 healthcare professionals participated in the study, and the results showed a significant increase in knowledge after the intervention for all knowledge items. The percentage of correct answers regarding the implementation of a peripheral vein catheter increased from 52.63% to 89.47%, and for the knowledge of the stages of setting up a peripheral vein catheter, it increased from 36.84% to 84.21%. The correct answer rate for the question "citing three indications on hand hygiene when setting up a CVP" increased from 42.10% to 94.73%. Finally, the correct response rate for the question "What information should a health professional trace when setting up the CVP?" increased from 15.78% to 68.42%.
Conclusion: This pilot study demonstrated a significant improvement in the knowledge of healthcare professionals regarding peripheral vein catheter placement after the intervention. Therefore, we recommend implementing practical training workshops targeting all health personnel to improve patient safety and quality of care.

Disclosure of Interest
None declared.

P392

Healthcare practitioners' infection prevention strategies and associated factors in primary healthcare facilities of Rohingya refugee camps in Bangladesh: a qualitative study

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P392

Introduction: Rohingya refugee camps in Bangladesh are the most densely populated in the world. In primary healthcare facilities of Rohingya refugee camps, healthcare-associated infections pose major barriers to safe and high-quality healthcare delivery.
Objectives: The study's goal was to evaluate infection prevention strategies and associated factors among primary healthcare practitioners of Rohingya refugee camps.
Methods: In 2023, we conducted a qualitative study among primary healthcare practitioners identified from 15 primary healthcare facilities in 15 Rohingya refugee camps. We conducted 60 in-depth interviews and six focus group discussions with community healthcare providers. We reviewed the collected data, developed a coding system, analyzed data, and summarized findings according to the study objectives and themes.
Results: Respondents were 60% men and 40% women, with a median age of 30 years, and 85% had higher secondary education. All respondents were employed for a median of 3 months (range, 1–36 months). Only 42.5% of primary healthcare practitioners were knowledgeable about infection prevention strategies, and 37.2% practiced good infection prevention. Primary healthcare providers who had higher education and formal training on IPC were significantly more likely to have good infection prevention practices. Effective infection prevention practices were linked to the availability and accessibility of hand washing facilities and soap in primary healthcare facilities, as well as adequate knowledge of infection prevention.
Conclusion: To improve infection prevention knowledge and practices among primary healthcare practitioners in Rohingya refugee camps, an effective infection prevention training program, an adequate supply of infection prevention basic resources, and continuous monitoring and supervision are required.

Disclosure of Interest
None declared.

P393

Effectiveness of healthcare waste management education among health professionals: a pre experimental study in Tunisian University Hospital

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Introduction: Healthcare waste (HCW) generation is an inherent aspect of healthcare services. Inadequate management and disposal of HCW can have adverse impacts on both human health and the environment. Despite being a critical public health issue, HCW management has often been neglected in developing countries. Healthcare professionals play a crucial role in managing infectious waste within healthcare facilities, and their effective training and education are essential for optimal performance.
Objectives: to evaluate the impact of an educational intervention session on the knowledge of healthcare professionals regarding HCWs management.
Methods: This pre-experimental study was conducted in December 2022 at Sahloul University Hospital to assess the impact of an intervention program on knowledge and practice regarding HCWs management. The same questionnaire was used in the pre-test and post test.
Results: Twenty healthcare professionals participated in the study, and all knowledge items showed a significant increase in knowledge after the intervention. The knowledge about HCW management under Tunisian legislation increased from 83.3% to 100%. The correct response rate for HCW management as one of the standard precautions increased from 44.4% to 66.6%. The participants could list the types of packaging of HCW including yellow bags increasing from 55.5% to 77.7%, black bags increasing from 83.3% to 100%, and sharp objects containers increasing from 61.1% to 100%. The correct answers rate regarding the correct way of different HCW disposal increased. it passed from 66.6% to 77.7% for Infectious HCW from 22.2% to 33.3%, for Chemical and Toxic HCW; from 0% to 11.1% for Flammable or Explosive Waste and from 11.1% to 50.0% for Radioactive wastes.
Conclusion: The post-test results showed an improvement in the knowledge of health professionals regarding HCWs management. However, the majority of answers did not exceed 50%. Therefore, practical training workshops targeting all health personnel are recommended to enhance their knowledge and practices regarding HCWs management.

Disclosure of Interest
None declared.

P394

Biomedical waste management among medical students: a quasi-experimental study comparing two active training interventions

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Introduction: Following many studies, medical students lack Healthcare Waste Management (HWM) knowledge. But there have been few actions to boost HWM for future doctors. It is stated that student-centered active learning has more effective educational results comparing to conventional method.
Objectives: We aimed to evaluate HWM knowledge and attitudes among medical students before and after 2 active teaching methods.
Methods: We performed a quasi-experimental study between January and March 2023, including fifth-year medical students in the faculty of Medicine of Monastir (Tunisia). We relied on the mixed method based on simulated exercises and games guided by the teacher and the self-directed method based on various teaching aids prepared by students. To evaluate HWM knowledge, we used the "HWM audit" validated by The Nosocomial Infection Control Committee in France.
Results: Totally, we included 73 students (35 for the mixed method and 38 for the self-directed training) with a mean age of 23.19 ± 0.86 years. Students who had received training in HWM represented 52.1%.
The pre-test HWM scores were comparable for both groups. A significant increase in post-test global score was found whatever the training method (35.95 ± 8.81 vs 42.69 ± 6.12, $p < 10^{-3}$). For self directed and mixed interventions, scores improved by 5.52 and 8.08 points respectively ($p = 0.2$).
Concerning ordinary waste, poor responses fell from 23.4% to 11.8% in mixed intervention, and from 25.6% to 10.3% in self directed method. For septic waste, poor responses declined from 23.5% to 8.8% in mixed method, and from 13.2% to 5.1% in self directed one.
Students were more satisfied by the mixed method (40.12 ± 6.01 vs 37.62 ± 8.39, $p = 0.16$).
Conclusion: The study highlights the low HWM knowledge level among future doctors but also the efficacy of capacity building via active trainings. It is crucial to boost HWM knowledge among medical students, which will ultimately lead to better infection prevention and control.

Disclosure of Interest
None declared.

Poster session: Automated disinfection & antimicrobial surfaces

P395

UVC room desinfection: the eco-responsable and efficient technology of the future?

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Introduction: Multiple reports describe the in vitro effect of UVC room desinfection devices, however the real in vivo capacity of eliminating surface pathogens is less clear.
Objectives: In this multicenter study we determined the level of microbial contamination after discharge of an ICU patient, after terminal cleaning or terminal cleaning/disinfection and after an additional UVC disinfection.
Methods: The study was conducted on ICU in 3 different hospitals between december 2022 and february 2023.
Environmental samples were collected in 18 ICU rooms from 10 frequently touched hospital surfaces for each of the 3 different timepoints (standardised surface sampling with TSA Lecithin and Polysorbate 80 contact plates Biomérieux). After discharge of a patient with lenght of ICU stay > 48 h (n = 180), after terminal cleaning with microfibre and water (n = 90) or terminal cleaning and desinfection with microfibre and desinfectant (n = 90) and after UVD desinfection (n = 180) with UVDI-360 (Duomed). UVC dosimeters dots (Intelligo technologies) and UV Dose Verify (Duomed) were attached on the 10 identified frequently touched surfaces before each UVC room desinfection. Also 2 fluorescent dots were applied at the sampling places in order to control with an UV Flashlight the level of cleaning thoroughness. Sporocidal activity was checked by placing an UV-confirm biological test (Stratix labs) on 2 assigned vertical points in every ICU room.
Results: Mean CFU/18cm^2 after discharge of the patient was 22.1. After cleaning or cleaning & desinfection mean CFU/18cm^2 was 10.7 which is a 0.31 $\log_{10}$ reduction. Surprising there was no significant differences between $\log_{10}$ reduction obtained after cleaning versus after cleaning/desinfection (0.40 versus 0.24). After UVC disinfection mean CFU/18cm^2 was 0.7 which is a 1.17 $\log_{10}$ reduction. Each used UV-confirm biological test confirmed a sporocidal activity.
Conclusion: Cleaning with microfibre (water or desinfectant) followed by UVC desinfection results in a 1.48 $\log_{10}$ reduction. The achieved $\log_{10}$ reduction was determined immediately after disinfection and take account variations in RH and temperature. A quick room desinfection without chemicals can be obtained but is this sufficient for replacing automated airborne desinfection systems in all circumstances?

Disclosure of Interest
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P396

What is the additional benefit of UVC disinfection in ICU?

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Introduction: Use of automated room desinfection systems can be an effective adjunct to conventional methods of terminal desinfection when dealing with high-risk pathogens.
Objectives: In this study we determined the level of microbial contamination after discharge of an ICU patient, after terminal cleaning or terminal cleaning/disinfection and after an additional UVC disinfection. Achieved $\log_{10}$ reduction and statistical data analysis should help to determine the added value of UVC.
Methods: The study was conducted between november 2022 and april 2023. Environmental samples were collected in 18 ICU discharge rooms from 10 frequently touched hospital surfaces for each of the 3 different time points: after discharge of a patient (lenght of ICU stay > 48 h) (n = 177), after terminal cleaning with microfibre and water (n = 88) or terminal cleaning and desinfection with microfibre and desinfectant (Surfanios premium 2% Duomed) (n = 89) and after UVC desinfection (n = 177). 3 different UVC devices were used: SAM (Looprobots), UVDI-360 (Duomed) and Steripro (Hospidex). For each UVC device the same research protocol was followed in 6 ICU rooms.
Results: We used linear mixed model analysis with mean CFU/18cm^2 as dependent variable and time points of sampling, horizontal/vertical surfaces and UVC devices as fixed factors. No significant differences in mean CFU obtained after cleaning vs after cleaning/desinfection. A clear significant effect on the mean CFU value after cleaning vs after discharge was seen, as well as after cleaning + UVC desinfection vs after discharge. Furthermore, there is no significant additional effect of UVC on the CFU value after manual cleaning. This is most likely due to the already low mean CFU value after traditional cleaning. Quite similar $\log_{10}$ reductions were seen after UVC desinfection (Looprobots 0.82, UVDI-360 0.87, Steripro 1.35). Taking account the whole proces cleaning with microfibre (water or desinfectant) followed by UVC desinfection $\log_{10}$ reduction varies between 2.23 (Looprobots), 1.20 (UVDI-360) and 1.88 (Steripro).
Conclusion: Most studies report a 1 to 2 $\log_{10}$ reduction for UVC desinfection combined with manual precleaning of surfaces. Our results confirm this. We assume statistical differences between the tested UVC devices but were unable to demonstrate these in our study.

Disclosure of Interest
None declared.

P397

Effectiveness of ultraviolet-c irradiation before terminal cleaning in the intensive care units

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Introduction: Ultraviolet-C (UVC) irradiation has been shown to decrease the number of living microbes on hospital environmental surface.
Objectives: To evaluate the effectiveness of UVC irradiation (Hyper Light P3) in reducing bacteria load and multidrug-resistant organism (MDRO) contamination on intensive care units (ICUs) surfaces before terminal cleaning.
Methods: This single-center prospective study conducted in four medical ICUs of a 2600-bed teaching hospital from January 2021 through April 2022. After patient transfer, UVC irradiation was administered before terminal cleaning. Ten predefined high-touch surfaces of each single-bed room were sampled before and after UVC irradiation to assess aerobic colony counts (ACCs) and screen for clinically important MDROs. A surface with an ACC < 2.5 colony forming units (CFU)/cm^2 was considered clean.
Results: Of 2583 paired surfaces samples collected after 281 patients transferred from ICU, the mean ACC decreased from 2.38 ± 18.2 to 0.74 ± 12.4 CFU/cm^2 after UVC ($p < 0.001$), and the percentages

of surfaces with bacteria growth decreased from 51.5% to 16.4% ($p < 0.001$). The table showed surfaces with bacterial growth before UVC and the average reduction percentage of ACC after UVC with barcode scanner and suction button had the lowest reduction percentage. Vancomycin-resistant *Enterococcus* and carbapenem-resistant *Acinetobacter baumannii* were the most commonly isolated MDROs which decreased from 3.3% and 0.8%, respectively, to 0.8% and 0.2%, respectively, after UVC.

Surface type	Number of samples	Number of surfaces with bacteria growth before UVC	Average reduction (%) of aerobic colony counts after UVC and before terminal cleaning
Keyboard	281	237	89.9
Barcode scanner	281	192	73.2
Medical carts handle	281	126	89.2
Bed rail button panel	278	112	88.4
Bed rail switch	278	147	90.5
Bedside monitor	281	69	78.2
IV pump button	275	84	92.6
Suction button	280	150	93.8
ECG leads	274	237	75.1
Ventilator panel	74	66	89.3

Conclusion: This surveillance study demonstrated clean ICU environment maintained by daily cleaning and UVC irradiation significantly reduced bacterial contamination before terminal cleaning.

Disclosure of Interest
None declared.

P398

Shining a light on terminal cleaning: a method comparison

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Introduction: Mobile UVC disinfection robots have been validated in a laboratory setting to achieve disinfection in a dose-reduction standard, and could contribute towards a clean hospital environment.
Objectives: To compare two different terminal cleaning methods involving a mobile UVC disinfection robot with the nationally recognised two-in-one terminal cleaning method.
Methods: Inclusion criteria were: length of stay of at least 3 days and hospitalisation of a multidrug resistant microorganism carrier. Cleaning methods:
1: Daily whole room routine cleaning (damp-wet microfiber cloth) + manual room cleaning/disinfection of contact points (Hydrogen Peroxide Biocide Disinfection method (HPBD)).
2: Daily whole room routine cleaning (damp-wet microfiber cloth) + manual room cleaning of contact points (damp-wet microfiber cloth) + HPBD of areas not reached by UVC light, named shadow spots + UVC robot (Looprobots, Netherlands).
3: Daily whole room routine cleaning (damp-wet microfiber cloth) + shadow spots (HPBD) + UVC robot.
Terminal cleaning effectiveness was measured by sampling 22 surfaces at 3 different time points; before cleaning (T = 1), before shadow disinfection (T = 2) and after (UVC) disinfection (T = 3). Sampling was performed using eSwabs® in Liquid Amies Elution buffer. One aliquot of 100 µL was platted on a Tryptic Soy Agar plate and incubated at 30° Celsius for 3 days. Colony forming units (CFU) were counted, and terminal cleaning was categorised as good (< 3 CFU/cm^2), moderate (3–10 CFU/cm^2) and contaminated (> 10 CFU/cm^2).
Results: Table 1. Terminal cleaning effectiveness (%).

CFU/cm^2 category	Method 1	Method 2	Method 3
Good	40.9%	77.3%	40.9%
Moderate	31.8%	22.7%	36.4%
Contaminated	27.3%	0.0%	22.7%

Floor and sanitarian surfaces were often (moderately) contaminated after disinfection across all methods. Disinfection of high-touch surfaces improves while using method 2 and 3 as compared to method 1.
Conclusion: This study shows that the use of a mobile UVC disinfection robot is an improvement over the classic terminal cleaning method. The importance of cleaning before UVC disinfection for highly contaminated surfaces such as floor and sanitarian points is shown. It also indicates that cleaning of high-touch surfaces is not always needed while using UVC disinfection, and differentiation should be tested in future research.

Disclosure of Interest
None declared.

P399

The effectiveness of continuous desinfection using ultraviolet-c lamp in comparison with mechanical cleaning with desinfection alone

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Introduction: Enviromental control in areas with high risk of contamination, control of the high touch surfaces is one of the main problem in prevention of healthcare associated infections. The optimal method of decontamination is still needed.
Objectives: The aim of this study is to compare the results between two methods of cleaning the inanimate environment: mechanical cleaning with desinfection and contactless desinfection with a Ultraviolet-C (UVC) lamp after mechanical cleaning.
Methods: The research was conducted at the Department of Neurology with the stroke unit and in the surgical operating theatre. 54 swabs of the inanimate environment were taken in one single day from 18 different surfaces—three swabs from each surface (before mechanical cleaning, after mechanical cleaning with chemical desinfection and after contactless desinfection with the UVC lamp). The swabs were analyzed in the microbiological laboratory and presence of microbial contamination was shown. We also analyzed the results of cleaning methods with regard to the orientation of the surfaces in relation to the source and direction of UVC rays.
Results: The results of the swabs taken before mechanical cleaning show bacterial contamination on 12 out of a total of 18 surfaces (66.67% of surfaces). The results of the swabs taken after mechanical cleaning with chemical desinfection show bacterial contamination on 11 out of a total of 18 surfaces (61.11% of surfaces). The results of the swabs taken after contactless desinfection with the UVC lamp show bacterial contamination on 1 out of a total of 18 surfaces (5.56% of surfaces). There were no difference between the source and direction of UVC lamp on the cleaning results.

Conclusion: According to our results, the use of contactless desinfection with a UVC lamp after mechanical cleaning with chemical desinfection of inanimate areas significantly contributes to the reduction of microbiological contamination in the observed areas of the stroke unit and operating theaters, as well as to the reduction of the number of hospital infections. Contactless desinfection with a UVC lamp is significantly better method than cleaning with chemical desinfection alone and should be considered for use in areas with high-risk for the transmission and development of hospital-acquired infections.

Disclosure of Interest
None declared.

P400

Comparison of manual disinfection using alcohol based wipes and automatic UV-C radiation without prior cleaning

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Introduction: The use of automatic room disinfection using UV-C devices has increased in recent years to improve cleaning performance in hospitals. However, laboratory tests allow no direct conclusions about effectiveness in the hospital environment.
Objectives: In this study we established a field test for efficacy assessment of UV-C in comparison to manual disinfection under realistic conditions.
Methods: Frequent sampling of surfaces with close contact to high risk patients were taken before and after disinfection using swab technique to obtain representative data samples for disinfected and non-disinfected surfaces. Subsequently, the log reduction values (LRV) and the proportion of disinfection success were evaluated for UV-C radiation and full compliant manual disinfection using alcohol based wipes. Successful disinfection was defined as one with a total colony count of < 1 cfu/cm^2 and lack of potential pathogens.
Results: No relevant difference in mean contamination before UV-C and manual disinfection at the individual sampling areas, has been observed. Mean contamination was reduced from 23.3 to 1.98 cfu/cm^2 (LRV 0.9) and 29.7 to 0.26 cfu/cm^2 (LRV 1.2) for UV-C and manual disinfection, respectively. UV-C disinfection achieved 75.5% successful disinfected surfaces, whereas manual disinfection showed 97.2%. On three surfaces, *S. aureus* and enterococci were detected even after UV-C disinfection without mechanical cleaning.
Conclusion: Full compliant manual disinfection showed slightly greater LRV and disinfection success than automatic UV-C disinfection. The detection of relevant pathogens after disinfection with UV-C without mechanical cleaning shows that an exclusive UV-C disinfection of relevant surfaces is not suitable. However, operator-independent UV-C disinfection still enables the potential to improve disinfection performance in addition to manual cleaning and disinfection.

Disclosure of Interest
None declared.

P401

A survey on the use of automated room sterilizers in Korea

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Introduction: Automated room disinfection systems using ultraviolet-C (UVC), hydrogen peroxide (aerosolized or vaporized; aHP or HPV) have been developed to complement manual cleaning as terminal disinfection worrying the highly contamination of surface leaving after infectious patients.
Objectives: This study was conducted to investigate the current status of automated room sterilizers (ARS) use in Korea.
Methods: This was a descriptive on-line survey. A self-administered questionnaire was developed and distributed to 370 tertiary and general hospitals nationwide, and a total of 151 (response rate = 41%) institutions were responded. The question was consisted of three sections: questions for currently using, previously used, or never introducing ARS. Data were collected from August 27 to September 8, 2022.
Results: 149 out of 151 hospitals were equipped with written environmental cleaning and disinfection policy. The number of hospitals Using or used UVC, aHP or HPV was 64, and 92, respectively mostly introduced after the MERS outbreak. The level of satisfaction currently using ARS was ranged from 76.9 to 78.3%, and the rate of currently using responders who were addressed having an intention to continue using UVC, aHP or HPV was 88.5% (46/52), 93.5 (58/62), respectively. The major reasons for previously used ARS but currently not using were unsure of its sterilization effect (41.7%, 5/12), and aHP or HPV were inconvenient in their usage (60.0%, 18/30), expensive (36.7%, 11/30) and harmful to human body (30.0%, 9/30). The use of ARS in hospital was considered, but the purchase was withdrawn because of the high cost (59.2%0.32/54).
Conclusion: ARS was much more used in Korean hospitals than expected, and high level of satisfaction and succeed use intention were confirmed. It is needed to develop and apply environmental surface disinfection systems to prevent infection and promote employee safety.

Disclosure of Interest
None declared.

P402

Real-life performance of a UV-C disinfection robot in patient rooms using a new assessment method

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Introduction: Cleaning and disinfection of patient rooms is labor-intensive, difficult to standardize and therefore vulnerable to human error, and may require the use of disinfectants detrimental to the environment. In this pilot study we assessed the performance of a mobile disinfection robot using ultraviolet C (UV-C) radiation and a novel assessment method to determine in situ bacterial load reduction in patient rooms.
Objectives: To assess the in situ performance of a mobile UV-C disinfection robot using a novel assessment method.
Methods: We used an automated, mobile UV-C robot (SAM-UV-C, Loop Robots BV, Netherlands) that has several 253.7 nm germicidal light sources that deliver a dosage of ≥ 30 mJ/cm^2 on the target surface. Adequacy of disinfection (bacterial load reduction of ≥ 5 log) was assessed using Rodac plates directly inoculated with *E. coli*, *S. aureus*, *E. faecium* (VanB), *P. aeruginosa* or *A. baumannii*. Inoculated plates were placed at different positions to cover a wide and diverse array of surfaces in the patient room, both on 'target surfaces' (unshaded and below elbow height) and 'non-target surfaces' (shaded and/or above elbow height). Subsequently, the room was disinfected using the UV-C robot and inoculated plates were incubated for 24 h (36 °C), and bacterial density on the test plates was compared to a reference (serial dilution of the pathogen) to determine bacterial load reduction. The UV-C dosage was measured for each test plate using dosimeter indicator strips (Intellego Technologies).
Results: Of the 32 plates placed on target surfaces, 31 showed an adequate reduction in CFU's of ≥ 5-log. One plate could not be

interpreted due to contamination. Of these 32 plates, 29 (91%) dosimeter strips showed an adequate UV-C dosage of ≥ 50 mJ/cm^2. Of the 18 plates placed on non-target surfaces, 13 (72%) showed an adequate CFU-reduction, whilst only 4 (22%) had received an adequate UV-C dosage.
Conclusion: This pilot study demonstrates a new method to quantify reduction in bacterial load of ≥ 5-log for different locations in hospital patient rooms using UV-C. Our findings supports the idea that UV-C robots can be used to achieve an adequate bacterial load reduction on a variety of smooth surfaces under different angles within patient rooms for a selected subset of pathogenic microorganisms.

Disclosure of Interest
None declared.

P403

Comparison of the efficacy of disinfection using activated ionized hydrogen peroxide space sterilizer for multidrug-resistant bacteria according to surface materials

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Introduction: Carbapenemase-producing *Enterobacterales* (CPE) and vancomycin-resistant *Enterococci* (VRE) are multidrug-resistant bacteria that are spread through contact, and surface disinfection is emphasized in healthcare environmental management. Hydrogen peroxide space disinfection is one of no-touch space disinfection methods.
Objectives: In this study, we aimed to confirm disinfection efficacy of AIHP space sterilizer on CPE and VRE strains for each surface material.
Methods: This study was conducted at Keimyung University Daegu Dongsan Hospital from August 10 to August 17, 2022. CPE and VRE isolated from the clinical samples were used for this study. Stainless steel, glass, and plastic petri dishes spread with CRE and VRE were placed in several places in the isolation room. The AIHP space sterilizer (MUGYUN, SUNGSAM, Korea) was used for disinfection and this process was repeated three more times (total four times).
Results: Disinfection efficacy was assessed through $\log_{10}$ reduction of the number of cultured strains after disinfection. VRE demonstrated 6.916 $\log_{10}$ reduction on stainless steel and 7.581 $\log_{10}$ reduction on plastic. CPE showed 7.393 $\log_{10}$ reduction on stainless steel and 7.581 $\log_{10}$ reduction on plastic. Both VRE and CPE were not isolated on glass surfaces.
Conclusion: The AIHP space sterilizer exhibited sufficient disinfection efficacy on stainless steels, plastic, and glass with variations in effectiveness depending on surface materials.

Disclosure of Interest
None declared.

P404

The effect of standardized terminal disinfection training and sequential application of hydrogen peroxide space disinfection on the reduction of environmental contamination in patient rooms with carbapenem-resistant enterobacterals

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Introduction: As the number of CRE patients increases nationwide, the importance of disinfecting the isolation room environment is emerging.
Objectives: The study aimed to investigate the effects of standardized terminal cleaning education and sequential application of hydrogen peroxide space disinfection on reducing contamination in patient rooms with carbapenem-resistant enterobacterals (CRE).
Methods: A 10 isolation rooms for CRE patients in a general hospital were selected. Nine high-frequency contact surfaces were targeted for comparison of the decontamination effect between regular terminal cleaning and sequential application of standardized terminal cleaning and hydrogen peroxide space disinfection. The decontamination effect was evaluated using microbial culture and adenosine triphosphate (ATP) measurements. A total of 450 samples were collected using sterilized swabs and then cultured on blood agar and chromogenic agar plates at 35℃ for 24 h. The colony were counted, and ATP test results were reported in relative light units (RLU).
Results: After regular terminal cleaning, significant differences in RLU were observed before and after cleaning on the bed table ($Z = -0.561$, $p = 0.037$), toilet seat ($Z = -2.090$, $p = 0.037$), and sink drain ($Z = -1.988$, $p = 0.047$) only. After the sequential application of standardized terminal cleaning and hydrogen peroxide space disinfection, RLU significantly decreased on all eight surfaces except the bathroom doorknob ($p < 0.05$). The median CFU also significantly decreased on six surfaces ($p < 0.05$), excluding the mattress, bed railing, and bathroom doorknob. Among the 450 surfaces, only the sink drain showed the presence of CRE, and remained even after hydrogen peroxide space disinfection.
Conclusion: The sequential application of standardized terminal cleaning education and hydrogen peroxide space disinfection significantly reduced the environmental contamination in patient rooms. However, CRE continued to be detected in the sink drain, suggesting the need for improvement in disinfection methods for drains.

Disclosure of Interest
None declared.

P405

Aerosolized hydrogen peroxide (AHP) application in the intervention of carbapenem resistant K. pneumoniae outbreak in the intensive care unit

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Introduction: The inadequacy of antibiotics against resistant pathogens complicates the control of infections and causes outbreaks of resistant pathogens.
Objectives: It was aimed to evaluate the epidemic control after aerosolized Hydrogen Peroxide (aHP) applied after an increase in *K. pneumoniae* infections in the Intensive Care Unit of our hospital.
Methods: An increase in *K. pneumoniae* infections was detected in the patients followed up in the Intensive Care Unit of our hospital between 28.05.2022 and 27.06.2022, with the follow-up of the Infection Control Committee. Patients were transported from between 28.06.2022 and 30.06.2022, and aHP was applied in line with the recommendations of the manufacturer, together with the environment disinfection. The ICU was reopened for use on 1.07.2022. The age,

gender and culture results of the patients who were followed up in a one-month period before and after aHP administration were recorded. The formulas "infection rate = number of infections developed in the intensive care unit/number of patients hospitalized in the intensive care unitx100" and "incidence density = number of infections in the intensive care unit/total number of days of hospitalization in the intensive care unit × 1000" was used. The change in *K. pneumoniae* infection rate and incidence density before and after aHP administration in one month period was evaluated.
Results: Before aHP application, 89 patients were followed up on 923 hospitalization days between 28.05.2022 and 27.06.2022, and *K. pneumoniae* infection was detected in 21 of them. After aHP application, a total of 103 patients were followed up on 922 hospitalization days between 01.07.2022 and 31.07.2022, and *K. pneumoniae* infection was detected in 15 of them. The infection rate decreased by 23.6% before the application and 14.6% after the application. While the incidence density was 22.8 in 1000 patient days, it decreased to 16.3 after the application.
Conclusion: aHP system has not been shown to eradicate any pathogen in clinical practice and its effect on infection rates in epidemics is not yet clear. In our study, a decrease was observed in infection rate and incidence density. aHP emerges as an option with limited antibiotics as well as traditional environment disinfection.

Disclosure of Interest
None declared.

P406

Evaluation of decontamination effect of multidrug-resistant organism after space sterilization with activated ionized hydrogen peroxide

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Introduction: Multidrug-resistant bacteria is challenge in hospital environment, and awareness of the effects of environmental management is increasing. The hydrogen peroxide space disinfection method is one of the no-touch disinfection methods.
Objectives: This study aimed to confirm the efficacy of disinfection of multidrug-resistant *Acinetobacter baumannii* (MRAB) and multidrug-resistant *Pseudomonas aeruginosa* (MRPA) using activated ionized hydrogen peroxide (AIHP) space sterilizer.
Methods: The experiment was conducted in the isolation rooms of general hospital in South Korea from December 22, 2022, to January 9, 2023. MRAB and MRPA strains were isolated from clinical specimens, and were spread on the petri dishes. Petri dishes with MRPA and MRAB were attached on the ten evaluation sites. AIHP space sterilization was performed for 1 h 10 min and we counted the colonies remaining on the petri dishes. This process was repeated three times.
Results: Mean bacterial count before sterilization was 1.86 × 10^6 CFUs/plate (6.27 log inoculum/plate) for MRAB, 1.79 × 10^6 CFUs/plate (6.25 inoculum/plate). After sterilization by AIHP, mean bacterial count was 0.1 CFUs/plate (-1.00 log inoculum/plate) in MRAB, 0.3 CFUs/plate (-0.52 log inoculum/plate) in MRPA. Log reduction was 7.27 for MRAB, and 6.77 for MRPA.
Conclusion: The AIHP space sterilizer exhibited sufficient disinfection efficacy for MRAB and MRPA. Further study is needed to evaluate efficacy in real-world hospital environment.

Disclosure of Interest
None declared.

P407

Antimicrobial textile for healthcare applications

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Introduction: The warm and humid climate of Hong Kong increases the moisture retention in fabrics, creating the breeding grounds for bacteria and increasing the viability of viruses, thereby rendering fabrics an important vector for cross-transmission in healthcare settings. This is particularly prevalent in facilities for elderly care.
Objectives: Our study aims to functionalize healthcare textiles with antimicrobial properties and provide long-lasting protection against bacteria and viruses.
Methods: The antimicrobial coating was formulated with commonly used cosmetic ingredients to avoid provoking skin irritations and allergic reactions and was added during the finishing stage of laundry for ease of application. The treated fabrics were tested for antimicrobial activities in accordance with ISO 20743 and ISO 18184 and their performance was further evaluated in a field study conducted in the local elderly homes and hospitals in Hong Kong.
Results: The laboratory test results demonstrated that the treated fabrics provided a 3-log reduction of various bacteria including E. coli, S. aureus, E. faecalis, and P. aeruginosa, and a 2-log reduction of bacteriophages MS2 and T3 at a contact time of only 10 min. The treated fabrics remained effective against multiple bacteriophages and bacterial strains including MRSA even after one week of exposure to a high-risk environment.
Conclusion: This polymer-based coating provided a cost-effective strategy for combating HAIs.

Disclosure of Interest
None declared.

P408

In vitro assessment of antibacterial and antiviral activity of three copper products after 200 rounds of simulated use

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Introduction: Copper (Cu) surfaces have well documented antibacterial properties but few have evaluated it after prolonged use and against both bacteria and viruses.
Objectives: This study assessed the antimicrobial effects of three types of Cu surfaces using *Staphylococcus aureus* (SA), *Pseudomonas aeruginosa* (PA), Coronavirus 229E (CO) and Murine Calicivirus (CA) after simulated cleaning with a Wiperator™.
Methods: Coupons (25 mm diameter) in triplicate from three Cu formulations (solid, spray-on and decal Cu) and stainless steel (SS) controls were subjected to 200 rounds of simulated daily cleaning with accelerated hydrogen peroxide (AHP) and quarternary ammonium (QA) products and in the presence of sweat. The Wiperator™ procedure consisted of 10 s of wiping with the disinfectant(s), followed by air drying and repeated for a total of 200 times per coupon. Coupons were evaluated for antibacterial activity using PA and SA and a modified Environmental Protection Agency (EPA) protocol. Antiviral activity was assessed with CO and CA surrogates to represent COVID19 and norovirus using theTCID50 method to evaluate virucidal activity.
Results: A total of 12 coupons for each of the Cu products and SS were tested. One hour after inoculation, SA exhibited a log kill difference of 1.16 to 4.87 and PA, a log kill difference of 3.39 to 5.23 (dependent upon Cu product and disinfectant), compared to SS. The viral studies

for CoV-229 and MNV-1 showed a significant reduction in viral load, 97.4% and 99.5% respectively, after 2 h.
Conclusion: Self-sanitizing Cu surfaces maintained antibacterial and antiviral activity after 200 rounds of simulated use, regardless of the utilization of surface desinfectant (AHP or QA) or the presence of sweat.

Disclosure of Interest
M. Charles Speaker bureau of: Cepheid, Hologic, T. Williams: None declared, T. Woznow: None declared, B. Velapatino: None declared, E. Asselin: None declared, D. Nakhaie: None declared, E. Bryce: None declared.

P409

Reactive oxygen species generation and antibacterial effectiveness of copper surface oxides

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Introduction: When metallic copper is exposed to air, their surfaces are covered by oxide films. When such copper surfaces contact with water, Cu ions dissolve from copper surface oxides. If the hypothesis that the dissolved Cu ions produce by the Fenton reaction ·OH which is the major antibacterial agents, the antibacterial effectiveness of Cu_2O and CuO should be equivalent. Experimental results however show that Cu_2O has higher antibacterial effectiveness than CuO. Such experimental results indicate that the oxidation state of copper surfaces also affects the antibacterial effectiveness of copper. Reactive oxygen species can be formed on copper surfaces and could affect the antibacterial effectiveness of copper.
Objectives: We studied the effect of difference in generated ROS on antibacterial effectiveness of Cu_2O and CuO.
Methods: Cu_2O and CuO films were produced on oxygen-free copper sheets by heat treatments, and they were confirmed by an X-ray photoelectron spectroscopy. Antibacterial effectiveness was evaluated by a film contact method designated in ISO 22196. The amount of ROS was measured using an electron spin resonance, and that of H_2O_2 was measured using an ultraviolet–visible absorption spectroscopy.
Results: The antibacterial activities of Cu_2O and CuO were 3.0 and 2.1, respectively. H_2O_2, ·OH, and $^1O_2$ was detected from both Cu_2O and CuO, but $\cdot O_2^-$ was not. The concentration of H_2O_2 produced was higher for Cu_2O than for CuO. ·OH was detected even when H_2O_2 was consumed by a H_2O_2 scavenger.
Conclusion: As H_2O_2 is produced and Cu ions dissolve from the copper oxide surfaces, the Fenton reaction therefore takes place in the water in contact with the copper oxide without H_2O_2 being added. And the difference is antibacterial effectiveness between Cu_2O and CuO in attributed to the difference in the amount of H_2O_2 concentration.

Disclosure of Interest
None declared.

P410

Development of antimicrobial copper-coated pet air filter using electroless copper deposition with an activation step process

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P410

Introduction: The COVID-19 pandemic brought increasing importance to the research on decreasing the spread of airborne pathogenic microbes. One potential abatement measure is using antimicrobial copper incorporated in air filters.
Objectives: The study aims to develop an air filter using electroless deposition of copper on a spun-bonded polyethylene terephthalate (PET) filter substrate with an additional activation step process and evaluate its effectiveness as an antimicrobial filter against four model microorganisms.
Methods: The PET filter substrate was degreased, sensitized using Sn (II) solution, and activated using Pd (II) solution before the electroless deposition using copper nitrate precursor reduced by hydrazine on the filter surface. The contact-killing test was performed on the resulting filters. The test used Escherichia coli (*E. coli*) and Staphylococcus aureus (S.A.) as model bacteria and MS2 phage and Phi 6 phage as surrogate viruses. The filter was inoculated with the bacteria and phage suspensions for 1 h of contact time at room temperature and room humidity. After contact, a D/E neutralizer was added, and the solutions were plated on agar plates. The percent reduction was then obtained after plate enumeration.
Results: The copper-coated PET filter resulted in up to 4 log reduction for bacteria and bacteriophage after 1 h of contact time. The model bacteria *E. coli* and S.A. reached a reduction of 99.99% and 99.45%, respectively. The model viruses MS2 phage and Phi 6 phage reached a reduction of 99.97% and 99.96% respectively.
Conclusion: The study focused on evaluating the effectiveness of electroless deposited copper on a PET air filter substrate with an additional activation step in reducing microorganisms' growth. The results showed that all test microorganisms exhibited more than 2 log reduction, indicating excellent antimicrobial properties. The findings suggest that copper-coated filters could be a promising addition to air filtration systems in reducing the transmission of airborne pathogens. However, further research is needed to optimize the copper coating and evaluate the filter's performance under real-world conditions.

Disclosure of Interest
None declared.

P411

Colloidal antimicrobial coating for surface disinfection: effects of accelerated aging on stability and antimicrobial efficacy

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Introduction: Contaminated surfaces are reservoirs for pathogens and potential agents for cross-contamination. Efficient surface disinfection is necessary for maintaining environmental and public health safety. We developed a colloidal antimicrobial system capable of application on solid and porous surfaces and affording a broad spectrum of antimicrobial properties. The antimicrobial coating system consists of a formulation of antimicrobial polymer colloids.
Objectives: Disinfectants age with time even under ideal environmental conditions altering their performance. This study aimed to study the ageing of antimicrobial polymer colloids in suspension and coated form on their (i) physical and chemical properties and (ii) antimicrobial efficacy.
Methods: The stability test adopted the GB/T 38499–2020 standard accelerated aging technique. Changes in the antimicrobial system were investigated by microscopy and spectroscopy techniques. Antimicrobial efficacy was evaluated with coating deposited on a porous media, by adapting the ISO 20743 method against *E. coli* ATCC 25922, *S. aureus* ATCC 25923, *E. coli* bacteriophage *MS2* (HSEO, HKUST), Pseudomonas bacteriophage Ø6 (HSEO, HKUST). Virucidal activity against the H1N1 PR8 virus was conducted according to ISO 18184:2019 standard.

Results: There were no visible changes in physical appearance nor chemistry of the antimicrobial polymer colloids with time. Optical micrograph showed well dispersed colloidal particles that are smaller in size after 1.15 days (≅30 days shelf life) with water evaporation but remained unchanged with further ageing. Antimicrobial efficacy of the colloidal system maintained over 2 log reduction in the bacteria and bacteriophages after 14 days accelerated aging period (≅12-month shelf life). Moreover, the virucidal activity achieved over 1.5 log reduction in the H1N1 PR8 virus after a shelf life of 7 months.
Conclusion: The antimicrobial polymer colloids were stable and maintained similar bactericidal and virucidal efficacy over 12 months. Stability testing of disinfectants is crucial to provide evidence of the variation in efficacy with time under the influence of environmental factors. This is essential for establishing the shelf-life of the antimicrobial coating and to recommend appropriate storage conditions.

Disclosure of Interest
None declared.

Poster session: Nursing homes and geriatric care

P412

Effectiveness of the vaccination against COVID-19 among residents of long term care facilities in Poland

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P412

Introduction: Residents of long-term care facilities (LTCFs) are particularly vulnerable to COVID-19 infection. By October 2020, COVID-19 deaths among long-term care residents accounted for about 50% of all COVID-19-related deaths worldwide. First vaccines against COVID-19 were available in Poland in December 2020 and residents of LTCFs were eligible to receive vaccines right after healthcare workers.
Objectives: The aim of our study was to determine the level of immune response after vaccination against COVID-19 among residents of long-term care facilities in Poland.
Methods: It was a non-interventional, prospective, multi-center study aiming to assess the vaccination coverage among residents of LCTFs in 8 institutions. Clinical data including vaccination status and possible COVID-19 infection was obtained from each participant between Feb-Apr 2022. At the same time, blood samples were collected by trained medical personnel. Anti-SARS-COV-2 QuantiVac ELISA (IgG) test for serum, targeting spike (S) protein (Euroimmun) was used. The study was approved by the Bioethics Committee of the JU, 1072.6120.212.2021. This research was funded within the Polish NCN grant: 2020/39/B/NZ6/01939.
Results: Altogether 429 residents of LTCFs were enrolled; 374 (87.18%) of them have been fully vaccinated, mostly with mRNA vaccines. As many as 98.4% of vaccinated participants had positive result of IgG anti-SARS-COV-2 targeting spike protein (median value 163.34 RU/ml; IR 143.44–183.56). The antibody test result was positive (≥ 11 RU/ml) after the vaccination for median 391 days (IR 329–413). There were no statistically significant differences in antibody levels in relation to the age, co-morbidities, previous COVID-19 infection, frailty syndrome or additional booster dose of vaccine against COVID-19.
Conclusion: Vaccines, mostly mRNA, against COVID-19 can be successfully used in geriatric patients residing in LCTFs, who are prone to the infection due to natural immunodeficiency related to age since they provide the reference level of the specific immunity.

Disclosure of Interest
None declared.

P413

Healthcare associated infection: a comparative study between elderly COVID19 patients and other hospitalized patients in intensive care units in a Tunisian Hospital in 2021

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Introduction: Hospital-acquired infections (HAIs) poses significant risks to patient safety, leading to increased morbidity, mortality and higher costs. Elderly patients are particularly vulnerable to HAIs due to their weakened host defense mechanisms and the invasive nature of their medical care. Additionally, the COVID-19 pandemic has added a new burden on hospitals, leading to prolonged hospitalizationsand more severe treatments.
Objectives: to compare the incidence and risk factors of HAIs between elderly patients with COVID-19 and other elderly patients in intensive care units (ICU).
Methods: This observational prospective survey was conducted in the medical and surgical ICU of a tertiary hospital. All patients aged at least 65 years, admitted to the ICU between August 1st and October 31st, 2021, were included. The onset of infection within 48 h of hospitalization was used to define HAI. Data wa extracted from medical records including diagnoses, laboratory results, and antibiotic use. Microbiologically-confirmed bacterial and fungal pathogens from clinical cultures were evaluated to confirm the diagnosis.
Results: A total of 88 patients were included. The overall prevalence of COVID-19 was 27.6%, while the prevalence of HAIs was 19.3%. Patients with HAIs were categorized into two groups: group 1 consisted of patients with COVID-19, and group 2 included patients without COVID-19. Notably, the prevalence of HAIs was significantly higher among patients with COVID-19 (45.8%) compared to those without COVID-19 (45.8% VS 9.5%. $p = 0.001$). Additionally, the presence of multidrug-resistant bacteria was higher among observed in of patients in group 1 although the difference was not statistically significant (90%VS 40%, $p = 0.077$).
Conclusion: Reducing the transmission of HAIs remains a challenge, especially in the context of the COVID-19 pandemic, which has placed a significant burden on hospitals and healthcare providers. It is crucial to deepen our understanding of the transmission pathways of HAIs and to implement infection prevention guidelines to improve patient protection.

Disclosure of Interest
None declared.

P414

Burden of covid-19 in long-term care facilities in Finland, March 2020–June 2022

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Introduction: Residents in long-term care facilities (LTCF) have been highly affected by the COVID-19 pandemic. The Resident Assessment Instrument for Long-Term Care (RAI-LTC) is a standardized instrument used in LTCFs for older people to assess residents' service needs and to target the services correctly. In Finland RAI-LTC assessments cover around half of the target population.

Objectives: We aimed to assess the burden of COVID-19 in elderly persons living in LTCFs using RAI-LTC data during March 1, 2020 and June 30, 2022 in Finland.
Methods: RAI-LTC assessments are done twice a year (spring and autumn), and at admission or when health condition or functional capacity changes substantially. We formed a cohort of RAI-LTC residents aged ≥ 65 years who were assessed from spring 2020 to spring 2022, covering five RAI-LTC assessment periods. For each resident only the first RAI-LTC assessment was considered. We linked RAI-LTC data to the laboratory notifications of COVID-19 in the National Infectious Diseases Register using national identity codes. Only the first infection was considered. The date of death was obtained from the Finnish Population Register. We assessed the number of all deaths and those occurring within 30 days after a specimen positive for SARS-CoV-2.
Results: In total, RAI-LTC assessments covered 61 286 residents, 41 304 female (68%). We identified 10 944 COVID-19 infections (18%). The median age of residents with COVID-19 was 83 years and 84 years for those without. There were 28 857 deaths (47%), of which 1316 occurred within 30 days after a specimen positive for SARS-CoV-2. 30-day case fatality decreased from 29 to 10% from 2020 to 2022. Both the number of COVID-19 infections and deaths followed the trends of those in the whole Finnish population, most took place in January-March 2022 simultaneously with the appearance of Omicron variant.
Conclusion: A remarkable number of residents in LTCFs developed COVID-19 during the pandemic despite the infection prevention and control (IPC) guidelines targeted to LTCFs and vaccines. Besides vaccine efficacy, it remains unknown which part of the COVID-19 burden was related to ineffective or insufficient IPC measures, or HCWs incapability or fatigue in implementing them.

Disclosure of Interest
None declared.

P415

Vaccinations against COVID-19 and influenza in 2021/2022 in long-term care facilities in southern Poland

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P415

Introduction: Elderly people are more likely to suffer from respiratory tract infections than younger adults, due to decreased immunocompetence, thus infection prevention is very important in this group, and especially for those residing in long term care facilities (LTCF). One of the most important elements of the prevention are annual vaccinations: against flu and Covid-19. Approximately 83% of the adult population of the EU is fully vaccinated against COVID-19, but in Poland only about 60%. As for influenza, the vaccination coverage of the the elderly in the EU ranges from 2 to 73% (median 47.1%), but in Poland, only 15% of the population 65 + years old received the vaccine in the 2019/20 season.
Objectives: The aim of the study was to determine the level of the vaccinations of Polish LTCF residents and systemic factors limiting vaccinations against COVID-19 and flu.
Methods: The study was conducted on 250 residents in 5 LTCFs, including 83 men and 167 women in season 2021/22 and was approved by the Bioethics Committee of the JU, 1072.6120.73.2022 and funded by the Polish NCN grant No. 2021/41/B/NZ6/00749.
Results: Among the residents, whose average age was 79.4 years, 245 individuals (98%) were vaccinated against COVID-19, and 72 residents (28.8%) were vaccinated against influenza. All studied LTCFs showed a similar vaccination rate against COVID-19. In two studied LTCFs, none of the residents was vaccinated against influenza—they were in village areas. Only one LCTF in village areas have flu vaccination rate 30.6%. On the other hand, in two urban located LCTF, the vaccination rates were 87.5% and 44% respectively. The residents who have not been vaccinated against COVID-19 also not received the flu vaccine.
Conclusion: The level of the vaccinations against COVID-19 and influenza in Polish LTCF was significantly higher than the average vaccinations rates in Poland for people 65 + years old but was below the median of the flu vaccinations in the EU. There was a strong correlation between the place of residence and the chances of receiving the flu vaccine.

Disclosure of Interest
None declared.

P416

Analysis of a COVID epidemic using the alarm method in a nursing home during the first wave in France 2020

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Introduction: On 9 March 2020, COVID cases were detected in a nursing home (NH), with eventually 59 epidemics in 96 NH on our list. We describe the lessons learnt from a feedback exercise (retour d'expérience—REX) conducted by our mobile infection prevention and control (IPC) team EMHE, after the first COVID epidemic amongst our NH.
Objectives: We used the ALARM method (*Association of litigation and risk management*), to identify contributing factors and possible corrective measures.
Methods: We conducted two sessions involving nurses, nursing aides, managing doctor and head nurse (total 11 staff, 2–2.5 h per session). We presented the epidemic curve within the context of regional/national measures. We analysed human factors (e.g. resident/personnel/visitor); material factors (e.g. personal protective equipment PPE, available guidelines, infection control measures, cleaning procedures); and organisational factors (e.g. working environment, staffing, communication). The EMHE team (IPC pharmacist and IPC nurse) have been working with the NH 2–5 years prior. We provided time and space for each staff to feedback on their area of responsibility, as well as their observations and personal experience of the epidemic.
Results: Results highlighted the difficulties linked to a novel virus pandemic (gastrointestinal before respiratory symptoms in the elderly during flu season, management of deaths and staffing during lockdown, widespread anxiety and fear, problems with communication especially with families, lack of or too many diverging guidelines, double rooms structure, lack of equipment and testing). Positive factors included availability of a « Plan Bleu» PPE stock (for influenza), staff solidarity, frequent internal updates and supportive communication, professionals trained in standard/complementary precautions, additional staff available for environmental cleaning, video communication between family and residents. Corrective measures proposed included updating COVID guidelines, improving management of laundry/cleaning/waste; enhancing communication and training; and ensuring adequate stock (e.g. PPE, alcohol-based handrub, bedlinen, nursing trolleys), in preparation for the future.
Conclusion: The NH staff and leaders found the REX constructive. They identified corrective measures and were able to put them in place in time for the next COVID waves.

Disclosure of Interest
None declared.

P417

Antimicrobial use in healthcare-associated infections in Malopolska long-term care facilities—one-year observation

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Introduction: Residents of long-term care facilities (LTCFs) are a steadily growing population particularly vulnerable to healthcare-associated infections (HAIs).
Objectives: The aim of the study was to analyze HAIs incidence and antimicrobial use in Polish long-term care facilities.
Methods: The study used the European Centre for Disease Prevention and Control H4LS: Healthcare-associated infections in long-term care facilities—longitudinal study protocol expanded to include information on antimicrobial drugs used in treatment of registered HAIs. The observation was conducted from February 1st 2022 to January 31st 2023. The study encompassed a total of 283 residents located in 4 LTCFs.
Results: A total of 425 infections were detected in 187 residents, 66% of residents had at least one infection. The most common HAIs were pneumonia (35.76% n = 152) and urinary tract infections (20.94% n = 89).
Of all HAIs 387 (91.06%) were treated with antimicrobials, 75.45% (n = 292) of treatments consisted of 1 antimicrobial agent, 14.73% (n = 57)—2, 6.46% (n = 25)—3, 3.1% (n = 12)—4, and 1 infection (0.26%) was treated with 5 antimicrobials—either in combination or in sequence.
All of pneumonias and urinary tract infections were treated with antibiotics. Strikingly, 80.36% (n = 45) of other than pneumonia respiratory tract infections, including those of viral etiology, were also treated with antibiotics. Moreover 64.71% (n = 11) of COVID-19 infections were treated with antibiotics regardless of clinical severity.
Most frequently used groups of antibiotics were third-generation cephalosporins which accounted for 20.64% of all prescribed antimicrobials, penicillins with beta-lactamase inhibitors—18.39% and fluoroquinolones—13.88%.
No statistically significant difference was found between facilities with regard to the total percentage of infections treated with an antibiotic.
Statistically significant differences were found between facilities regarding the use of the two predominant antibiotic groups—third-gen. cephalosporins and penicillins with beta-lactamase inhibitors, but not in relation to fluoroquinolones.
Conclusion: Our results indicate the necessity of urgent implementation of effective infection control, including monitoring of antibiotic use in Polish LTCFs.

Disclosure of Interest
None declared.

P418

Infections and antibiotic consumption in residents of long- term care facilities in southern Poland, 6-month surveillance

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Introduction: According to Organization for Economic Co-operation and Development (OECD), population over 80 years-old projected to double by 2050. Residents of Long-Term Care Facilities (LTCF) are at high risk of infections. These individuals are particularly vulnerable due to their age, co-morbidities and use of medications. According to American and European data expected incidence density of infections in LTCFs is 2–11/1000 patients-days (pds).
Objectives: The aim of this research was to determine the level of antibiotic consumption in the context of the use of microbiological tests and the epidemiology of infections in Polish LTCF.
Methods: Our observational prospective study included residents of 5 LCTFs in southern Poland in the period between Sep 2022-March 2023 with using of definition of the pan-european HALT study. The study was approved by the Bioethics Committee of the JU, 1072.6120.73.2022. This research was funded by the Polish NCN grant No.2021/41/B/NZ6/00749.
Results: This study encompassed 250 residents with 86 cases of HAIs (without gastrointestinal and *Clostridioides difficile* infections, CDI) and the incidence rate was 1.4/1000 pds—with a predominance of lower respiratory tract infections, including pneumonia, 58 (55.8) cases. Additionally, there were 22 cases of gastrointestinal infections, including 7 cases of *Clostridioides difficile* infections (CDI) with incidence rate 1.2 CDI per 10 000 pds. The general antimicrobial consumption was 894 days of antibiotic therapy, DOT and 14.8/DOT per 1000 pds or 10.4 DOT per case.
Conclusion: The incidence rate of Polish LTCF residents were lower than expected, but antibiotic use was higher. The presented data indicate major problems regarding the antimicrobial consumption in Polish LTCFs and using antimicrobials without microbiology testing — almost all of antimicrobial therapy was administered empirically. This situation requires further analysis and implementation of the prevention and control program including antibiotic stewardship in Polish LTCFs.

Disclosure of Interest
None declared.

Poster session: Infection control in neonates and children

P419

Environmental reservoirs of staphylococcus capitis within the neonatal intensive care unit—transmission risks posed by stethoscopes and incubators

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Introduction: A national incident team was formed by the UK Health Security Agency in response to increased detection of *Staphylococcus capitis* in clinical samples from hospitalised infants in 2021. A specific clone, known as the NRCS-A strain, causes significant outbreaks.
Objectives: A cluster of *S. capitis* bacteraemias in babies in a local neonatal intensive care unit (NICU) prompted investigation as part of the mitigation process through targeted environmental swabbing to identify potential sources of transmission.
Methods: In total, 47 environmental samples were taken from four nurseries and communal areas on the NICU. Contact plates ($25cm^2$) were used to sample cannulation trollies, stethoscopes, keyboards, telephones and cleaner's trolly. Two clean incubators were also sampled with sponge swabs. Presumptive coagulase-negative *Staphylococcus* sp. colonies were subcultured and identified using MALDI-TOF–MS and antibiotic susceptibility profiles obtained.
Results: *S. capitis* was present on 26% (12/47) of the surfaces. Stethoscopes (5/9; 55%) were frequently contaminated before and after cleaning with disinfectant wipes with heavy bioburden (> 100 cfu/$25cm^2$) on the rim of the stethoscope diaphragm. *S. capitis* was present on communal surfaces (outside of nurseries): telephone in a staff area, cleaner's trolley handle and patient equipment: X-ray plate

drawer, incubator door handle, inner lid surface and main body of the weighing scale. Clean incubators were stored in the corridor prior to use. Most environmental isolates did not match antibiograms of the NRCS-A clone except one isolate recovered from a stethoscope.
Conclusion: Stethoscopes and incubators could be potential sources of transmission in the NICU for *S. capitis*. Presence of *S. capitis* on decontaminated items suggest the cleaning technique and product combination is not effective. The NRCS-A clone was not widely disseminated despite babies with colonisation present at the time of sampling. High vigilance is needed to control dissemination, with thorough IPC measures such as validated cleaning protocols. Investigation for alternative, more effective, cleaning options are necessary.

Disclosure of Interest
None declared.

P420

Multimodal strategy to reduce healthcare-associated rotavirus gastroenteritis among pediatric patients: an intervention study

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Introduction: Rotavirus gastroenteritis (RVGE) is frequent healthcare-associated viral infection causing acute pediatric gastroenteritis leading to prolonged hospitalization or re-hospitalization. Spread and transmission of the rotaviruses can be effectively slowed down by different approaches including vaccination and improved hygiene.
Objectives: The aim of this study was to analyze the occurrence of healthcare-associated RVGE (HA-RVGE) after the implementation of prevention and infection control interventions.
Methods: This study was performed at the Pediatric Ward and Infectious Diseases Clinic of University Hospital Trnava. The prevention and infection control program was introduced in 2017 including multimodal components: active surveillance, hand hygiene program, decontamination quality monitoring, education, audits, and feedback. We compared indicators between the pre-intervention period (2015–2017) and the post-intervention period (2018–2020).
Results: Incidence of HA-RVGE decreased from 4.8/1,000 to 0.2/1,000 hospitalized patients ($p < 0.0001$). Alcohol hand rub consumption significantly increased from 11.4/1 to 43.5/1,000 patient days ($p < 0.0001$). Disinfection moment per patient day increased from 4.5 to 9.4 ($p < 0.0001$). Consumption of single disinfecting wipes increased significantly from 0.0 to 89.4/1,000 patient days as well as proportion of decontamination compliance increased from 69.2% to 91.2% ($p = 0.013$). Vaccination coverage with live oral rotavirus vaccines in Trnava municipality increased from 714.4/1,000 live birth to 954.2/1,000 live birth infants ($p < 0.0001$) while incidence of community acquired RVGE requiring hospitalization decreased from 28.8/1,000 to 15.9/1,000 hospitalizations ($p < 0.0001$).
Conclusion: The developed multimodal strategy for prevention of HA-RVGE alongside infant vaccination coverage of more than 90% led to an effective and sharp decline of rotavirus infections in our healthcare facility.

Disclosure of Interest
None declared.

P422

From tiny tots to troubling taps: unmasking the aquatic assassin in the neonatal intensive care unit

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Introduction: Hospital water is a well-known reservoir of opportunistic pathogenic Pseudomonas species, particularly affecting patients with central venous access devices (CVADs). Effective Infection Prevention measures, including rigorous environmental surveillance, are essential in preventing bloodstream infections (BSIs). A distressing incident of a Pseudomonas-related BSI fatality occurred within a Neonatal Intensive Care Unit (NICU) in New York City.
Objectives: This study seeks to uncover the potential correlation between environmental surveillance and BSIs in neonates.
Methods: Rectal surveillance cultures were collected from all roommates of the index patient, using a three-point prevalence approach. Environmental cultures encompassing seven locations within the NICU were obtained, including sink faucets, water tower samples, breastmilk nourishment refrigerators, incubator humidifier chambers, and humidifier water samples. All samples underwent analysis at an external microbiology laboratory. To evaluate potential risk factors, clinical surveillance involved monitoring microbiology reports and electronic medical records for patients with multi-drug resistant organisms and CVADs across the entire hospital.
Results: Of the seven environmental cultures, Pseudomonas species were detected in four (57%) samples. Specifically, Pseudomonas species were identified in three NICU faucets and the breast milk refrigerator. However, all rectal cultures collected for point prevalence surveillance were negative for Pseudomonas. Interestingly, two patients in other intensive care units within the hospital tested positive for Pseudomonas species with the same susceptibility pattern during the same month.
Conclusion: While the genus Pseudomonas was found in multiple sources, there were variations between the samples obtained from environmental cultures and blood cultures. The possibility of the nourishment refrigerator and water faucets as potential sources for pseudomonas BSI cannot be disregarded based on the environmental cultures. To strengthen this investigation, it would be beneficial to explore transmission from the hands of the staff. This study emphasizes the critical importance of Infection Prevention surveillance and the need for maintaining a sustainable and hygienic NICU environment to effectively prevent hospital-acquired infections.

Disclosure of Interest
None declared.

P423

Epidemiological investigation of staphylococcus aureus in neonates

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Introduction: *Staphylococcus aureus* is a bacterium commonly found on the skin and mucous membranes of humans. It can be a harmless commensal organism, but it is also known to cause various infections, both in community and healthcare settings. In neonates, *S. aureus* infections can be particularly concerning due to their underdeveloped immune system. Whereas the source of infection in adults is most

often the own microbiota of the patient, newborn infants acquired this bacterium from the mother, but also from healthcare settings, particularly if they require prolonged hospitalization or invasive medical procedures.
Objectives: To investigate a suspicion of an outbreak in our neonate intensive care unit (NICU).
Methods: Screening samples for *S. aureus* consisted in a pooled of nose, throat and inguinal skin swabs. *S. aureus* isolates were typed with a first line method (Double Locus Sequence Typing). Identical DLST types were then analyzed by whole genome MLST.
Results: Following the occurrence of three patients infected with the same *S. aureus* strain, all patients in the unit (40 beds) were screened on five occasions over a two-month period. Among the 83 screened patients, 44 (53%) were found positive for *S. aureus*; none was MRSA or PVL positive. Molecular and genotyping revealed a great diversity of strains, with 22 patients with a unique strain, three couples of siblings with the same strain and five clusters of 6, 4, 2, 2, and 2 patients, respectively. The first cluster included the initial three patient plus three other colonized patients, the other clusters included only colonized patients.
Conclusion: Similar to a recent study (Nurjadi et al. JAMA Network Open. 2021; 4(9):e2124938), we observed a high proportion of NICU patients harboring *S. aureus* and a high number of possible transmissions suggesting the epidemiology of this pathogen in this setting is different from adults ICUs.

Disclosure of Interest
None declared.

P424

Incidence and microbiological profile of infectious complications associated with peripherally inserted central venous catheters in a neonatal intensive care unit: a prospective study of 151 cases

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P424

Introduction: Infections related to peripherally inserted central venous catheters (PICCs) are a major cause of nosocomial bacteremia, particularly in neonatal intensive care units (NICUs).
Objectives: The objective of this study is to determine the incidence and microbiological profile of infectious complications (IC) related to the insertion of a PICC in a NICU of a Tunisian university hospital.
Methods: We carried out a prospective longitudinal study among neonates (NN) who had undergone a PICC for more than 48 h, admitted to a neonatology department of a Tunisian university hospital during the period from November 1, 2020 to November 30, 2021. The IC collected were defined as: Central Line Bloodstream Infection (CLABSI) in the case of positive blood culture without any other known infectious site, a Catheter Related Bloodstream Infection (CRBSI) in the case of positive blood culture with the same microorganism present on the catheter tip, and a clinical associated sepsis (without any microbiological confirmation).
Results: A total of 151 NNs were enrolled, with a mean gestational age of 32.95 ± 3.64 weeks of amenorrhoea and a female predominance (sex ratio = 0.8). The majority (81.5%) were premature with moderate prematurity predominating (56.1%). The median weight was 1585 g (IQR: 1250–2100) of which 40.40% were hypotrophic. A total of 185 PICC were placed. The median duration before the occurrence of IC was 5 days (IQR: 2–8). Catheter-related clinical sepsis was the most frequent infection with an incidence of 14% and an incidence density (ID) of 17.03/1000 PICC days, followed by CLABSI and CRBSI with an incidence and ID respectively of 10.8%; 13/1000 PICC days and 4.8%; 6.08/1000 PICC days. Microbiologically, the most frequently incriminated pathogens were Klebsiella pneumoniae (43%), followed by Candida albicans (16.7%), coagulase-negative Staphylococcus (10%) and Serratia marcessens (10%).
Conclusion: The implementation of a continuous quality improvement program seems to be effective in improving practices and thus reducing infection rates.

Disclosure of Interest
None declared.

P425

Risk factors of central-line associated bloodstream infections in neonatal intensive care unit patients after implementation of insertion and maintenance bundles: case–control study

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Introduction: The implementation of CVC insertion and maintenance bundles are suggested to reduce the risk of CLABSIs, but still the risk of CLABSIs remains.
Objectives: This study aimed to identify the risk factors of CLABSIs after implementation of CVC insertion and maintenance bundles in neonatal intensive care unit (NICU) patients.
Methods: Methods: This was a case–control study with matching gestational age. The subjects of this study were those who were admitted to a 58-bed NICU at a 2,715-bed tertiary hospital in Seoul from January 1, 2019 to December 31, 2020, and stayed for more than 3 days with keeping peripherally inserted central venous catheter (PICC) for more than 48 h, and having the CVC bundle. Among them, 32 cases with CLABSIs were selected as the case group and 90 matched with them by gestational age (± 7 days) as the control group. To identify the risk factor of CLABSIs, logistic regression analysis was performed and odds ratio and its 95% confidence intervals were calculated using SPSS version 26.0.
Results: Results: The CLABSIs were related with Apgar score at 1 min, presence of patent ductus arteriosus (PDA), history of major surgery, use of artificial ventilation, use of antibiotics such as glycopeptides and β-lactamase inhibitor, PICC dwell time (days). As a result of multivariate analysis, the risk factors of CLABSIs were presence of PDA (OR 6.03, 95% CI 2.14–16.86, $p = 0.001$) and PICC dwell time (OR 1.03, 95% CI 1.01–1.05, $p = 0.005$).
Conclusion: According the results, the presence of PDA and long-term PICC insertion can increase the risk of CLABSI although CVC bundles are implemented, Therefore, regular assessment of the necessity of PICC and removal of PICC as early as possible, especially for neonates with PDA.

Disclosure of Interest
None declared.

P426

Bundle strategy used in a pediatric unit to achieve zero central line-associated bloodstream infections in a tertiary teaching hospital in Palestine

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Introduction: The management of critically ill patients frequently involves the use of central venous catheterization (CVC), which provides vital access for various treatments and monitoring. Pediatric patients, however, are particularly vulnerable to infection and have weakened immune system.
Objectives: The study aims to achieve zero central line-associated bloodstream infections (CLABSIs) in a pediatric unit at 2023.
Methods: Comprehensive bundle strategy was implemented in pediatric unit that combines multiple evidence-based practices in collaboration multidisciplinary team with pediatric head nurse, the nursing team and patients' mother using plan-Do-Study-Act cycles. CLABSIs prevention bundle strategy, Strict adherence to hand hygiene protocols, Proper insertion and maintenance, ensure sterile technique during central line insertion by using sterile gloves, gown and masks. Clean the patient's skin with an antiseptic solution before insertion., avoidance of Femoral Lines, daily Assessment and Line Care and conduct regular education and training programs for healthcare providers to enhance their knowledge and adherence to infection prevention practices.
Implementing this bundle strategy consistently and rigorously shifty by nursing team, daily by head nurse and twice weekly from infection control officer by form that controlled from quality department at the hospital.
Results: The rate of CLABSI decline from 2.8 to ZERO per 1000 catheter days between 2022 and 2023, while the compliance of the CVL bundle increased from 85 to 96%. This is a promising pattern, suggesting that the CLABSI prevention methods have been successful.
Conclusion: Promote a culture of safety on the pediatric unit by promoting open communication, teamwork, and the reporting of any infection prevention-related issues. This involves giving healthcare professionals the confidence to speak up if they notice violations of infection control procedures.

Disclosure of Interest
None declared.

P427

Interventions to decrease central line-associated bloodstream infection in the neonatal intensive care unit in a Korean Hospital

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Introduction: Central line-associated bloodstream infection (CLABSI) is among the most common hospital acquired infections in the neonatal intensive care unit (NICU) and leads to increase in mortality and morbidity.
Objectives: In a university-affiliated tertiary care hospital of 40 bed-NICU, a high-risk mother-to-neonatal integrated care center was opened in August 2017, which lead to an increase in CLABSI. Therefore the improvement activities to decrease CLABSI was initiated.
Methods: To reduce CLABSI, a multidisciplinary team was formed from July to October 2021. Prior to intervention, literature was reviewed, and interviews were done among healthcare workers (HCWs) in the NICU. Problems addressed included poor compliance of daily recording on need of central line (C-line), confusion of appropriate time points of hand hygiene during C-line care, lack of sharing parameters. To improve this, NICU staff participated in monitoring during catheterization, a standardized hand hygiene process and age-specific standards for skin disinfectant use were established, and need of C-line, which was checked during daily rounds, was encouraged to be recorded in medical records. Targeted education on C-line management was conducted and level of knowledge was measured before and after education. A CLABSI board was installed to share the current status of CLABSI with the NICU HCWs.
Results: The estimated CLABSI rate was 5.31 in pre-intervention period (September 2020 to March 2021) and decreased to 4.78 in post-intervention period (November 2021 to May 2022), although not statistically significant ($p = 0.068$). Level of knowledge of C-line management significantly increased from 80.5 to 84.1 points after education ($p = 0.048$). Rate of recording the need to maintain C-line increased from 32.3% to 53.4% after intervention ($p < 0.001$).
Conclusion: There was a decrease in incidence after intervention. The level of knowledge among NICU HCWs on CLABSI guidelines and compliance for daily assessment and recording the need for C-line maintenance increased significantly. Multidisciplinary measures developed through continuous communication with the HCWs in the NICU are necessary to decrease CLABSI in the NICU.

Disclosure of Interest
None declared.

P428

Epidemiology of complications related to epicutaneous catheters: a one-year prospective study in a neonatal intensive care unit

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P428

Introduction: Peripherally inserted central venous catheters (PICCs) are widely used in neonatal intensive care units (NICUs), allowing safe venous access in neonates (NNs), especially during prolonged stays.
Objectives: The aim of this study is to determine the epidemiological and clinical profile of mechanical and infectious complications related to the insertion of a PICC in a NICU.
Methods: We carried out a prospective descriptive study among NNs who had undergone PC placement, admitted to a neonatology department of a Tunisian university hospital during the period from November 1, 2020 to November 30, 2021. Collected mechanical complications were: obstruction, catheter migration, accidental removal, parenteral leakage, phlebitis, edema and infiltration. Infectious complications were defined according to the centers for diseases control and prevention.
Results: A total of 151 NNs were collected with a mean gestational age of 32.95 ± 3.64 WA and a female predominance (sex ratio = 0.8). The majority (81.5%) was premature. The median weight was 1585 g (IQR: 1250–2100). Respiratory distress was the primary reason for admission (89.4%). A history of umbilical venous catheterization was noted in 86.1% of NN. A total of 185 PC were placed in the 151 patients. Placement was performed under guide in 42% of cases with a final fixation time of 60 min (IQR: 60–120). In the majority of cases (86%), placement was uneventful. The median age at PC placement was 4 days (IQR: 2–6). Indications were dominated by prolonged parenteral nutrition (83.8%) and low birth weight (49.2%). The median duration of PICC maintenance was 8 days (IIQ: 5.5–14). Regarding complications, 87 PICC (47.02%) were complicated during hospitalization, of which (39%) were mechanical complications dominated by parenteral leakage (51.6%) and accidental removal (21.2%). Infectious complications were reported in 63.2% of cases. The median time of onset of complications was 5 days $\pm$ 4.24 with a minimum of 48 h and a maximum of 21 days.
Conclusion: Infectious complications related to PICCs use are the most redoubtable, confirming the importance of constant surveillance for hospital infection control in the NICU.

Disclosure of Interest
None declared.

P429

Impact of SARS-COV-2 outbreak on blood cultures of pediatric patients

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Introduction: The emergence of the SARS-CoV-2 infection has presented significant challenges to healthcare systems worldwide. One notable aspect is the change in the microbiological profile of blood cultures.
Objectives: This study aims to compare the profile of positive results in blood cultures of pediatric patients admitted two years before and two years after the onset of the COVID-19 outbreak.
Methods: All patients aged less than 17 years who were admitted between 2018 and 2022 to the largest referral children's hospital in east of Iran, were included in the study. We analyzed positive blood cultures with pathogenic microorganisms and compared the results before and after the emergence of SARS-CoV-2.
Results: Between 2018 and 2020, there were 173 positive blood cultures (4%), while there were 321 positive blood cultures (0.1%) over the two years following this time period. The most common pathogens before the SARS-CoV-2 outbreak were Klebsiella pneumoniae 38 (12%), E. coli 33 (10.4%), Staphylococcus aureus 14 (4.4%), yeast 9 (2.8%) and Acinetobacter 5 (1.5%). However, in the two years following the outbreak, the most common pathogens were Klebsiella pneumonia 75 (23.6%), Acinetobacter 50 (15.7%), E. coli 46 (14.5%), and yeast (9%). Staphylococcus aureus was only detected in one patient between 2020 and 2022.
Conclusion: Based on our findings, the profile of blood cultures may be influenced by pandemic infections such as SARS-CoV-2. This impact could be attributed to factors such as the hygiene practices of healthcare workers or treatment protocols involving widespread antibiotic usage. Further studies are warranted to better understand the underlying mechanisms contributing to these changes and to optimize patient care during pandemic outbreaks.

Disclosure of Interest
None declared.

P431

The study of eryptosis in newborns with ventilator-associate pneumonia, receiving inhaled aminoglycosides in a complex treatment

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Introduction: Ventilator-associated pneumonia (VAP) as nosocomial complication that develops after at least 48 h of mechanical ventilation. Antibiotics empirically administered to patients for the therapy of VAP in up to 70% of cases are considered as ineffective. There is crucial importance to develop novel treatment approaches and optimize the existing ones. One of such treatment strategies is to use nebulized antibiotics.
Objectives: *The aim*—to study the phosphatidylserine translocation to the outer leaflet in membranes of red blood cells in newborns with VAP, receiving inhaled aminoglycosides in a complex treatment.
Methods: In the study 20 newborns with proved VAP took part. There were compared traditional empirical de-escalation systemic antibiotic therapy and the use of systemic wide-spectrum antibiotic (the comparison group; n-10 patients) in combination with inhaled aminoglycosides via nebulizer (the main group; n-10 patients). In both groups of newborn we collected 1 ml of blood on the 1st, 3rd, 5th and/or after extubation for the study of phosphatidylserine translocation to the outer leaflet in membranes of red blood cells. Evaluation of binding degree of fluorescently-labeled annexin V to translocated phosphatidylserine is a common approach to assess eryptosis.
Results: Comparing the effectiveness of treatment regimens, it is important to emphasize that administration of adjunctive nebulized amikacin statistically significantly decreased the values of annexin V after both 48 h and 96 h of treatment compared with the conventional systemic antimicrobial therapy.
Conclusion: Our clinical data corroborate other studies, which support the idea that aerosolized antibiotics improve the clinical cure results. Moreover, the positive effects of inhaled amikacin are confirmed in this research by analyzing sensitive markers. Due to the responsiveness of eryptosis indices to inflammation intensity, eryptosis is considered as a good cell model to monitor the disease severity and treatment effectiveness monitoring in vivo.

Disclosure of Interest
None declared.

P432

Association of IL-17 and IL-17 receptor gene polymorphisms and IL-17 levels with community acquired pneumonia in children aged 1 month to 5 years

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Introduction: Community-acquired pneumonia (CAP) is prevalent (25%) in children under 5 years of age. Given the role of IL-17/IL-17 receptor (R) axis in the inflammation induced in lungs tissue and the effects of single nucleotide polymorphisms (SNP) in the gene expression.
Objectives: This study aimed to evaluate the relationship between the polymorphisms in the IL-17, IL-17R gene and the serum level of IL-17A with CAP among Iranian children.
Methods: The study was carried out on the blood sample of 126 children with CAP and 70 healthy children as control. The genotypes of IL-17 and IL-17R were determined using allele specific and restriction fragment length polymorphism (RFLP) polymerase chain reaction (PCR). Serum IL-17A levels were also analyzed by ELISA method.
Results: The level of IL-17A was significantly higher ($P = 0.001$) in the patients compared with that in the controls (295.8 ± 138.5 vs 40.6 ± 35.3 pg/ml, respectively). Although, there was no statistically significant differences in the frequency of alleles and genotypes of IL-17 rs4711998 and IL-17 rs3748067 between the study groups, genotype AA and allele A at IL-17R rs4819554 were significantly more frequent in the patients than the controls. Results revealed no significant correlation between the frequency of IL-17 rs4711998 and IL-17 rs3748067 genotypes with IL-17 level. With the exception of positive correlation with fever (0.001), IL-17 level was not associated with other clinical manifestations.
Conclusion: Significant up-regulation of IL-17A in the patients' sera as well as its association with fever implies the role of this cytokine in the pathogenesis of CAP. The presence of allele A and genotype AA in the IL-17R rs4819554 may predispose Iranian children to the increased risk of CAP. However, no significant association between IL-17 variants and IL-17 level may be consequence of a complex network in the production of IL-17.

Disclosure of Interest
None declared.

P433

Five candida Lusitaniae cases isolated from bloodstream infection in neonates ward Bali Mandara Hospital: Is it an outbreak?

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P433

Introduction: *Candida lusitaniae* is one of the emerging pathogen that has been reported as a caused of candidemia in immunocompromised patient. Neonatology unit is one of the critical area in hospital that become "reservoir" for *C. lusitaniae* and colonize the environment if there is lack of infection control measurements.
Objectives: This study aims to report five cases candidemia due to *Candida lusitaniae* in neonates ward Bali Mandara Hospital, Bali, Indonesia and the intervention of infection and prevention control measurements to stop the spread of outbreak.
Methods: The Department of Clinical Microbiology database at Bali Mandara Hospital for the period of January–May 2023 was reviewed to identify patients with positive blood culture in Neonates Intensive Care Unit (NICU). Neonates with *C. lusitaniae* isolated from blood culture were eligible for analysis. We use automated system for blood culture incubation system BacT/Alert and Vitek2 Compact System for identification and sensitivity test of isolation *C. lusitaniae*. We compare the laboratory data with clinical manifestation of each case. We also monitor the intervention and Infection control measurements to control the outbreak.
Results: All the *Candida lusitaniae* isolated from positive blood culture has the same sensitivity antifungal patterns, which sensitive to Voriconazole, AMphotericin B and Flucytosin.

Characteristic	Case 1	Case 2	Case 3	Case 4	Case 5
Birth date (dd/mm/yy)	07/03/23	10/04/23	12/04/23	16/04/23	10/04/23
Admission Hospital	11/03/23	11/04/23	14/04/23	16/04/23	14/04/23
Wards	NICU	NICU	NICU	NICU	Perinatology
Gestational age (weeks)	30	37	38	38	38
Sex	M	M	M	F	F
Birth weight (g)	1680	3000	2700	3080	2150
External device	PICC	ETT + PICC	IV line + PICC + ETT	IV line	IV line
Parenteral nutrition	Yes	Yes	Yes	Yes	Yes
Broad spectrum antibiotics	SCF, AK, MEM	AM, GN, SCF, AK, MEM	AM, GN, SCF, AK	AM, GN, SCF, AK	AM, GN, SCF, AK, MET
Blood culture positive on	15/03/23	13/03/23	20/03/23	19/03/23	19/03/23
Antifungal therapy	FL, AMB, VOR	FL, VOR	VOR	VOR	VOR
Outcome	Discharged	Discharged	Discharged	Discharged	Discharged

The first intervention to control the transmission were closed the NICU ward and cohorting all the neonates. The measurements to control the outbreak is performed the general cleaning, maintain the HVAC (Heating, Ventilation and Air Conditioning) system and evaluate the hand hygiene compliance. Some environment samples from NICU ward including surface swabs and air quality were underwent in microbiology laboratory and yielded *C. lusitaniae* only from zink.

Conclusion: Candida lusitaniae is one of Candida species that cause candidemia. The spread of these five cases can be assumed transmitted horizontally, based on phenotypic method of antifungal sensitivity pattern. However, clonility relatedness need further study. The multidisciplinary approach including Pediatrician, Infection Preventionist, Clinical Microbiologist and other related stakeholders are beneficial to control the outbreak.

Disclosure of Interest

I. W. A. G. M. Saputra Employee of: Clinical Microbiology Laboratory Staff, I. A. S. Kusumadewi Employee of: Neonatology Intensive Care Unit Team Bali Mandara Hospital.

P434

Investigation of probiotic nasal spray for the prevention of common respiratory viruses in children with asthma: a double-blind randomized clinical trial

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Introduction: With the emergence of SARS-CoV-2 in late 2019, followed by its rapid global spread, there has been a collective effort to identify effective preventive strategies. While vaccine development has been a major focus, alternative safe preventive options have been sought after.
Objectives: The objective of this study is to investigate the efficacy of a probiotic nasal spray containing lysate Lactobacillus casei and Lactobacillus reuteri in preventing common respiratory viruses, including COVID-19, in children with asthma.
Methods: This study employed a double-blind, placebo-controlled randomized clinical trial conducted between October 2020 and February 2021, a period that encompasses the school year, providing similar exposure to infections. Participants were instructed to use the nasal spray twice daily, applying it to each nostril, for a duration of one month. Follow-up assessments were conducted at two-week intervals over a period of two months. During these assessments, participants were queried about any symptoms or signs related to respiratory infections, and information regarding symptoms in other family members was also obtained ethics committee (Code: IR.MUMS.REC.1399.311) (IRCT20200117046164N2).
Results: A total of 86 patients with a mean age of 10.32 years (ranging from 6 to 16 years) were enrolled in the study. There was no significant difference between the two groups in terms of infection incidence ($p = 0.15$). The outcome of the disease was assessed, and it was observed that 70.5% of the placebo group and 90.5% of the

intervention group did not require any treatment after infection. There was a significant difference between the two groups in terms of antibiotic use or hospitalization necessity (p = 0.032).
Conclusion: Based on our study, the use of a nasal spray containing lysate probiotics of Lactobacillus casei and Lactobacillus reuteri did not result in a statistically significant reduction in the incidence of respiratory infections. However, when infections did occur, this nasal spray showed potential in mitigating their severity. Further research is warranted to explore the potential benefits of probiotic interventions in preventing respiratory infections in asthmatic children.

Disclosure of Interest
None declared.

P435

Barriers to infection control in pediatrics ICU at a rural medical college in India

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Introduction: In low- and middle-income nations, like India, hospital acquired infections are more common than in high-income nations. Reducing the spread of hospital acquired illnesses becomes all the more relevant in pediatric intensive care units. Little research has been conducted on the challenges hampering the effective implementation of hospital interventions in pediatrics units.
Objectives: The SEIPS approach (Systems Engineering Initiative for Patient Safety) looks at issues from the perspective of how people and systems interact. We intended to use the same to study the challenges faced by pediatric facility in a resource constrained setting.
Methods: A narrative review of factors affecting infection control in pediatric setting was conducted. Further a study of relevant stakeholders including nursing and physicians was conducted. This was done using a semi structured questionnaire which was based on the SEIPS model.
Results: Our study highlighted the challenges which are associated with infection control in pediatric ICUs in low-resource settings. The broad themes were lack of awareness, lack of trained nursing staff, and lack of organizational support. Major barriers included a high rate of nursing staff turnover, little training received by new staff, erratic supply of personal protective equipment, and heavy clinical workloads. Further, the education level of the patient's attendant directly corresponded to their lack of awareness towards infection control in a highly sensitive setting such as PICU. The lack of a dedicated infection control team in our setting was identified as a major drawback.
Conclusion: Our study identified the role of institutional support and training in the effective implementation of infection control practices. It is also vital that the staff is proactive in counseling the patient's attendants towards infection control practices as they are actively involved in the patient care journey in the hospital. Also, it is important to focus on IEC materials for increasing awareness on infection control in high risk settings such as PICU.

Disclosure of Interest
None declared.

P437

Study of outpatient children in five waves of COVID-19, comparing clinical manifestations, need for hospitalization, and antibiotic prescription

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Introduction: The SARS-CoV-2 virus has several subtypes with different characteristics. The disease is mild in children, and patients with this infection are generally not expected to receive antibiotics. The recurrence of the disease in children and the use of antibiotics in this group of patients have not been investigated.
Objectives: This study aimed to focus on the number of times a person gets sick with COVID-19 and the use of antibiotics due to secondary bacterial infections in outpatient children.
Methods: From February 2020 to August 2022 the study was conducted at the level of three outpatient centers for pediatric infectious diseases, all children younger than 15 years of age with SARS-CoV-2 infection whose information was complete at the outpatient clinic and whose parents signed the consent form to participate in the study were included in the study. Patients were studied in terms of clinical manifestations, need for hospitalization, antibiotic prescription, and the number of times they contracted COVID-19. Descriptive findings were classified and summarized as frequency and percentage. Median and interquartile ranges were used for continuous variables.
Results: Of 2448 children with the final diagnosis of COVID-19, 65% were boys, 192 people (7.84%) were infected with COVID-19 twice, 35 (1.43%) three times, 7 (0.29%) four times, and 2 (0.14%) five times, and 143 (5.84%) needed hospitalization. The prevalence of antibiotic use was 17.73% (n = 434); Acute bacterial sinusitis (12.21%) and middle ear infection (8.52%) were the most common known reasons for an antibiotic prescription, respectively. Azithromycin, Amoxicillin, Cfuroxime, and Co-cotrimoxazole were the most used antibiotics.
Conclusion: Several subtypes of SARS-CoV-2 have different clinical behaviors in the age group of children. A person may be infected with COVID-19 several times. The use of antibiotics in outpatients is insignificant and mostly limited to acute sinusitis and middle ear infection.

Disclosure of Interest
A. Hosseininasab Conflict with: no conflict, M. Farroknia Conflict with: no conflict.

Poster session: IPC challenges in immunocompromised patients

P438

Clinical signs and symptoms guided therapy for febrile neutropenia

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Introduction: Infections in neutropenic patients are often polymicrobial, and the use of infection-predicting scales is crucial for initiating preemptive therapy, particularly in settings with limited resources.
Objectives: This study proposes predicting scales for common infections in neutropenic patients, enabling the initiation of antibiotics and antifungals while awaiting investigation results.
Methods: A prospective cohort study included 234 episodes of febrile neutropenia. Patients experienced persistent or recurrent fever after five days of empirical antibiotics. Episodes were categorized based on symptoms (respiratory or gastrointestinal). Preemptive therapy was initiated based on prespecified infection criteria. Binary multivariate logistic regression suggested validated predicting scales for invasive pulmonary aspergillosis (IPA), pneumocystis jirovecii pneumonia (PJP), neutropenic enterocolitis (NEC), and clostridioides difficile infection (CDI). The area under the curve (AUC) was calculated for these predicting scales; mortality rate compared to the historical group (neutropenic fever patients in the previous three years at our center) to assess preemptive therapy effectiveness.
Results: IPA.Scale (Hypoxia, Wheezing, rales, Hemoptysis, pleural pain, productive cough, CRP > 120 mg/dl) AUC = 0.69 (95% CI 0.59–0.79), PJP. Scale (Hypoxia, nonproductive cough, absence of Wheezing, rales, and Hemoptysis) AUC = 0.82 (95% CI 0.74–0.90), CDI.Scale

(Abdominal bloating, diarrhea, absence of Right iliac fossa tenderness) AUC = 0.90 (95% CI 0.85–0.95), and NEC.Scale (Right iliac fossa tenderness, vomiting, mouth ulcerations) AUC = 0.82 (95% CI 0.74–0.89). To assess preemptive therapy's impact on in-hospital mortality and stay duration, we compared mortality rates between our study population and the historical group. Our study had a mortality rate of 20.8%, while the historical group had 16.5%, with no significant difference (p = 0.08). However, our study population had a shorter hospital stay (28 ± 8 vs. 35 ± 6, respectively; p = 0.04), indicating a significant difference.
Conclusion: Implementing preemptive therapy based on clinical predicting scales reduced hospital stay for febrile neutropenic patients experiencing persistent or recurrent fever after five days of empirical therapy initiation.

Disclosure of Interest
None declared.

P439

Legionella management and control in a hematopoietic stem-cell transplantation service

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P439

Introduction: *Legionella pneumophila* can cause serious disease including pneumonia mainly affecting immunocompromised patients. Historically, most outbreaks of Legionnaires' disease have occurred in buildings with large complex water systems as hotels, hospitals, nursing homes (CDC). This concern inspired us to develop a multidisciplinary Legionella management program even in a country with no formal recommendation for that.
Objectives: Prevention and monitoring of Legionella outbreak in a Hematopoietic stem-cell transplantation service.
Methods: Descriptive study of *Legionella* management and control in a Hematopoietic stem-cell transplantation service in a private Hospital in São Paulo.
Several measures have been performed in last years as: diagnostic investigation of clinical suspects, active surveillance of environmental samples and evaluation of the corrective/preventive measures.
Legionella tests performed for clinical diagnosis include: urinary antigen, PCR (bronchoalveolar lavage, sputum or tracheal secretion) and serology.
Environmental samples for *Legionella pneumophila* (serogroup 1) were analysed by SMWW 23ª Ed. 9260 J method.
Results: Environmental samples for *Legionella pneumophila* analysis were collected semiannually in a HSCT service (cold and hot water) from shower, bathroom's sink and bedroom's sink). At the beginning of 2022, one of the samples was positive (water shower). Samples were taken in a short time interval in downstream and upstream points, 38 were negative and 6 positives. The following measures were taken: hot water system temperature was increased and flushed for five minutes at showers and sinks and cold water system was hyper chlorinated with the same preventive/corrective measures, since there were no more positive results. Clinical suspicions were all excluded, with no case of nosocomial nor community transmission along the last years and months.
Conclusion: A well-structured management and control program is essential to support health care facilities to prevent and control *Legionella pneumophila* in hydraulic systems and to avoid nosocomial transmission.

Disclosure of Interest
None declared.

P440

Infections in primary immunodeficiency patients: a hospital-based study

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Introduction: Primary immunodeficiency disorders represent a diverse group of diseases with an increasing global prevalence. Patients with primary immunodeficiency are highly prone to recurrent infections.
Objectives: This survey aims to investigate hospital admissions due to infections in a referral hospital over a span of six years.
Methods: A cross-sectional study was conducted from 2016 to 2023 at the largest referral children's hospital in the eastern region of Iran. All patients with immunodeficiency-related codes in the hospital information system were included. The duration of hospital stay, diagnosis at admission, final diagnosis, and outcomes were recorded. Positive blood cultures were also taken into account.
Results: During the study period, a total of 158,780 patients were admitted to the hospital. Among them, 354 patients (0.21%), ranging in age from 1 month to 22 years, had immunodeficiency and stayed in the hospital for more than one day. Among the primary immunodeficiency (PID) patients, 28 (8%) passed away due to infection, with 10 males and 14 females, and a mean age of 2.54 years. Most of the deceased patients had combined immunodeficiency. In comparison, 4052 patients (2.6%) passed away in all admitted patients. Among the commonly isolated pathogens, Staphylococcus aureus (14%), Klebsiella spp. (6%), and E. coli (5%) were the most prevalent in the PID population. In all positive blood cultures of admitted children, Klebsiella spp. 206 (24%), E. coli 116 (15%), Acinetobacter 76 (9%) and yeast (6%) were the most frequently encountered pathogens.
Conclusion: According to our findings, infectious diseases are a leading cause of mortality in patients with primary immunodeficiency. The overall prognosis is poor in a high percentage of these patients, emphasizing the need for appropriate preventive and treatment protocols. Given the high frequency of Staphylococcus aureus in PID patients and the role of topical antimicrobials in eradicating this pathogen, the utilization of such agents may be beneficial in limiting hospital and community transmission.

Disclosure of Interest
None declared.

P441

Incidence of influenza and other respiratory viral infections in adults following hematopoietic stem cell transplant (HSCT) at a tertiary care hospital in India

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Introduction: Respiratory viral infections are the major risk of mortality & morbidity to HSCT recipients. They are at high risk during early post-engraftment period, exposure to community or an outbreak. To minimize these opportunistic infections, it is important to analyze their incidence, disease burden & associated risk.
Objectives: Estimate the severity, incidence, disease burden, cause of mortalities & risk factors. Identifying the clinical features & need of early detection to reduce complications.

Methods: Our study included 100 HSCT recipients, enrolled from January 2017 to February 2020, followed up prospectively for 18 months for respiratory episodes until August 2021. RT-PCR was performed for viral etiology including influenza virus, human metapneumovirus (hMPV), respiratory syncytial virus (RSV), adenovirus, rhinovirus, parainfluenza virus (PIV 1–4).
Results: Total 318 episodes of acute respiratory infections occurred, of which 252 episodes (mean:3.2/patient) were seen in autologous (n = 78), 66 episodes (mean:3/patient) in allogeneic HSCT (n = 22). A total of 158 collected episodes 61 (38.6%) samples were tested positive. A higher infection rate (41.4%) was seen in autologous compared with allogeneic HSCT (28.5%). The most common was rhinovirus (31.1%), followed by PIV (19.6%), hMPV (16.3%), RSV (18%), Influenza (14.7%). We also observed 5 episodes with dual viruses & 94 episodes of lower respiratory tract infection. The maximum incidence was seen in rhinovirus; 18.6 per 100 patient per year, followed by PIV (11), RSV (10), hMPV (8.9), Influenza (7.9). The hCFR for influenza was 11.1% & 30% for hMPV, calculated as the number of in-hospital deaths due to these infections with respect to number of diagnosed & hospitalized cases during follow-up period.
Conclusion: Comparatively higher mortality was seen in allogeneic patients especially during early post-transplant. There were dual infections which needs to be studied at molecular level. The data on incidence & the disease burden helps to assess the severity & cause of mortalities. It will provide the information of rising cases that may cause an outbreak especially for influenza & SARS-CoV-2, which have subtypes/mutants. Treatment, vaccination & early diagnosis as a routine practice can prevent the transmission.

Disclosure of Interest
None declared.

P442

Nosocomial infection rates for primary blood stream infections and pneumonia after allogeneic and autologous hematopoietic stem cell transplantation—5-year data from the German surveillance system ONKO-KISS, 2018–2022

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Introduction: After allogeneic (allo-) and autologous (auto-) hematopoietic stem cell transplantation (HSCT), infections are major causes of morbidity and mortality. ONKO-KISS is a module in the German Nosocomial Infection Surveillance System (KISS) focusing on primary blood stream infections (BSI) and pneumonia in patients after allo- and auto-HSCT.
Objectives: To evaluate nosocomial infection rates for BSI and pneumonia after allo- and auto-HSCT.
Methods: Data from voluntarily participating hematologic departments in Germany that conducted surveillance for HSCT patients were analyzed for the years 2018–2022. Patients after allo-/auto-HSCT were included within their hospital stay. Modified definitions of the NHSN were used for the diagnosis of BSI and pneumonia. Neutropenia rate was defined as the number of days with absolute neutrophil count < 500/mm^3 or white blood cell count < 1000 mm^3 per 100 patient days, neutropenia-associated infection rates as the number of neutropenia-associated infections per 1000 neutropenia days. Device utilization ratio for central venous catheters (CVC; excluding ports) was defined as the number of CVC days per 100 patient days, CVC-associated infection (CLABSI) rates as the number of CVC-associated BSI per 1000 CVC days.
Results: 4121 patients with allo-HSCT from 22 departments and 1944 patients with auto-HSCT from 21 departments were included. Mean neutropenia rates were 47.17 after allo-HSCT and 32.16 after auto-HSCT. Mean CVC utilization ratios were 88.42 after allo-HSCT and 66.40 after auto-HSCT. The mean overall infection rates for BSI and pneumonia per 1000 patient days were 6.14 and 2.44 after allo-HSCT, and 6.80 and 1.96 after auto-HSCT, respectively. CLABSI rates in total and during neutropenia per 1000 CVC days were 3.5 and 6.09 after allo-HSCT, and 4.96 and 12.40 after auto-HSCT, respectively. Neutropenia-associated infection rates for BSI and pneumonia per 1000 neutropenia days were 12.05 and 4.09 after allo-HSCT, and 19.28 and 4.45 after auto-HSCT, respectively.
Conclusion: BSI and pneumonia are common infectious events after HSCT, with higher rates of CLABSI and neutropenia-associated BSI and pneumonia after auto-HSCT compared to allo-HSCT.

Disclosure of Interest
None declared.

Poster session: Environmental control in low- & middle-economy countries

P443

Interventions to improve environmental cleanliness in healthcare facilities in low- and middle-income countries: a systematic review

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Introduction: The risks of healthcare-associated infections and subsequent antimicrobial resistance have been linked to facilities' environmental cleanliness.
Objectives: The purpose of this study was to assess healthcare cleanliness interventions and describe their characteristics and effectiveness critically in low and middle-income countries (LMICs).
Methods: We conducted a systematic literature review following the Preferred Reporting Items for Systematic Reviews and Meta-Analysis guidelines. We searched Medline, Global Health, EMBASE, and CINAHL for articles published between Jan 2010 and March 2022. We focused on studies that measured cleanliness using objective measures (ATP illuminance, pathogen presence, fluorescent marker removal, and aerobic colony count). We conducted a risk of bias (RoB) assessment adapting the ROBINS-I tool; studies meeting the highest two categories were considered for data extraction and synthesis.
Results: From 11,292 abstracts screened, twenty-three were assessed for RoB, and nine studies were chosen for complete data extraction. Most interventions identified were multi-modal, involving educational components (n = 6), health system strategies (n = 6), and modifying cleaning practices or materials (n = 7). Most recipients were orderlies (n = 3) or nurses (n = 2), or both (n = 2). We found substantial heterogeneity in study designs, most of which were pilot studies applying an uncontrolled before-and-after design. Our RoB assessment yielded moderate to serious bias, with risks arising from potential time-varying confounders. The baseline cleanliness levels ranged from 28 to 58% of the samples collected. The most reported measures were the fluorescent markers removal (n = 5) and ATP illuminance (n = 5). All studies reported a statistically significant improvement on at least one of the measures used, with an effect size ranging from 11 to 48 percentage points for fluorescent markers removal and 14 to 26 percentage points for ATP illuminance.
Conclusion: Despite substantial variations in design and quality, several studies show potential to improve environmental cleanliness. Further research on the effectiveness of cleaning interventions is needed, especially using a randomised controlled design.

Disclosure of Interest
None declared.

P444

Hospital environment surveillance—standard or a routine: a report

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Introduction: The microbial monitoring of the hospital environment surrounding a patient can be twofold, to check the presence of particular nosocomial pathogens that could be the cause of an outbreak and to monitor the standards of the hospital environment, which includes surveillance of the air, water, inanimate environment, and food.
Objectives: In this study infection control teams from four tertiary care hospitals in south India were asked to compile information for this report on the standards and procedures they follow when monitoring the hospital environment.
Methods: In four tertiary care facilities in south India, a multi-centric cross-sectional observational study was carried out in the month of May 2023. Data on various surveillance techniques for the hospital's air, water, and inanimate environment are gathered, contrasted, and analysed which include the use of airborne particle sampling, routine water culturing from a variety of sources, endotoxin assay of dialysis water, sampling of inanimate surfaces in high-risk areas, frequency of surveillance, and analysis of the surveillance's results.
Results: The data collected and analyzed showed that the frequency of conducting environmental surveillance varies from each centre but the most commonly followed is monthly surveillance. The media and methods used in air and water sampling had minor differences but endotoxin assay of the dialysis water is common among all the hospitals. Varied differences were observed in the protocol for surface environment surveillance and also the acceptable values of the surveillance's results.
Table 1 Hospital surveillance practices -Total Hospitals: 4

	Frequency (monthly)
Air	75%
Water	75%
Surface environment	25%
Endotoxin assay	100%

Conclusion: Numerous national (ICMR) and worldwide (WHO) guidelines on hospital environment surveillance advise against routine environmental microbiological testing unless epidemiologically necessary for identifying a likely source of an outbreak. Standardized environmental sampling techniques can be implemented and can be enhanced by a standardized strategy and set of recommendations, which will make it possible to compare the outcomes of research studies, hospital wards, and institutes.

Disclosure of Interest
None declared.

P445

Cleaning and disinfection effectiveness and antibiotic sensitivity in neonatology and theater: case of 3 rural hospitals in Rwanda

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Introduction: The environmental infections can worsen the outcomes of patients and we evaluate the effectiveness of cleaning and disinfection in neonatology and theater.
Objectives: To evaluate the cleaning effectiveness within hospital environment.
Methods: We used data collected during programmatic surveillance in neonatology unit and theater room from 15th Jan to 15th Feb 2023, in 3 rural Rwandan District Hospitals. Usually, these wards are cleaned once per week. Samples were transported and analyzed. The infection prevalence was defined as number of swabs with bacteria among the total swabs collected and we compared it before and after cleaning to evaluate the effectiveness of cleaning and disinfection using the Odd Ratio (OR) with 95% Confidence Intervals (CI). We report the resistant bacteria to any Antibiotic (ATB) and multidrug resistance (MDR) when three or more antibiotic were not responding.
Results: We collected 77 samples before cleaning, the bacteria were identified in 60 samples reflecting a prevalence of 78%(95% CI 67–86). After cleaning we collected 70 samples and bacteria were identified in 30 samples, thus a prevalence of 43%(95% CI 32–54). The odd ratio was 4.7 (CI 2.2–9.6) showing that the risk of infection was about 4 times higher before cleaning than after cleaning and was statistically significant.
Among 60 bacteria identified before cleaning, the most common identified were Staphylococci ssp, n = 15 (25%) and 46 identified were resistant to at least one antibiotic with the prevalence of 66%, while 41 were resistant to 3 ATB at least with the prevalence of 58%. Among 30 identified bacteria after cleaning, the most common identified were Staphylococcus spp, n = 10 (33%),23 of them were resistant to at least one ATB with the prevalence of 76%, while 13 were resistant to at least 3 ATBs with the prevalence of 43%.
Conclusion: Routine environmental cleaning of neonatal unit and theater was not 100% effective, at baseline that's why more frequent cleaning is highly advised to improve environmental and equipment hygiene within those wards. The findings reiterate the necessity to reexamine effectiveness of disinfection and cleaning practices within the study hospitals.

Disclosure of Interest
None declared.

P446

Environmental surveillance of multidrug-resistant gram-negative bacilli in a Ivorian Tertiary Hospital, 2023

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Introduction: Nosocomial infections from hospital environments have been shown to be a particularly prevalent source of multidrug resistant strains, yet surveillance of hospital environmental contamination is often not investigated. The ESKAPE group (*Enterococcus spp, Staphylococcus aureus Klebsiella pneumoniae, Acinetobacter baumannii, Pseudomonas aeruginosa and Enterobacter cloacae)* is often implicated in healthcare-associated infections.
Objectives: This study was to analyze the distribution of GRAM-negative bacilli in the hospital environmental at University Hospital of Angré and their antibiotic resistance.

Methods: A cross-sectional study was conducted from April 12 to May 12, 2023, from 4 wards in Angré University Hospital. Swabs samples of dry and wet surfaces (beds, washbasins, handles, potencies) were taken and streaked onto selective agar plates. Bacteria were identified by standard bacteriological methods. Antibiotic susceptibility testing by the Kirby-Bauer disk diffusion method and interpretation by CA-SFM 2019 standards.
Results: From 174 samples, 108 bacterial strains were isolated. The majority of species isolated were *Acinetobacter baumannii* 28.70%; *Enterobacter spp* (25.93%), *Klebsiella pneumoniae* (20.37%) and *Pseudomonas aeruginosa* (12.96%). MDR bacteria represented 57.40%. Enterobacteriaceae producing extended spectrum lactamases (E-BLSE) and carbapenemases were isolated in 24.19% and 20.96%. *Acinetobacter baumannii* was resistant for imipenem in 27.41%. Ceftazidime-resistant *Pseudomonas aeruginosa* was 6.45%. The MDR rate was higher in the ICU (61.29%) than surgery (25.80%).
Conclusion: We, therefore, recommend the implementation of infection prevention and control measures, particularly hand hygiene and hospital environmental cleaning.

Disclosure of Interest
None declared.

P447

Antimicrobial profile of surface and air contaminants, and infectious risks associated with healthcare waste management in a hospital in Yaounde, Cameroon

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Introduction: Hospital surface contaminations and pathogen aerosolization plays a significant role in contagion and transmission outbreaks due to the pathogens' ability to survive on dry surfaces and waste generated during care respectively. This highlights the importance of the microbiological surveillance of the hospital environment and Healthcare waste management (HCWM).
Objectives: Therefore, this study aimed at the determination of the antimicrobial profile of surface and air contaminants, and infectious risk factors associated with HCWM at the Biology, Emergency Departments and Disposal site a Hospital in Yaounde, Cameroon.
Methods: In a cross-sectional study, 871 swabs and air samples were collected from trash bins and various hospital surfaces (tables, sinks, chairs, countertops, desks, patient beds and bed stands) of all aforementioned sites. Inoculated on Mueller–Hinton agar, pathogenic microbial contaminants were isolated, identified and their antimicrobial susceptibility profile determined using Kirby Bauer method. In addition, the Chi-square test determined the infectious risk factors.
Results: There was a high prevalence of microbial surface contaminants (79.1%) with the predominance of *Staphylococcus aureus* (22.4%) and *Salmonella spp.* (20.0%). Only the Biology Department revealed microbial air contaminations (45.9%) with a predominance of *Aspergillus spp.* (30.7%), associated to poor hospital unit ventilation. Moreover, the prevalence of multi-drug resistances varied (0–100%). This included Methicillin Resistant *Staphylococcus aureus* (66.7–100%), Extended Spectrum Beta-Lactamase Producing Enterobacteriaceae (0–25%) and Carbapenem-Resistant Enterobacteriaceae (37.5–100%). Finally, the infectious risk factors associated with HCWM included: (1) The sample period; (2) The sample site and (3) The microbial isolate.
Conclusion: The high prevalence of microbial contaminants is an indicator of ineffective infection control measures. Thus reiterating the need to re-examine their application in Healthcare facilities to avoid Healthcare waste-related infections, nosocomial infections and environmental pollution.

Disclosure of Interest
None declared.

P448

Impact of COVID-19 pandemic on the prevalence of surface contaminants in a hospital in Yaounde, Cameroon

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Introduction: An estimated 40% of Nosocomial infections have been attributed to cross-infection via the healthcare personnels' hands, which could result either directly and/or indirectly from touching contaminated surfaces and patient contact. The COVID-19 pandemic has been a stark reminder of the importance of basic infection prevention measures (hand washing, disinfection/decontamination, Personal Protective Equipment use) when providing patient care.
Objectives: This study was aimed at determining the prevalence of nosocomial contaminants found on fomites in the Biology, Emergency Department and Disposal site of a hospital in Yaounde from March to August 2020.
Methods: In a cross-sectional study, 736 swabs were collected from trash bins (infectious and non-infectious) and surfaces (tables, sinks, chairs, countertops, desks, patient beds and bed stands) of all aforementioned sites. Inoculated on Mueller–Hinton agar, contaminants were isolated and, identified using Gram staining, classical biochemical tests (oxidase, catalase, coagulase, germ tube and Kligler Iron Agar) and grown on specific media (Hektoen Enteric Agar, Mannitol Salt Agar and Potatoes Dextrose Agar).
Results: There was a high prevalence of surface contaminants (78.9%) especially for non-infectious bins (90.3%). Their mean frequencies were significant for sampled surfaces of the Biology Department, and only sampled beds of the Emergency ward indicating their equal potential to cause infections. In addition, highly touched surfaces were prone to *S. aureus* contamination (22.4%), a constituent of the human hand microbiota which suggests that the staff' hands could be the main vector of surface contamination in analysed units. In May, contaminants' frequencies dropped (24.9%) due to increase in the awareness of basic infection control measures amongst staff, staff rotations, changes in work hour schedules and hospitalisation beds' availability.
Conclusion: The concept of environmental bacterial reservoir is a reality. Improvement strategies include interventions to reduce/contain the shedding of pathogens and, improving the efficacy of cleaning/disinfection of hospital surfaces and hand hygiene.

Disclosure of Interest
None declared.

P450

Multidrug resistant and biofilm forming β-lactamase-producing bacteria colonising hospital surfaces from low- and middle-income countries

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Introduction: Resistant gram-negative bacteria (GNB) found on hospital surfaces endorse infection prevention and control (IPC) programs evaluation in low- and middle-income countries (LMICs).
Objectives: To study biofilm formation and antibiotic/disinfectant resistance.
Methods: GNB carrying bla_{NDM} and bla_{OXA-48}-like were recovered from surfaces from six LMICs during the BARNARDS study. Out of 77 BARNARDS strains, antimicrobial susceptibility testing (AST) by broth microdilution method, biofilm formation by the modified microtiter-plate test, and minimum biofilm inhibitory and eradication concentrations of antibiotics and healthcare disinfectants were determined for isolates forming biofilms. Chi-Square tests and T-tests were performed using IBM SPSS Statistics (V 28.0.0.0) (190).
Results: During BARNARDS, the prevalence of bla_{NDM} and bla_{OXA-48}-like was higher in sinks (7.4% and 3.3%, respectively), among environmental and patient care surfaces analysed. *K. pneumoniae* (26.3%, mostly sequence type (ST)15), *E. hormaechei* (21.7%, ST316 and ST418 among others), *A. baumannii* (7.4%, mostly ST52), *S. marcescens* (6.9%) and *L. adecarboxylata* (6.3%) carrying bla_{NDM} and/or bla_{OXA-48}-like were mostly recovered in Pakistan and Bangladesh. ST15 *K. pneumoniae* isolates found on surfaces were identical to those causing neonatal sepsis. From the sub-collection, 100%, 97.4%, 94.8%, 84.4% and 0% were resistant against ampicillin, ceftazidime, ceftazidime-avibactam, gentamicin, and colistin, respectively. These isolates showed weak, moderate, and strong ability to form biofilms. *Results for disinfectant susceptibility, MBIC and MBEC to follow.*
Conclusion: We show the ability of resistant GNB to colonise hospital surfaces posing a threat to patients, evidencing the need to evaluate IPC programs.

Disclosure of Interest
None declared.

Poster session: Environmental hygiene: Specific environments

P451
Healthcare waste management practices in a Tunisian tertiary care hospital
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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P451

Introduction: Inadequate healthcare waste management (HCWM) practices pose a significant risk to both human health and the environment.
Objectives: This study aims to evaluate the practices of healthcare professionals regarding HCWM in a Tunisian tertiary hospital.
Methods: This study utilized a descriptive evaluation design (audit) to assess waste management practices in the tertiary Hospital Sahloul during November 2022. All services and blocks were included, except for those without care activity (e.g., laundry room, sterilization unit, internal and external pharmacies). Trained auditors collected data using an observation grid based on the manual of good HCWM techniques and practices (ANGED).
Results: The study audited a total of 127 trolleys, 32 benches, and 9 operating rooms. The overall compliance with sorting HCWs was 63.15%. The criteria with the highest compliance rates were "the containers are of the appropriate size for the type of sharp waste produced" and "the black bags are secured in their holders" at 92.3% and 87.5%, respectively. Regarding intra-service collection steps, the overall compliance score was 46.9%, with the best-scored criterion being the "absence of ordinary waste apart from waste bags (mats, beds, etc.)" with a compliance rate of 90.9%. However, there was a lack of labeling practice noted, such as labeling bags containing infectious waste (6.8%) and sharp containers (0.1%) as well as traceability of waste disposal time (38.4%).
Conclusion: This study highlights low compliance with standard HCW management practices in the Tunisian tertiary hospital. It is recommended that healthcare facilities possess HCW management guidelines, provide staff training on HCW disposal, and ensure the provision of necessary equipment to promote environmental safety in HCW disposal.

Disclosure of Interest
None declared.

P452
Evaluation of biomedical waste management practices and compliance in a tertiary care oncology centre
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Introduction: Biomedical waste in hospitals poses risks to healthcare workers, patients, caregivers, the community, and the environment. Adequate knowledge, training, and implementation of biomedical waste management (BMWM) are crucial. Regular monitoring of BMWM practices, from waste generation to disposal, is essential.
Objectives: Review current BMW management practices and assess compliance with the Biomedical Waste Management Act 2016 among healthcare workers in our hospital.
Methods: This observational study includes 18 hospital facilities: wards, day care, ICU, recovery ward, OTs, and laboratories. Key parameters analysed include availability of BMW prerequisites, onsite waste segregation, transport, storage, labelling, staff training, immunization, documentation, and overall compliance. Descriptive statistics present percentages and frequencies.
Results: Most processes are followed by all respondent groups, indicating a high level of compliance with the BMWM Act 2016 across all defined attributes. The assessment included 500 nursing and 223 housekeeping staff of the organization involved in handling and transporting BMW. Minor issues were observed, such as shortage of blue cardboard boxes in 3 wards (16.66%) and color-coded bags not fitting the bin sizes in 1.85% of cases. Overall, waste segregation and the condition of receptacles were satisfactory. Unfavourable BMW practices were identified in 11 bins (1.74%) out of total 632 bins. Majority of staff were vaccinated against Hepatitis B, with only 8 (1.10%) newly recruited staff undergoing vaccination. Waste transportation and documentation practices were in accordance with regulations. However, newly hired staff exhibited lower awareness of BMW handling and spillage management compared to experienced staff.
Conclusion: Effective BMW management requires interdisciplinary coordination, thorough training and education, dedication from healthcare workers, and constant vigilance. The study findings highlight areas of success and areas that may require further attention to ensure compliance and safety in biomedical waste management.

Disclosure of Interest
None declared.

P453

Audit of resources and waste management practices in a Tunisian University Hospital

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P453

Introduction: In the hospital setting, the risk of infection is omnipresent for both healthcare providers and patients. Healthcare facilities are increasingly committed to preventing healthcare-associated infections through environmental and waste management.
Objectives: This study aims to assess the compliance of resources and waste management practices in healthcare services at Farhat Hached University Hospital Center in Sousse, Tunisia.
Methods: This was an observational audit conducted in all departments of Farhat Hached University Hospital Center in Sousse during November and December 2021. The data collection sheets were used to evaluate the availability of resources and the management practices of infectious healthcare waste, anatomical waste, and chemical waste.
Results: A total of 51 observations were collected. The departments of infectious diseases and immunology had the highest compliance rates with good practice guidelines, with an overall compliance rate of 96.55% for both. On the other hand, the services with the lowest compliance rates were neonatology, anesthesia-reanimation, and stomatology (65.51%, 67.63%, and 37.93% respectively). The average compliance rate for resource availability was 81.53%. The management of infectious healthcare waste was compliant in 78.71% of cases, with waste sorting being the most deficient step, with a compliance rate of 59.04%. Additionally, the management of recognizable anatomical waste was compliant in 75% of cases, while the management of chemical waste had the lowest compliance rate at 10.71%.
Conclusion: The audit revealed the need for additional effort to improve practices, especially in high-risk infectious services. Awareness-raising and support for healthcare personnel in preventing environmental contamination should be systematically implemented in each healthcare unit.

Disclosure of Interest
None declared.

P454

Evaluation of strategies for keeping health care linens clean: under recognized hazards and critical control points to avoid contamination. A case of Kitale County Hospital

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P454

Introduction: Outbreaks of health care-associated infections, particularly invasive mold infections, have been linked to environmental contamination of laundered health care textiles. Contamination may occur at the laundry or health care facility. This report highlights under recognized hazards, control points, and actions that IPC can take to help decrease the potential for patient exposure to contaminated health care textiles.
Objectives: This study aimed at evaluating occupational health practice of laundry and linen services at Kitale Hospital in Transnzoia County, Kenya. Specifically, the study sought to ascertain potential hazards, determine adherence levels and establish wet bulb globe temperature of workers in the Laundry and Linen Services.
Methods: Sample size was determined using Yamane's (1967) formula. The study adopted a cross-sectional analytical design through a questionnaire that was structured. forty (40) participants were recruited for interviewing through a systematic random sampling technique. Data was cleaned and analysis was done by use of version 22.0 of SPSS software. A Chi-test was calculated to show associations between variables.
Results: The results revealed that respondent's age was significantly associated with knowledge ($\times 2(2) = 5.483$, $p = 0.045$, $p < 0.05$) as well as association between religion and knowledge of common hazards within the laundry department (($\times 2(1) = 4.172$, $p = 0.041$, $p < 0.05$). The analysis of association revealed that age ($\times 2(2) = 9.091$, $p = 0.011$, $p < 0.05$), level of education attained ($\times 2(1) = 10.76$, $p = 0.001$, $p < 0.05$) and marital status ($\times 2(2) = 9.768$, $p = 0.008$, $p < 0.05$) were had a signification association with knowledge on environmental aspects in laundry and linen services.
Conclusion: The study has provided a strong understanding on important aspects regarding health hazards and safety practices within the facility. There were various types of hazards identified, adherence to laundry protocols.

Disclosure of Interest
None declared.

P455

The identification and management of mycobacterium chimaera in heater cooler machines

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P455

Introduction: The release of Center for Disease Control and Prevention (CDC) bulletin in 2017 about the risk of aerosolization of Mycobacteria chimaera contamination in heater cooler machine during open cardiac surgeries had alerted our cardiac facility to take a proactive approach to test the water inside the heater cooler machines (HCMs) to ensure patient safety. The isolation of Mycobacterium other than tuberculosis (MOTT) prompted us to develop interventions that will mitigate the risks.
Objectives: We aimed that the heater cooler machines will be free from Mycobacterium chimaera in subsequent water tests.
Methods: The decision to take baseline water sample was raised in the water safety committee meeting to ensure the safety of patients undergoing cardiac surgeries. Water samples were collected carefully from the heater cooler machines and sent to TB Lab for detection of Mycobacterium chimaera. The positive water sample reports triggered the team to take actions based on the recommendations of CDC and Food and Drug Administration (FDA) for the management of HCMs. We developed guidelines for cleaning and disinfection of HCMs to standardize the practices and water testing.
Results: The initial detection of MOTT in April 2017 and the identification of Mycobacterium chimaera in between the water tests heightened the perfusionists' compliance to the cleaning and disinfection of HCMs using 3% hydrogen peroxide, continuous auditing of staff practices and quarterly water testing for negative reports to reduce the risk of Mycobacteria chimaera and promote patient safety.
Conclusion: A standardized cleaning and disinfection protocol of heater cooler machine and regular water testing will enhance patient safety of patients undergoing cardiac surgeries. Ensuring the availability of 3% hydrogen peroxide solutions, continuous audit inside the operating theatre will enhance staff compliance to infection control practices. The upgraded features of HCMs with new accessories and use of alternative heating devices will reduce the risk of possible of aerosolization of Mycobacteria Chimaera.

Disclosure of Interest
None declared.

P456

Biocide preparation jug indicated as source of *Burkholderia cepacia* transmission in dental unit water lines

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P456

Introduction: Dental unit water lines (DUWLs) are routinely tested for *Pseudomonas aeruginosa* following advice for augmented care units under Health Technical Memorandum 04–01. *Burkholderia cepacia complex* (*BCC*) was isolated from DUWLs from dental chairs used by immunosuppressed patients having dental treatment.
Objectives: Aims were to find the source and eradicate contamination.
Methods: DUWLs had been treated twice with a biofilm removing system (BRS) 72 h prior to testing.
Water (100 mL) was sampled from handwash basins in clean utility rooms where Alpron, a biocide used for daily DUWL treatment, was prepared. Sterility assessments were performed on neat Alpron.
Water samples were filter-concentrated through a membrane (0.45 µm pores) and transferred onto *Pseudomonas* CN selective agar. 1 mL was plated onto Columbia Blood Agar for total viable counts (TVCs).
Plates were incubated at 37˚C for 48 h. Isolates were identified by MALDI-TOF–MS.
Results: *BCC* was present in DUWLs despite two cycles of BRS treatments. Handwash basins were heavily contaminated with microorganisms (TVC > 300 cfu/mL); however, *BCC* was not detected. Neat Alpron solutions were free of bacterial contamination.
A biocide measuring jug, used to top up dental chair reservoirs, was heavily contaminated with *BCC* (> 300 cfu/mL of biocide).
Conclusion: Contaminated residual biocide solution in jugs was introducing *BCC* into the dental chair reservoirs used to treat dental patients. Swift infection prevention and control measures including removing contaminated jugs, introduction of sterile single use disposable jugs and sterile distilled water to prepare 1% Alpron solution eradicated *BCC* contamination and transmission risks.
BCC infection in patients was not linked to contaminated DUWL kits in the dental unit.
DUWLs are an integral part of dental chairs and are open to bacterial growth and biofilm formation. *BCC* continues to pose a risk of hazardous contamination of non-sterile, water-based products in hospitals since the bacteria are resistant to certain preservatives and antimicrobial agents. Suboptimal concentration of biocide may promote *BCC* colonisation and persistence in solutions.
Healthcare facilities treating vulnerable patients, should ensure microbiologically safe potable water and prevent risks for microbial contamination via environmental monitoring.

Disclosure of Interest
None declared.

P457

Wastewater-based surveillance of clostridioides difficile in hospitals

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P457

Introduction: *Clostridioides difficile* is a leading cause of infectious diarrhea in hospitals and is responsible for significant morbidity, mortality and healthcare-associated costs.
Objectives: We sought to quantify and monitor the abundance of *C. difficile* in hospital populations over time using wastewater (WW)-based surveillance (WBS) as an inclusive, comprehensive and objective strategy.
Methods: WW was collected from sewers exclusively and comprehensively servicing two Calgary hospitals, PLC (517 beds) and RGH (615 beds). A community WW treatment plant (BBW; > 1 million people) served as a community control. DNA was extracted from WW pellets. *C. difficile* 16S rRNA and *tcdA* (multiplex) and *tcdB* (singleplex) genes were detected with qPCR. Gene copy numbers were normalized with three different fecal biomarker genes (total bacterial 16S rRNA, human 18S rRNA and *Bacteroides* HF183 16S rRNA) or assessed as raw (copies/mL of WW). Mann–Whitney tests and correlations were determined with GraphPad Prism v9.0.
Results: Over a 12-week period, we observed a 5- to-10-X and a 14- to-34-X greater mean aggregate abundance of *C. difficile* 16S rRNA, *tcdA*, and *tcdB* gene copies in RGH and PLC, respectively, relative to the WWTP control when assessed as a ratio of total bacterial 16S rRNA gene copies ($P < 0.0001$, $P < 0.0001$, and $P < 0.005$, respectively, Mann–Whitney). Similar trends were observed over time assessing *C. difficile* gene copy numbers as raw values or normalized with other fecal biomarkers. Raw values for *tcdA* and *tcdB* gene abundances in RGH and PLC were strongly correlated ($r = 0.9856$, $P < 0.0001$) and followed similar trends with *C. difficile* 16S rRNA gene abundance over time ($r = 0.899$, $P = 0.0024$ and $r = 0.796$, $P = 0.0182$, respectively).
Conclusion: WBS offers a unique real-time method to monitor the abundance of *C. difficile* genes in hospitals and the community. This approach may be adapted to provide a comprehensive understanding of contributing factors to *C. difficile* prevalence and to augment antimicrobial stewardship and infection prevention and control programs.

Disclosure of Interest
None declared.

P458

Microbiological evaluation of water in ambulance reservoirs

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P458

Introduction: Water is essential to life, however, it can also be a vehicle for disease transmission. Its quality assurance and monitoring processes aim to ensure that it can be used safely in healthcare-related contexts. However, some circumstances can affect water quality and pose health risks.
Objectives: The aim of this study was to assess microbial contamination of water in the lavatory tanks of Portuguese extra-hospital emergency vehicles.
Methods: Water samples were collected from the respective reservoirs in 6 ambulances, by convenience sampling, in April 2022. The collection point was the faucet of the ambulances' washbasins.
The analytical tests carried out involved field parameters (temperature and free chlorine), quantification of cultivable microorganisms at 37 ºC and 22 ºC, and identification of microorganisms through specific methods determined by the provider laboratory and national norms. The results were compared with the parametric values recommended in Portuguese legislation.
Results: Deficient levels of free chlorine were found in the water in the lavatory tanks of most samples (67%). In all media analyzed, a number of microorganism colonies (colony forming units of heterotrophic organisms/ml; CFU/ml) was detected at the maximum value quantifiable by the analysis method. Bacterial strains of potentially pathogenic

agents (P. aeruginosa and coliform bacteria) were also identified in 50% of the tested samples.
Conclusion: Significant microbial contamination of the water in the ambulance washbasin tanks was identified, with potential negative consequences for the health of patients and professionals. The remaining structures of the system (pipes and water pump) are difficult to access, which hinders the cleaning processes. Chlorine present in water is a volatile substance and its release can increase with ambient temperature. All these circumstances, associated with poor practices in the system management, can contribute to the deterioration of the quality of the water present in the reservoirs.
The present study proved to be fundamental for the implementation of preventive measures in relation to ambulance washbasins in Portugal, revealing the importance of adequate monitoring of water quality in all types of healthcare contexts.

Disclosure of Interest
None declared.

P459

VOCS-mediated suppression of bacillus subtilis against pathogens in drainage system

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Introduction: The global outbreak of the COVID-19 pandemic heightened appreciation for scientific inquiry aimed at mitigating the proliferation of pathogens in the environment. In this context, one potential strategy for curbing the transmission of infectious agents is the utilization of probiotic technology, which functions to impede their growth and activity.
Objectives: The present investigation proposes use of *B. subtilis'* mVOC emission to lower viability of pathogens (i.e., *E. coli* and *P. aeruginosa*) and also mitigate malodor.
Methods: Water samples were recovered from drainage sites and culture in laboratory under aerobic and anerobic conditions with and without exposure to mVOC emission from a *B. subtilis* culture plate. The microbial volatiles from water sample and *B. subtilis* culture were analyzed by TD-GC–MS, while the total genomic DNA was determined. Moreover, plate counting method was used to determine the viable colony forming units. In addition, the proteomic profile of *P. aeruginosa* was mapped during exposure to *B. subtilis'* mVOCs.
Results: Exposure to *B. subtilis'* mVOCs decreased the overall viable aerobic and anaerobic bacteria count by more than 50% during the first 6 h with a marked change in microbial community compared to control sample. Moreover, the volatile emission from the water sample decreased significantly with complete suppression for water samples cultured anaerobically. Finally, *B. subtilis'* mVOCs trigger *P. aeruginosa* to assume a defensive and offensive posture with upregulation of several proteins related to toxin production.
Conclusion: The current study shows that indirect exposure to *B. subtilis'* mVOCs can effectively alter the viability of microbial community in drainage water with *P. aeruginosa* suffering the largest decrease. Moreover, it also has the effect of inhibiting overall volatile emissions, thus, mitigating malodor.

Disclosure of Interest
None declared.

P460

Unveiling the hidden threat of carbapenemase-producing enterobacteriaceae in hospital water environments: a single center study

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Introduction: The presence of Carbapenemase-Producing Enterobacteriaceae (CPE) in sinks and showers poses a threat, but the extent of this phenomenon was not well studied.
Objectives: We aimed to assess the distribution of CPE in hospital water environments.
Methods: We conducted a retrospective analysis of data from environmental samples (ES) for CPE collected at Carmel Medical Center between January until December, 2022. ES were obtained as part of epidemiological investigations whenever a patient acquired CPE (clinically or through colonization) during their hospitalization. These samples were collected from various areas within the same ward where the CPE acquisition occurred.
ES were categorized based on their distance from a water source within the hospital (sinks or showers). An Infection Prevention and Control Practitioner assigned each sample a number (1, 2, or 3) to represent distances of up to 1 m, 1–3 m, and more than 3 m, respectively. Movable items such as trays, ECG monitors, and computer carts were classified as category 3.
Results: Out of the 835 ES collected, 34 samples were excluded due to missing data. The remaining 801 samples were divided into three categories. Category 1, within 1 m of a water source, comprised 400 samples, while category 2 had 111 samples, and category 3 had 290 samples. Within category 1, 166 samples tested positive for CPE (41.5%, CI 36.6%-46.5%), while 13 samples were positive in category 2. No positive samples were found in category 3, as detailed in Table 1. The isolated pathogens included various species, with Enterobacter species being the most prevalent (41%) and Lecleria species being the least prevalent (1%).
Table 1:

Categories	Not detected (n)	Detected (n)	Total (n)	Detected (%)	CI	
< 1 m	234	166	400	41.5%	36.6%	46.5%
1–3 m	98	13	111	11.7%	6.4%	19.2%
> 3 m	290	0	290	0.0%	0.0%	1.3%

Conclusion: This study sheds light on the presence of CPE in hospital water environments, particularly sinks and showers. The analysis of ES revealed a significant proportion of positive samples within close proximity to water sources, emphasizing the potential for contamination in these areas.

Disclosure of Interest
None declared.

P461

Evaluation of pathogen survival on coated and uncoated HEPA filters installed in air purifiers in an elderly care facility

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Introduction: Opportunistic pathogens are ubiquitous in the atmosphere of indoor environments. Various technologies are employed to remove these pathogens, but the use of air filters in air circulation units is considered the most efficient. High-efficiency particulate air (HEPA) filters remove by trapping airborne microorganisms. However, the filters may present a risk of recontamination, as microorganisms can remain viable on the filter and propagate under ideal environmental conditions, lowering filter efficiency and paving the way for microbial penetration.
Objectives: This study aimed to evaluate (i) the survival of microorganisms on uncoated and antimicrobial HEPA filters and (ii) the efficacy of antimicrobial HEPA filters.
Methods: Filters were installed in air purifiers stationed in the care facility. Two rooms were used for the study, one for the uncoated filter as control, and the other for the antimicrobial filter. Each room was equipped with two air purifiers, one placed close to the entrance door, and the other farther away from the door. Filtration efficiency was determined weekly over air sampling conditions of 28.4 L/min and 5 min. After 5 weeks, the filters were collected and aseptically analyzed for viable and culturable microorganisms. Bacteria were cultured on Tryptone soy agar, molds on Malt extract agar and CHROMagar was used to differentiate bacteria from MDRO strains. After incubation at the appropriate conditions, the number of colonies was enumerated and the mean log of viable microorganisms on the uncoated and the antimicrobial filters were compared statistically using Student's *t*-test.
Results: There was a statistically significant ($p < 0.001$, 2-tailed) difference in the mean log of viable organisms cultured from the uncoated filters and antimicrobial-coated filters. Antimicrobial filtration efficiency was 97.43% for total viable bacteria, 97.91% for mold, and 92.40% for methicillin-resistant Staphylococcus aureus, *MRSA*.
Conclusion: The results proved that filtered microorganisms can remain viable on uncoated HEPA filters. Hence, imparting antimicrobial properties to HEPA filters can help to filter as well as inactivate microorganisms to maintain clean and quality air in the indoor environment.

Disclosure of Interest
None declared.

P462

Exploring the potential for air purifying technologies to reduce the energy cost of hospital ventilation

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Introduction: Hospital ventilation is known to play an important role in limiting the spread of pathogenic airborne particles. Healthcare facility guidelines specify ventilation requirements in terms of the number of air changes per hour (ACH), with critical areas such as operating theatres requiring the greatest levels of replenishment. Achieving these flow rates demands high electricity use and can be responsible for considerable CO2 emissions. An alternative measure of air replenishment is the equivalent air changes per hour (ACHe), which considers the volume of air provided through both building ventilation as well as portable air purification devices.
Objectives: The aim of this study was to explore if an energy effecient air purification device could achieve levels of airborne bioburden reduction comparable with traditional ventilation.
Methods: A series of experiments were performed in air testing cell ($4\ m \times 4\ m \times 3\ m$). To populate the cell with aerosolized particles, a person entered the cell for a period necessary for the CO2 levels to reach 1500 parts per million. In the control condition, the cell did not have any ventilation. In the first test condition, air was extracted from the cell at a rate of 6 ACH. In the second test condition, the ventilation was switched off a mobile air purification device operating at 6 ACHe was placed in the cell. Air sampling was performed at two locations using an active air sampler. Bioburden was quantified by the number of colony forming units following a period of incubation.
Results: A significant difference was measured between the control condition and the ventilation condition ($p < 0.05$), and also between the control condition and the air purification device condition ($p < 0.05$). A significant difference was not measured between the ventilation condition and the air purification device condition.
Conclusion: Our findings suggest that in certain circumstances, the ability for portable air purification devices to remove microorganisms from the air may be comparable with building ventilation of an equivalent flow rate. To determine whether these findings are generalizable, future work should examine the effect of larger room size and a range of ventilation rates.

Disclosure of Interest
None declared.

P463

Adiabatic humidifiers in the hospital: energy saving solution or infectious risk?

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Introduction: Adiabatic humidifiers seem an attractive alternative to steam humidifiers for air-conditioning in hospitals considering both sustainability and costs because of lower energy use. However there is little experience and knowledge of potential risk of contamination of the humidified air and which parameters are useful to assess this risk.
Objectives: To develop a safe method for implementation of adiabatic humidifiers and its risk management plan.
Methods: In 2019 five adiabatic humidifiers were placed in a new build imaging centre in our hospital. These air handling units (AHU) contain a F7 filter, heat exchange element, cooling and heating elements, a fan, the humidifying unit and a F9 filter. Reversed osmose (RO) water is filtered, softened and demineralised and sterilized by UV-C before nebulization directly into the air. Ceramic plates are situated to prevent unevaporated droplets are further transferred into the air system. Excess water is drained.
To assess potential risks every two months water samples were cultured and aerobe CFUs per millimetre were reported. Water samples were taken before and directly after the water purification device and the excess water after nebulizing. The different parts of the humidifier were visually inspected. Also air samples were taken before and after the nebulizing process.
Results: Fifteen measurements of incoming water showed several elevated bacterial loads after the water softener, but no elevated levels of water going into the nebulizer. Waste water showed elevated bacterial CFUs several times. Cleaning and disinfection of the AHU, modifying the drainage system and sampling from another spot was advised.
Incoming air contained minimal CFUs except for two units with higher fungal CFUs, outgoing air was not contaminated (< 10 fungal CFUs and < 1000 bacterial CFUs and less then incoming air).
Conclusion: Both water and air quality need to be controlled, especially when outgoing air is not filtered by HEPA filters after adiabatic humidification of air. Special attention needs to be given to the system of disposal of excess water. Learning from regular measurements

and effects of actions on deviations in the real life setting will lead to a practical and suitable risk management plan.

Disclosure of Interest
None declared.

P464

Efficacy of portable purification units and mechanical ventilation filters in controlling indoor air pollution and infection risk in classrooms

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Introduction: Prolonged indoor exposure to particulate matter (PM) has been linked to adverse health outcomes and increased infection risk due to the potential presence of airborne microorganisms.
Objectives: The primary objective of this study was to examine the efficacy of portable purification units working concurrently with line filters integrated within ventilation systems inside classrooms. In addition, this work sought to assess the adequacy of ventilation systems in circulating indoor air and maintaining sufficient air change rate.
Methods: Over a 5-month period, we continuously monitored particle mass and number concentrations, as well as CO_2 levels inside classrooms. To measure particle and gaseous pollutants, we used several indoor air monitoring instruments, including DustTrak, Q-Trak, Discmini, and an optical particle counter. Furthermore, we assessed the decay in particle concentrations in an empty classroom with an artificial PM source under varying purifier filtration rate conditions.
Results: The indoor CO_2 levels in all classrooms remained below 900 ppm, in compliance with ASHRAE standard 62.1. This was attributed to the high air change rates in all classrooms, which ranged between 3 and 10 h^{-1}, indicating proper ventilation. In addition, the classrooms with efficient ventilation filters exhibited significantly low indoor particle concentrations, as they were able to capture more than 85% of the outdoor particles infiltrating the indoor space. In the empty classroom, the natural decay rate of particles without the presence of the purification unit was in the range of 4–4.5 h^{-1}. After operating the purifier at the maximum air flow rate, the particle decay rate improved to 6.6–6.9 h^{-1}. In addition, the air purifier showed relatively higher removal efficiency for particles in the coarse and ultrafine modes, ranging between 95 and 99%, and lower efficiency for particles in the accumulation mode (i.e., 80–85%).
Conclusion: In conclusion, implementing filtration technologies in classrooms is crucial to control infection and promote a conducive learning environment. Therefore, it is essential for educational institutions to invest in and prioritize the implementation of efficient air filtration systems to ensure the health and safety of students and staff.

Disclosure of Interest
None declared.

P465

Electronic permit for construction projects in health care facilities

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Introduction: Introduction: The aim of the initiative was to develop an Infection Prevention & Control (IP&C) Electronic Permit for construction activities in healthcare settings within and outside the SAOLTA group.
The gap: there was no standardised Electronic system in place to communicate the Infection Prevention & Control (IP&C) measures required during construction activities.
The solution: An Infection Prevention & Control (IP&C) Electronic Permit for construction activities in healthcare settings was developed. It was developed to be adapted for new builds/refurbishment projects in the acute and community setting.
Objectives: Objectives:
To facilitate staff engagement.
Deliver Safer better healthcare and value for money.
Progress collaboration and engagement in a co-design process with key stakeholders across Saolta hospitals.
Methods: Change Framework: We focused on relationship building, organisational values and culture, social networks and widespread participation. The approach encouraged wider engagement.
Steps:
Define: Initiate change by defining the purpose, gap and problem.
Design: Determine the detail, plan and test feasibility, identify resources and agree a change action Plan.
Deliver: Implement change, measure outcomes and support sustainability.
Change Outcomes: To deliver safer better healthcare.
Results: Results:
Standardised IP&C E. permit for construction projects in Saolta hospitals was developed.
Project aims were met: Developed an electronic IP&C permit to mitigate risks of infection during construction activities.
Conclusion: Conclusions
The permit is in use in five of the seven Saolta hospitals and training commenced in the two other sites.
This project will:

1. Promote patient safety during construction activities.
2. Improve integration across health care areas.
3. Promote Staff engagement and the importance of learning from expertise & experience.
4. Financial impact—Facilitate capital projects to progress on schedule and within budget.
5. Support capital projects which improve infrastructure in a manner that facilitates IP.
6. The Permit and the learning from this initiative is being shared via HSE estates nationally and also Community Healthcare Organisations.

Disclosure of Interest
None declared.

Poster session: Sterilization & device reprocessing

P466

How to ensuring the quality of endoscopes reprocessing

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Introduction: The use of endoscopes for diagnostics or therapeutics has increased. Outbreaks related to these procedures have been reported and highlighting the importance of ensuring the quality of endoscope cleaning and disinfection.
Objectives: To evaluate the outcome of endoscopes reprocessing.
Methods: We retrospective analyzed the results of external audits, a part of infection prevention and control program, from 2018 through 2022 at a 2600-bed teaching hospital. This hospital improves quality of endoscope reprocessing through policy-do-check-act (PDCA) cycle including policy, education/training, periodical internal and external audits.

Results: External audit which included 28 items show the overall compliance rate was 96% and lowest score was inappropriate storage environment (88%). Surveillance cultures showed only 0.3% of 737 post-reprocessing endoscope samples and 0.5% of 191 reprocessor samples had high-concern organisms (**Table**).

Table 1. The results of microbiological surveillance culture from 217 endoscopes and 35 automatic endoscope reprocessors evaluated, 2018–2022.

Items Microbiological results	DIDT	%	Other 17 units	%	All
Endoscopy, samples collected	391		346		737
HCOs	2[1]	0.5%	0	0	0.3%
LCOs > 100 CFU	1	0.3%	0	0	0.1%
LCOs > 10	0	0	1	0.3%	0.1%
LCOs 0–10	15	3.8%	14	4%	4%
Automatic endoscope reprocessor, samples collected	**69**		**121**		**191**
HCOs	0	0	1[2]	0.8%	0.5%
LCOs > 100 CFU	0	0	3[3]	2.5%	1.6%
LCOs > 10	0	0	4	3.3%	2.1%
LCOs 0–10	5	7.2%	19	15.6%	12.6%

Abbreviations: *DIDT* Department of Integrated Diagnostics & Therapeutics, *HCO* High-concern organisms, *LCO* Low-concern organisms

[1] *Stenotrophomonas maltophilia;*[2]*Sphiomonas paucimobilis*; [3]*Bacillus* and unidentified gram-positive baciili

Conclusion: This study showed that periodical external audits which include surveillance cultures combined with internal audit and PDCA cycle support quality assurance or improvement.

Disclosure of Interest
None declared.

P467

Is this transducer safe to use?

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Introduction: The swift expansion of ultrasound (USG) use has yielded clinical advantages, albeit potentially exposing patients to avoidable risks of infection. Despite the apparently visible cleanliness of USG machines & probes, clinically significant pathogenic microorganisms have been cultured from them. Disinfection of USG equipment significantly reduces the microbial load. However, research indicates that individuals who perform USG engage in suboptimal cleansing practices and have inadequate training (Westerway et al., 2019).
Objectives: To assess the standard of USG probe cleaning within the hospital and assess the level of training received by operators.
Develop and implement interventions based on targeted need assessment and evaluate their effectiveness.
Methods: Though point-of-care USG is widely used throughout the hospital, the decontamination of these USG probes was not monitored. A clinical audit was carried out by experienced Infection Prevention and Control Nurses by observing the transducer reprocessing practices for the sonographers in eight clinical areas—ICU, Theatre, Emergency, Cardiology, Vascular Lab, Breast Health, Diagnostic, and Interventional Radiology.
Results: The study identified serious concerns. The cleaning of USG probes was suboptimal for critical, semi-critical, and non-critical probes as per the Spaulding classification. The compliance level for tracking and tracing was unsatisfactory. Lack of knowledge, inadequate access to cleaning supplies & equipment and time constraints were the primary barriers to guideline-based disinfection.
The results of the audit served as a guide for intervention. An educational resource was developed with the aim of enhancing the knowledge of sonographers regarding optimal techniques for cleaning and disinfection of USG machines and probes. To comply with the good practice recommendations revealed in this study, a standard operating protocol was developed for all USG equipment decontamination in the hospital. Automated tools for tracking & tracing were implemented to enhance tracking compliance.
Conclusion: This study's findings corroborate the findings of global survey of USG users, which indicated that cleaning procedures are inadequate and users are oblivious to recommended practices. Targeted interventions can significantly improve the thoroughness of decontamination of USG machines and probes and prevent patient harm.

Disclosure of Interest
J. Jerry Conflict with: A revised iteration of the Infection Prevention Toolkit was used for the purpose of conducting an audit, with authorization obtained from Nanosonics. The aforementioned toolkit is readily accessible to the public., M. Gavan: None declared, V. Gopalan: None declared.

P468

Experient sharing: improve the quality of instrument cleaning in the Department of Dental

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Introduction: Instrument cleaning is a very important process before sterilization. Much evidence showed the failure of sterilization due to unclean. And thanks to the examination of the ATP detection tool helps us to check the quality of cleaning. In the previous study, we can use an ATP kit to check whether the result was over the cut-off range or not. We also can use this tool to improve the quality of cleaning by multiple factor changes.
Objectives: Before this study, we collected 56 samples to check the ATP after cleaning from our department of dental. The ATP result showed the passing ratio was 56.5%(30/56). Even though sterilization could reduce the microorganism. But due to the unclean process, It would be a risk in the instrument reprocessing. So, in this study, we change the enzyme detergent, added the pressurized faucet, and used the special brush that claims used in dental instruments.
Methods: In the first step, we use the dedicated enzyme detergent to clean the instrument, Then we collected 50 samples and did the ATP examination after cleaning, and also did the culture after sterilization. On this basis (chang enzyme detergent), second, we added the pressurized faucet in our department of dental. Then we also collected 50 samples and did the ATP examination after cleaning, and also did the culture after sterilization. Finally, on those changes before, we used a special brush to clean the instrument, then still collected 50 samples and did the ATP examination after cleaning, and also did the culture after sterilization.
Results: The ATP passing ratio results show were following: before the change was 56.5%, change enzyme detergent was 74%, change enzyme and adding the pressurized faucet was 82%, change enzyme & adding the pressurized faucet and using a special brush was 98%. The culture ratio results show were following: before the change was 57.14%(32/56), change enzyme detergent was 80%, change enzyme and adding the pressurized faucet was 86%, change enzyme & adding the pressurized faucet and using a special brush was 100%.

Conclusion: This experiment shows the change could improve the quality of sterilization. Otherwise, in this study, we find the ATP tool could also help us to find the part of the instrument that was hard to clean. And hope this result could help more hospitals to improve the quality of instruments in the department of dental.

Disclosure of Interest
None declared.

P469

Audit of practices of different steps prior to the sterilization of medical devices in the operating room of a Tunisian Hospital

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Introduction: The sterilization of medical devices (MD) in healthcare facilities plays a key role in the prevention of nosocomial infections. The quality of the instrumentation and MDs used during surgery depend on the steps prior to sterilization.
Objectives: The aim of the study was to evaluate the professional practices relating to the steps prior to the sterilization of medical devices in the operating rooms (OR) of Sahloul University Hospital Sousse in 2021.
Methods: An audit of practices of the steps prior to sterilization by direct observation between December, 20th to June, 30 2022 in the eight ORs of Sahloul University Hospital Sousse.
Results: During the passage of the auditors, 224 observations were made. Reusable Medical Devices were handled in 78.1% of cases by the instrumentist of the OR and by interns in 10.7% of cases. The steps prior to sterilization were carried out in all ORs except the orthopedic OR. After pre-disinfection, the instruments are transported to the central sterilization unit. In 82.1% of the observations, the two pre-disinfection and cleaning steps were confused. Pre-disinfection was performed correctly in 77.5% of observations. The drying of the instruments was carried out in all observations and in 81.3% of cases it was done using a dry, non-pellish clean cloth. In all th ORs, The packaging of MD was carried out immediately after the cleaning steps. Finally, in 89.7% of cases, MDs were sent to the central sterilization unit at the end of the of the operational program.
Conclusion: The results of our audit made it possible to highlight certain dysfunctions in the management of MDs. Thus, corrective measures must be initiated, namely the awareness and accountability of staff for the processing of MDs while referring to quality procedures.

Disclosure of Interest
None declared.

P470

QUALITY APPROACH OF THE CENTRAL STERILIZATION UNIT IN TUNISIA

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Introduction: The process of medical device sterilization is unique as it directly impacts the safety of care. However, the results of sterilization processes cannot be concretely verified. To ensure its quality, sterilization must be carried out meticulously and by strictly following the steps in a reproducible manner that meets international standards.
Objectives: The objective was to assess the compliance of medical device sterilization practices in the Central Sterilization Unit (CSU).
Methods: An audit was conducted in April 2022 at the CSU of Farhat Hached University Hospital Center in Sousse to evaluate practices of medical device sterilization. For data collection, an observation checklist consisting of various items was used, organized into categories including architecture and layout of sterilization premises, staff, organization of sterilization activities, equipment processing practices, control, and management. The response to items was yes, no, or not applicable. Direct observation of resources and existing practices was performed in a single visit. Compliance rate was calculated by dividing the number of compliant criteria by the number of applicable criteria.
Results: Overall compliance rate of our CSU reached 60.2% (62/103). The main areas of non-compliance were architecture, facility layout, and the washing step, with respective compliance rates of 33.3%, 38.5%, and 12.5%. The available autoclaves were properly maintained and monitored, with a compliance rate of 100% (preventive maintenance of autoclaves was carried out correctly according to the established schedule, but not for heat sealers).
Conclusion: The CSU of Farhat Hached University Hospital in Sousse has achieved a relatively satisfactory but insufficient overall compliance level. The failures are mainly related to architecture, facility layout, and resources. It is therefore crucial to allocate the necessary financial and material resources to address these gaps and achieve the required compliance rate. A quality project has been developed and presented for approval.

Disclosure of Interest
None declared.

P471

Analysis of an adverse event related to treatments of medical devices according to alarm method

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Introduction: Invasive medical procedures, like sterilization, are intricate and carry the potential risk of infection transmission if Medical Devices (MDs) are not adequately sterilized. Hence, it is essential to identify sterilization issues and report Adverse Events (AEs) associated with the treatment of MDs.
Objectives: This study aimed to analyze a case of AEs related to the treatment of MDs using the Association of Litigation and Risk Management (ALARM) method.
Methods: This study was conducted at Sahloul University Hospital in Tunisia, and it involved analyzing all AEs related to MDs treatment over three years, from June 2018 to June 2021. The data were collected using the AEs reporting form, and any unacceptable AEs were analyzed using the ALARM method.
Results: The study identified only one unacceptable AE, which had a criticality score of 10. The incident occurred during the predisinfection stage, where the medical device's battery was not removed in the operating room. The AEs were related to inadequate control before steam sterilization in both the operating room and central sterilization unit. The unacceptable risk was analyzed using the ALARM method, and it was found that personal, team, and organizational factors contributed to the AE. Corrective measures were put in place, and their implementation was monitored in both the central sterilization unit and operating rooms.

Conclusion: The notification of incidents related to MDs treatment should involve trained and committed personnel in the operating rooms. This study highlights the importance of identifying and addressing AEs related to the treatment of MDs to enhance patient safety.

Disclosure of Interest
None declared.

Poster session: Impact of the COVID-19 pandemic

P472

Effects of COVID-19 on CLABSI of PICC, CVC, and dialysis catheter in a large teaching hospital

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Introduction: The coronavirus disease 2019 (COVID-19) pandemic has had a considerable impact on hospitalizations, affecting processes and patient population.
Objectives: To evaluate the impact of COVID-19 pandemic on central-line-associated bloodstream infections (CLABSIs) of PICC, CVC, and dialysis catheters.
Methods: We performed a retrospective study of CLABSIs in 68 units of a large teaching hospital in Western China between 2019 to 2021. The incidence of CLABSI in different years was compared.
Results: During the study periods, 38,092, 36,240 and 39,037 patients with PICC, CVC, and dialysis catheters were monitored, with a total of 217,064, 197,927 and 230,241 catheter days respectively. The CLABSI rates of PICC, CVC and dialysis catheter were 0.23, 0.91and 1.28 per 1,000 line days in 2019, 0.26, 0.98 and 0.91 per 1,000 line days in 2020, 0.65, 1.63 and 1.52 per 1,000 line days in 2021. CLABSI rate of PICC in 2021 increased significantly from 0.23 to 0.65 per 1,000 line days ($P < 0.001$). CLABSI rate of CVC in 2021 increased significantly from 0.91 to 1.63 per 1000 line days ($P < 0.001$). CLABSI rate of dialysis catheters in 2020 was the lowest. In contrast, no significant changes were identified for CLABSI rate of dialysis catheters in 2019 and 2020 (1.28 vs 0.91 per 1,000 catheter days; $P = 0.166$).
Conclusion: The COVID-19 pandemic was associated with substantial increases in CLABSIs of PICC and CVC, but not dialysis catheters. Our findings underscore the importance of balance the needs of epidemic prevention and control and routine nosocomial infection prevention and control. In the context of the COVID-19 pandemic, medical institutions should not only attach great importance to epidemic prevention and control, but also focus on the prevention and control of CLABSI.

Disclosure of Interest
None declared.

P473

Bloodstream infections in hospitalized patients before and during the COVID-19 surge in a tertiary teaching hospital in South-West Iran

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P473

Introduction: Antibiotic resistance is a significant global health challenge, and the global pandemic of coronavirus disease 2019 has further complicated the situation.
Objectives: We aimed to compare the prevalence of bacterial isolates and their antibiotic resistance during the pandemic period and the pre-pandemic period in children with bloodstream infections in a tertiary referral center in Iran.
Methods: In this retrospective cohort study, we analyzed 2450 positive blood cultures in children aged 18 years and below sent to the Professor Alborzi Clinical Microbiology Research Center, Nemazee Hospital, Shiraz, Iran. Bacterial isolates and their antibiotic resistance patterns were assessed by the disc diffusion method and compared during the pandemic phase (March 20, 2020, to 2023) and pre-pandemic (March 21, 2017, to 2020).
Results: The Gram-negative bacteria (GNB) were more frequently isolated than Gram-positive ones (GPB) in COVID-19 episodes (86% vs 14%, respectively), similar findings were detected in the pre-COVID-19 period. Among 2056 GNB, Enterobacteriaceae was significantly more prevalent in COVID-19 (37%) than pre-COVID-19 (17%). Among 523 Enterobacteriaceae, *Escherichia coli*, *Klebsiella pneumonia*, and *Enterobacter* species were the most common pathogens in both periods. Among 1517 Non-fermenter bacilli, the rate of *Stenotrophompnas maltophilia* was significantly less frequent in COVID-19 episodes (22%) than in the pre-COVID-19 period (35%). Among GPB, the frequency of enterococci spp. as the most frequent GPB was not significantly different in the two periods. Staphylococcus aureus was substantially more prevalent in the COVID-19 period than the pre-COVID-19 one (6% vs 3%, respectively).
The frequency of extended-spectrum beta-lactamases producing Enterobacteriaceae was significantly more frequent in the COVID-19 period (73%) than in the pre-COVID-19 one (43%). The frequency of vancomycin-resistant enterococci was 66% and methicillin-resistant staphylococcus aureus 20% were not significantly different in the two episodes.
Conclusion: Our findings highlight the urgent need for effective strategies to combat antibiotic resistance during the COVID-19 pandemic and beyond.

Disclosure of Interest
None declared.

P474

Disruptive effect of COVID-19 on the incidence of central line associated bloodstream infection (CLABSI) at intensive care unit in a tertiary teaching hospital—road to improvement

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P474

Introduction: Central line-associated bloodstream infection (CLABSI) is a common nosocomial infection which is preventable if CLABSI prevention bundles are adhered to consistently. However, the COVID-19 pandemic has taken a toll on hospital resources leading to adverse impact on patient care and outcomes.
Objectives: The objective of this study is to evaluate the impact of COVID-19 pandemic on the rate CLABSI in the intensive care unit (ICU) in a tertiary teaching hospital, University Malaya Medical Centre (UMMC).
Methods: This is a retrospective analysis of patients with central venous catheter (CVC) admitted to an adult ICU over three periods (P) in relation to COVID-19 pandemic; P1 before the COVID-19 pandemic (February 2019 to February 2020), P2 during the pandemic (March 2020–June 2022) and P3 recovery phase (July 2022–December 2022).

The total number of line days was collected monthly and CLABSI rates per 1000 catheter days was analyzed.
Results: The total central line days analyzed in the PI, P2 and P3 were 4899, 8929 and 1671 respectively. The CLABSI rates increased by 54.1% during the pandemic period from 3.06 (P1) to 6.83 (P2) per 1,000 line days and decreased to 4.51/1000 line days (P3). During P2, the rates were significantly higher from March 2021-June 2022 which coincided with the peaks in COVID-19 cases.
Conclusion: The COVID-19 pandemic was associated with substantial increase in CLABSI rate. This was likely due to changes in infection control measures in general and line care specifically to cope with the pandemic such as extended use of PPE, and extensive workload compromising the adherence to the five moments of hand hygiene and hindering compliance to CLABSI prevention bundle care.

Disclosure of Interest
None declared.

P475

Impact of simplified personal protective equipment on blood culture contamination during COVID-19 treatment

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Introduction: Personal protective equipment (PPE), such as gowns, gloves, masks, and face shields, is crucial for minimizing biohazard exposure. However, these protective measures can hinder healthcare workers from performing sophisticated procedures and adhering to sterilization guidelines.
Objectives: This study aims to assess the impact of simplifying PPE on implementing on the adherence to sterilization guidelines by comparing blood culture contamination rates.
Methods: We analyzed the contamination rate of blood cultures conducted at a 1,800-bed teaching hospital in Korea from January 2020 to December 2022. During the intensive PPE era (January 2020–December 2021), healthcare workers treated severe COVID-19 patients while wearing coveralls or long-sleeved surgical gowns, face shield, and double gloves for PPE. In the simplified PPE era (January 2022–December 2022), a disposable plastic apron with sleeves replaced the coveralls or long-sleeved surgical gowns, and single gloves were used instead of double gloves. Rates were presented as frequencies and compared by pairwise chi-squared tests.
Results: Over the 36-month study period, a total of 2,353 blood cultures were performed in the COVID-19 treatment unit, with 1,127 blood cultures during the intensive PPE era and 1,226 during the simplified PPE era. No significant change in the blood culture contamination rate was observed between the two periods in the non-COVID-19 treatment units. However, in the COVID-19 unit, the blood culture contamination rate significantly decreased after PPE simplification (Table).
Table. Blood culture contamination rates according to the ward type.

Ward type	Intensive PPE era (Jan 2020–Dec 2021)		Simplifed PPE era (Jan 2022–Dec 2022)		P-value
	Number of blood culture	Contamination rate, %(95% CI)	Number of blood culture	Contamination rate, %(95% CI)	
COVID-19 unit	1,127	5.06 (3.85–6.50)	1,226	1.96 (1.26–2.90)	< 0.001
Emergency room	20,986	1.14 (1.00–1.30)	16,413	0.95 (0.81–1.11)	0.078
Intensive care unit	6,562	2.58 (2.11–2.99)	4,568	2.54 (2.10–3.04)	0.954
Hematology unit	8,678	1.15 (0.94–1.40)	6,036	1.23 (0.96–1.54)	0.742
General ward	28,973	1.07 (0.95–1.20)	19,265	0.96 (0.82–1.10)	0.238

Conclusion: Simplifying PPE could enhance adherence to aseptic techniques and improve clinical performance during COVID-19 treatment.

Disclosure of Interest
None declared.

P476

Contamination of blood cultures before and during COVID-19 in a large tertiary-care center in Switzerland

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Introduction: Blood culture (BC) contamination is considered as an indicator of the quality of the consistency of BC prescription and of the aseptic measures applied during BC sampling. During the COVID-19 pandemic, the organization of medical and nursing activities has been strongly impacted, thus affecting major infection prevention measures provided by healthcare workers.
Objectives: To investigate BC contamination before and during the COVID-19 pandemic in a large tertiary-care center in Switzerland.
Methods: Prospective surveillance of positive BCs at the Geneva University Hospitals (HUG) has been conducted since 1995, including the monitoring of sample contaminations. A positive BC was defined as contaminated if it could not be classified as true bloodstream infection according to the European Center for Disease Control (ECDC) criteria. We described the annual incidence of BCs contamination from 2018 to 2022 using the number of BCs drawn as a denominator. We calculated incidence rate ratio (IRR) using Poisson regression models for the COVID-19 [2020–2022] period (versus non-COVID-19 period [2018–2019]).
Results: From 2018 to 2022, 6918 positive BCs were prospectively investigated. We observed 135, 117, 222, 240 and 242 BC contaminations in 2018, 2019, 2020, 2021 and 2022, respectively. The number of samples collected increased from 72,700 in 2018 to 78,251 in 2022. The incidence of BC contaminations increased from 1.2 (2018) and 1.6 (2019) per 1000 BCs drawn to 3.1 (2020), 2.8 (2021) and 3.1 (2022) per 1000 BCs drawn. During the COVID-19 period we observed a significantly increased IRR (1.61, 95% CI 1.25–2.09, $p = 0.003$). The highest IRR was observed in ICU settings (5.14, 95% CI 2.85–9.27, $p < 0.0001$).
Conclusion: We observed an increase in the incidence of BC contamination after 2019 that may be explained by lower compliance with hand hygiene and other aseptic precautions during BC sampling, together with inappropriate use of gloves, hospital reorganization, increased workload, staff shortage/turnover, increased BC prescriptions.

Disclosure of Interest
None declared.

P477

Surveillance of healthcare associated infections in Dutch nursing homes for the elderly from 2018–2022

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Introduction: Elderly living in nursing homes are prone to infections due to underlying conditions and dependence on care. During and after the COVID-19 pandemic increased attention has been given to hygiene measures in nursing homes.
Objectives: The aim of this study is to describe trends in infectious diseases in Dutch nursing homes from 2018 to 2022.
Methods: Data was collected through the Dutch national sentinel surveillance network (SNIV). Elderly care physicians registered every week the number of new cases for urinary tract infections (UTI), influenza-like illness (ILI), lower respiratory tract infections (LRTI), gastro-enteritis (GE), and mortality. Incidence rate ratios (IRR) were calculated to compared the pre COVID-19 period (January 2018 to March 2020) and the period from March 2020 to December 2022, further referred to as (post)-COVID-19 period.
Results: From 2018 to 2022, 38 unique nursing homes participated in the surveillance. A total of 640,475 resident weeks was included, with 306,204 resident weeks in the pre COVID-19 period and 334,271 resident weeks in the (post)-COVID-19 period. Mortality was significantly higher in the (post)-COVID-19 period compared to the pre COVID-19 period (IRR: 1.11, 95% CI 1.04–1.18). Also UTI was significantly higher (post)-COVID-19 (IRR: 1.14, 95% CI 1.07–1.20). On the other hand, LRTI was significantly lower in the (post)-COVID-19 period compared to pre COVID-19 (IRR: 0.86, 95% CI 0.79–0.94). Also GE was significantly lower (post)-COVID-19 than pre COVID-19 (IRR: 0.67, 95% CI 0.59–0.75). ILI remains stable over the years, with an IRR of 1.09 (95% CI 0.93–1.29).
Conclusion: Significant differences in incidences of healthcare associated infections in nursing home residents are observed before and after the start of the COVID-19 pandemic. Increased mortality due to COVID-19 and reduced spread of pathogens due to preventive measures may partially explain the findings.

Disclosure of Interest
None declared.

P478

Continuous monitoring of handrub dispenser use in the emergency department: monthly dispenser use before and during the COVID-19 pandemic

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Introduction: The use of alcohol-based hand rub (AHR) according to WHO recommendations is an important contribution to patient safety. In addition to direct observations, electronic counting AHR dispensers can be used to assess healthcare workers' adherence to hand hygiene (HH).
Objectives: Evaluation of electronic counting AHR dispenser use in emergency care before and during the COVID-19 pandemic.
Methods: As part of a HH implementation project, counting AHR dispensers were installed in an emergency department in a tertiary care hospital, to enable continuous HH monitoring during active HH implementation (01/2018–12/2019) and beyond. From 11/2017 to 12/2022, each dispenser use was counted with time of use. Daily dispenser counts were related to the daily number of patients. Daily dispenser use rates were summarized monthly. Median monthly rates were calculated before (phase 1: 11/2017–01/2020) and during the pandemic (phase 2: 02/2020–12/2022). Median rates of phase 1 and 2 were compared by Wilcoxon rank-sum test.
Results: We analyzed 1,237,249 dispenser counts (phase 1: 531,288, phase 2: 705,961) and 212,030 patient visits (phase 1: 100,769, phase 2: 111,261). The pooled mean dispenser use rate was 5.27 dispenser counts/patient in phase 1 and 6.35 dispenser counts/patient in phase 2. During the pandemic, the range was more pronounced than in phase 1 (4.53–11.56 and 4.37–6.29, respectively) and corresponded with the pandemic (incidence) waves. The median monthly dispenser use rate increased significantly from 5.28 (IQR 5.02–5.68) dispenser counts/patient in phase 1 to 6.33 (IQR 5.15–7.37) in phase 2 ($p = 0.002$).
Conclusion: The reasons for the increase are unclear. To what extent events such as a pandemic can increase the motivation for AHR dispenser use needs to be further investigated.

Disclosure of Interest
None declared.

P479

Healthcare workers hand hygiene adherence before, during and after SARS-COV2 pandemic in university acute general hospital in Argentina

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Introduction: Hand hygiene adherence (HHA) by healthcare workers (HW) is a key factor in reducing microorganisms transmission. Some recent publications describe increased HHA during the first SARS-CoV2 pandemic wave, with sustained decline in subsequent periods.
Objectives: Describe and compare HW HHA rates-according to WHO protocols-before, during and after SARS-CoV2 pandemic, classified by professional category.
Methods: Observational prospective study in a 264 beds in a university high complexity acute general hospital in Buenos Aires from July 2019 to April 2023.
Observer team measured HHA with WHO methodology in the whole hospital and during all HP shits. Data were loaded in Microsof form®, and processed on Power Business Intelligence dashboard. We evaluated 5 periods (P): PA Jun–Dec 2019 (pre-pandemic); PB Jun–Dec2020; PC Jan–Jun 2021; PD July–Dec 2021, PE: Jan–Jun 2022 as intra-pandemic P; and PF post pandemic P January-April 2023.
Variables studied: global hospital HHA and by professional category: nurses (N), physicians (Ph), respiratory therapists (RT) and technicians (T). Statistical analysis was performed applying Chi Square Test with Yates correction from Open EPI® program.

Results:

Global HHA rates (%)

Periods	A	B	C	D	E	F
HHA	66.42	57.29	68.58	73.69	83.47	80.02

Differences between PA and PB, PD, PE and PF rates were statistically significant (SS)—$p < 0.001$—but it wasn't between PA and PC.

HHA rates by professional category

Periods	A (%)	B (%)	C (%)	D (%)	E (%)	F (%)
N	85.60	61.10	77.90	84.57	95.39	94.97
Ph	54.30	49.75	55.71	65.41	70.69	71.72
RT	49.40	69.12	69.40	81.78	75	81.90
T	39.90	42.80	47.06	55.50	58.62	61.57

Improvement of N and RT HHA rates was SS—$p < 0.001$—between all periods. Improvement of Ph and T HHA rates was SS—$p < 0.001$—between PA and PD, PE, and PF.

Conclusion: Our study shows that despite slight decrease in HHA rates during the first SARS CoV2 wave, we could revert the initial negative tendency and achieve statistically significant improvement between periods. HHA rates improvement can be achieved even in pandemic times.

Disclosure of Interest
None declared.

P480

Impact of COVID-19 pandemic on the consumption of alcohol-based handrub and antimicrobial soap in the intensive care setting: a quasi-experimental study

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Introduction: During the COVID-19 pandemic, the practice of hand hygiene has been widely publicized as an essential measure to prevent this disease. However, assessing compliance with hand hygiene by direct observation has become even more difficult than usual. Thus, other surveillance strategies were necessary, such as assessing the consumption of hand hygiene products.
Objectives: To compare the consumption of alcohol-based handrub and 2% chlorhexidine soap for hand hygiene purposes, nursing workload, and patient-day rate in intensive care before and during the COVID-19 pandemic.
Methods: A quasi-experimental study was carried out in the pre- (January 2018 to December 2019) and during the pandemic (January 2020 to December 2021) period in an intensive care unit at a public tertiary-care hospital. We performed a descriptive analysis of the product's consumption before and during the COVID-19 pandemic.
Results: Alcohol-based handrub consumption increased from 49.99 ml/patient-day in the pre-pandemic period to 78.83 ml/patient-day during the pandemic. The consumption of chlorhexidine soap went from 3.66 l/month in the pre-pandemic period to 5.6 l/month during the pandemic. The nursing workload score went from 52.8 to 54.9, and the number of patients' days went from 244.5/month to 247.2 patients days/month pre and during the pandemic, respectively.
Conclusion: We observed a significant increase in the consumption of products for hand hygiene during the pandemic, which reinforces that when there is a imminent risk of self-contamination, healthcare workers' compliance with hand hygiene tends to increase.

Disclosure of Interest
None declared.

P481

The impact of hand hygiene compliance pre/post COVID in a low resource setting

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Introduction: Hand hygiene (HH) compliance represents one of the most significant challenges in healthcare settings in low resource Institutions. The "Stop Think Go" hand hygiene program in Barbados followed an outbreak of CRKP in 2014. The campaign uses a multimodal strategy approach to improve HH compliance by using active auditing across all inpatient areas. The COVID-19 pandemic gave an opportunity to further promote & educate. Post COVID-19, the department has recognized challenges with compliance resources. We therefore will look to see HH compliance rates across the institution between 2016 and 2022.
Objectives: The aim of this study is to measure the compliance rate of hand hygiene pre and post covid in all patient areas, and monitor these practices.
Methods: As part of the multimodal strategy of improving HH compliance the department use the Lewisham HH audit tool to assess practices. The HH tool observes & records HH behaviour. The observation chart allows for recording the HH practices of various disciplines of staff ultimately to allow for feedback for staff. Over a 20-min period, the observer uses the HH observation chart to record whether any person have had contact with a patient, or a patient's environment, has adequately and appropriately decontaminated their hands, in a timely way, either by washing their hands with soap and water, or by using an alcohol hand rub (AHR). A minimum of 10 HH opportunities must be observed during the audit period. On occasion, this may take more than 20 min to observe. The "5 moments for HH" (WHO) are assessed.
Results: These results indicate that prior to the COVID-19 pandemic the compliance in association with the CRKP outbreak was above 50 percent. Once the outbreak was over HH declined dramatically to below 20%. In the early part of the pandemic there was an improvement, but rates were unable to be ascertained in 2021 due to resource limitations at the height of the pandemic. An intense campaign of "Stop Think Go" CLEAN HAND SAVE LIVES was carried out at the end of 2022 and a pre-pandemic level have been achieved.
Conclusion: Low resource settings are being challenged post COIVD-19 with "HH fatigue". New effective strategies and mechanisms are required to reinvigorate programs in these settings using a multimodal approach. This will require the appropiate and continous financial investments by administrations to support programs to combat "HH fatigue".

Disclosure of Interest
None declared.

P483

Impact of COVID-19 on the incidence of healthcare-associated infections in the intensive care setting: a quasi-experimental study

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P483

Introduction: Healthcare-associated infections (HAI) increase patient morbidity and mortality, length of hospital stay and, consequently, hospitalization costs. During the COVID-19 pandemic, the need for intensive care has increased and critically ill patients are at greater risk of developing HAI.
Objectives: To compare the HAI density, the rate of use of endotracheal tube, central venous catheter (CVC) and indwelling urinary catheter before and during the COVID-19 pandemic.
Methods: This quasi-experimental study was carried out in the pre-pandemic period (January 2018 to December 2019) and during the first two waves of the pandemic (January 2020 to December 2021) in an intensive care unit of a public hospital. We compared the variables through descriptive analysis before and during the COVID-19 pandemic.
Results: The incidence density of ventilator-associated pneumonia (VAP) went from 2.28 before the pandemic to 10.0 episodes per 1,000 ventilator days during the pandemic. The incidence density of Central Line-Associated Bloodstream Infections went from 5.0 before the pandemic to 5.6 episodes per 1,000 central venous catheters days during the pandemic. The incidence density of Catheter-associated urinary tract infections went from 2.3 before the pandemic to 3.2 episodes per 1,000 indwelling urinary catheters day during the pandemic. There was an increase during the pandemic in the endotracheal tube utilization rate, from 33 to 49%; in the CVC utilization rate, from 56.8% to 67.6%; and in the indwelling urinary catheter utilization rate, from 60.2% to 70.7%.
Conclusion: COVID-19 pandemic greatly enhanced the incidence density of VAP in the ICU setting but did not significantly impact other types of HAI.

Disclosure of Interest
None declared.

P484

Incidence of healthcare-associated infections among patients with COVID-19 admitted to intensive care

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P484

Introduction: COVID-19 has become an important health problem worldwide, leading to increased admissions to intensive care units (ICU). The critically ill patient is more likely to acquire healthcare-associated infections (HAI).
Objectives: To identify the incidence of HAI in patients with COVID-19 admitted to the ICU.
Methods: A descriptive study was performed in a general ICU of a tertiary-care university hospital. Patients aged 18 years or older, with COVID-19 confirmed by RT-PCR, admitted to the study unit between January and August 2021 were included. During this period, the gamma variant of SARS-CoV-2 predominated in the study facility.
Results: A total of 161 patients were followed up, with a mean age of 52.6 years standard deviation (SD): 13.9 years; 93 (57.8%) were male, and the mean length of stay was 54 days, SD: 31.9 days. Of the 161 patients, 140 (86.9%) developed at least one episode of HAI. In total, there were 205 HAI, as 55 patients (34.2%) had two HAI and five (3.1%) had three. Regarding the types of HAI and microorganisms isolated, there were 90 Ventilator-associated pneumonia, 47 due to *Acinetobacter baumannii*, 11 due to *Klebsiella pneumoniae*, 10 due to *Pseudomonas aeruginosa*, 4 due to *Staphylococcus aureus* and 18 did not have any pathogen isolated. There were 105 Central Line-Associated Bloodstream Infections, of which 29 were caused by *Acinetobacter baumannii*, 25 by *Klebsiella pneumoniae*, five by *Pseudomonas aeruginosa*, eight by *Candida albicans*, 13 by *Staphylococcus* sp., ten by other agents and 15 did not have the isolated agent. There were 10 Catheter-Associated Urinary Tract infections, eight caused by *Klebsiella pneumoniae* and two by other agents. Of the Gram-negative bacteria, 80% were resistant to carbapenems, and all *Staphylococcus* sp. were methicilin-resistant.
Conclusion: We identified an extremely high incidence of HAI among patients with a critical form of COVID-19, most of them caused by multidrug-resistant Gram-negative bacteria.

Disclosure of Interest
None declared.

P486

Has the SARS-COV-2 pandemic changed perception and practices toward hand hygiene among patients in the United Arab Emirates?

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P486

Introduction: Patient engagement is essential to promote hand hygiene programs in healthcare settings. The recent SARS-CoV-2 pandemic has resulted in increased awareness about hand hygiene and other infection control practices in the community.
Objectives: The objectives of this study were to assess the perception and practices regarding hand hygiene among patients in the United Arab Emirates (UAE).
Methods: A sample of 96 patients aged 10 years and older were randomly selected from inpatient and outpatient settings in an acute care hospital in KhorfakKan city, UAE. Infection control professionals (ICPs) conducted the study between October 2022 and April 2023 using a questionnaire of 4 questions to assess knowledge, attitude and practices toward hand hygiene. ICP assessed the technique and duration of hand hygiene practices among patients through direct observation during the interview.
Results: Of the 96 patients, 95% followed the correct steps when performing hand hygiene and 80% adhered to the proper duration. The majority of our population (96%) considered hand hygiene an important component to maintain a safe and healthy environment in healthcare settings. Furthermore, 95% were aware that hand hygiene prevents the transmission of infections.
Conclusion: Hand hygiene is considered important by most of our patients. Public awareness helps in preventing the spread of infectious diseases. Moreover, empowering patients and their families to promote hand hygiene is an integral part of the hand hygiene multimodal strategy. Maintaining a safety culture in healthcare settings is essential to encourage patient engagement and to influence the behavior and compliance of the healthcare workers toward hand hygiene practices.

Disclosure of Interest
None declared.

P487

Psychological impact of COVID-19 pandemic among Tunisian healthcare workers

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Introduction: Healthcare workers are particularly at a high risk of facing stress during the COVID-19 pandemic.
Objectives: This study aimed to evaluate the psychometric properties of the Job Content Questionnaire (JCQ) of Karasek among health professional in private healthcare facilities in the Sousse region (Tunisia) during the first wave of COVID-19 pandemic and its association with mental health disorders.
Methods: A cross-sectional study included health professionals from six private healthcare facilities selected through convenience sampling in the Sousse region (Tunisia), during the first wave of COVID-19 pandemic (September 2020 to November 2020). The JCQ of Karasek was used to assess work-related stress focusing on psychological demand (PD), decision latitude (DL), and social support (SS). High PD, low DL, and low SS were defined based on median values. The Hospital Anxiety and Depression Scale (HADS) assessed mental health disorders.
Results: A total of 543 employees participated with a mean age of 34.15 ± 8.73 years. A sex ratio (M/F) was 0.36. A high level of PD at work was observed in 45.5% of participants. A low level of LD and of SS were found in 44.4% and 35.5% of participants, respectively. Anxiety disorder and depression were detected in 25.7% and 18.5% of the participants, respectively. Participants with anxiety (59.3%) and depression (64.6%) had significantly higher levels of PD compared to those without anxiety (41.3%) and without depression (42%) (p-value $< 10^{-3}$). No significant association was found between low LD, and anxiety ($p = 0.813$), or depression ($p = 0.281$). Participants with anxiety disorders (44.3%) were more likely to have low SS than those without anxiety (32.1%) ($p = 0.01$).
Conclusion: The impact of the Covid-19 pandemic on employees' mental health is evident. The establishment "Stress-Units" would minimize the occupational stress induced by similar health crises. These initiatives will improve productivity and resilience and reduce turnover and absenteism.

Disclosure of Interest
None declared.

P488

COSTS OF HEALTHCARE-ASSOCIATED INFECTIONS IN HOSPITAL CARE IN QUÉBEC DURING THE COVID-19 PANDEMIC

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P488

Introduction: Healthcare-associated infections (HCAIs) impose a major burden on hospitals by creating additional direct and indirect patient care costs. Costs increase for overall consumption of medication, procedures, and testing, as well as for extended length of stays. The clinical best practices of infection prevention and control (IPC) are essential for patient safety and have been shown to be cost-effective. Economic evaluations of the additional costs that HCAIs incur reveal the cost-effectiveness of IPC programs.
Objectives: To determine the costs of HCAIs in five Canadian hospitals.
Methods: A case–control study was used. Patients who had been hospitalized for > 72 h between July 1, 2019–June 30, 2020 had their medical charts reviewed. Patients who contracted an HCAI (cases) were matched with those who did not (controls). Eligible patients were in the same hospital unit at the same time. Matching was based on age, sex, and primary diagnosis. Demographic characteristics, primary diagnosis, type of infection, care and services received, comorbidities, and cost information pertaining to the relative level of resources (NIRRU in QUébec) was collected. Descriptive analyses, Charlson Index scores and Mann–Whitney U tests were performed.
Results: To date, 219 case–control pairs have been identified. Preliminary analyses demonstrate excellent matching between cases and controls for: sex (both are 52% male), age (mean age is 71 years for both), principal diagnosis, and comorbidities (same four most frequent conditions in both groups). Mann–Whitney U tests indicated cases had a significantly higher relative level of resources used ($Mdn = 1.95$, $SD = 2.86$) compared to controls ($Mdn = 1.64$, $SD = 2.47$), $p = 0.002$, representing a $1 321 difference. The Age-Adjusted Charlson Index revealed cases had higher index scores ($Mdn = 6.00$) than controls ($Mdn = 5.00$); though not significantly, $p = 0.056$.
Conclusion: HCAIs incur a significantly higher financial burden to healthcare institutions and society. Data collection across hospitals is ongoing, however, preliminary analyses suggest it is possible to determine the economic burden attributable to HCAIs in patients with varying levels of complexity of care and services provided. Calculated costs are being integrated into a larger-scale project that examines the return on investment in clinical best practices of IPC programs.

Disclosure of Interest
None declared.

Video Clip Award

C1

Video hand hygiene IPC Austral Universitary Hospital

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**C1

Abstract video clip description: Hand hygiene (HDM) is one of the most effective and simple measures that has a direct impact on the reduction of healthcare-associated infections (HAIs), and its implementation and compliance by hospital staff and family members is one of the priorities of the Infection Control Service at Austral University Hospital, which has developed a program to achieve the highest level of compliance. This program is based on the recommendations of the World Health Organization, which proposes the use of alcohol-gel as the primary means for hand hygiene. The video was made as part of the campaign of May 5 HDM 2019.

Disclosure of Interest
None declared.

C3

Empowering patients and enhancing hand hygiene: key strategies for life-saving impact

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**C3

Abstract video clip description: Hand hygiene is vital for infection prevention in healthcare, encompassing both professionals and patients. Patient empowerment enhances adherence to preventive measures, including hand hygiene. Proper hand hygiene curtails pathogen transmission and reduces healthcare-associated infections. Patients play a crucial role in infection prevention alongside healthcare staff. Empowering patients involves education and involvement in decision-making. This fosters adherence to recommended hand hygiene practices. Our objective is to produce and distribute an informative video that raises awareness about the significance of hand hygiene practices and the role of patient empowerment in mitigating healthcare-associated infections.
In May 2023, a collaborative effort involving students and professors from the Federal University of Juiz de Fora was undertaken to produce the awareness video. Weekly meetings were conducted to facilitate the development of the short film, which centered around the core principles of self-care, patient empowerment, and the prevention of healthcare-associated infections.
The video, lasting 2 min and 23 s, portrays a nurse starting her hospital shift. Despite contamination from a cellphone, elevator surfaces, and handshakes, she neglects hand hygiene while interacting with colleagues and inadvertently touches patients. However, a patient insists on hand hygiene before contact, prompting the nurse's realization. She subsequently performs proper hand hygiene, promoting safe care. This impactful video underscores the risks of inadequate hand hygiene and the importance of patient involvement in ensuring safety.
The video highlights the importance of self-care and patient empowerment in infection prevention through hand hygiene. By showcasing real-life scenarios, it promotes awareness and education. Emphasizing the role of healthcare professionals in maintaining their own hand hygiene and involving patients in their care, the video aims to instill a culture of infection prevention. Overall, it serves as a catalyst for change, reducing healthcare-associated infections.

Disclosure of Interest
None declared.

C4

Prevention campaign for central line-associated bloodstream infection (CLABSI) poetry and TROVA

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**C4

Abstract video clip description: OBJECTIVE
Introduction: Among the leading healthcare-associated infections, Central Line-Associated Bloodstream Infection (CLABSI), area a challenge for healthcare institutions as there is a need to keep the incidence rate as low as possible to ensure patient's safety and well-being. Extensive literature exists on recommended measures for bacteremia prevention, including comprehensive bundles for catheter insertion and maintenance.
To facilitate understanding and practical application of these measures among healthcare personnel, we have launched a campaign that promotes key strategies for preventing CLABSI. We have implemented two methodologies to achieve this goal: creation on poems and implementation into musical rhythms in the form of the traditional genre "the trova".
Objective: To promote the main prevention measures for CLABSI among healthcare personnel in a practical manner, featuring communication, memory and emotions so they will remember.
Description: The initial process was the selection of the strategies to prevent primary bacteremias when used for CLABSI. Once these key measures were identified, we created a poem with rhyming verses to stimulate communication, memory and emotions among the healthcare providers responsible for catheter insertion and care. Individuals representing various services were selected as references to create the drawings for the video and the infection control area. Patients and family members were also involved in delivering the messages to the entire medical and healthcare population.
In addition, we supplemented the campaign with a video featuring traditional "trova", a form of improvised singing in which the lyrics were adapted to the verses. "The trova" is a musical genre that combines poetry and music, and its inclusion in our campaign aims to introduce a neurosensory innovation component that captures the attention of the staff, ensuring the longevity and remebering of our campaign and facilitating personnel learning on the topic. The end goal of the project was to have a long-lasting intervention through the creation of a catchy song. To further enhance engagement and enable access for all individuals, including external institutions, we have included subtitled translations for the poem and versions in both English and Spanish for "the trova" singing.

Disclosure of Interest
None declared.

C5

Video on prevention of healthcare-associated infections (HAIS)

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**C5

Abstract video clip description: Considering that healthcare-associated infections (HAIs) are a worldwide problem that significantly impacts clinical outcomes in terms of morbidity and mortality, it is crucial to identify healthcare safety practices that are relevant to all of us responsible for patient care. To achieve this, multiple strategies have been sought to promote a culture of best practices.
In this instance, we are participating in a preventive strategy for the Fundación Valle del Lili University Hospital, utilizing a "silent film" format where actions take center stage and capture the audience's attention for educational purposes, emphasizing the message of "leading by example."
We present the guidelines for proper hand hygiene, adherence to isolation measures, and correct use of personal protective equipment in a unique manner through this strategy. Our aim is to help the audience understand that HAIs are truly a "silent enemy," and it is within our power and through appropriate decision-making to establish preventive and control measures.
Objective: To promote healthcare personnel's adherence to patient safety best practices, including hand hygiene, isolation protocols, and the use of personal protective equipment (PPE), for the care of patients, through an educational strategy.
Video Description: This short film, presented in a silent film style, showcases patient safety best practices such as handwashing, isolation protocols, and the use of personal protective equipment (PPE). The video features nursing staff from the Adult Intensive Care Unit at the Fundación Valle del Lili University Hospital, with support from the area's coordination and the infection control committee.
Participants: A group of nurses from the Adult Intensive Care Unit developed the planning, script, performance, and editing.

Disclosure of Interest
None declared.

C6

I-Prevent—An innovative teaching approach of IPC among clinical phase medical students

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**C6

Abstract video clip description: Introduction: Competency in infection prevention/control (IPC) is pivotal for medical practice, independent of most specializations. Yet, the cross-sectional character of IPC leads to reduced curricular exposure of undergrads to these subjects, potentially hampering perception and proper education.
Methods: We implemented a novel approach of teaching IPC among students, combining three innovative teaching methods (ITM) at once, using a gaming character in a digital setting with "hands on" experience. Clinical phase medical students (CMS) were recruited (voluntarily; ethics approval file no. 16/1/21) and divided into teams. Each team was entitled to prepare a short video (under supervision), covering an IPC topic in which misinformation were deliberately placed (n = 5). After watching the video, the respective other team had to identify and correct the misinformation within a given timeframe. Each identification and/or correction event was documented. Finally, subjective individual CMS opinion of the approach was collected.
Results: Nineteen students participated in three cohorts (six teams). The accompanying video (I-PrEvent) is exemplary and was prepared by the project team. The topics covered by the students were: AMR, emporiatrics, vancomycin utilization, healthcare-associated infections (3 parts: transfusion-transmitted infections, central line-associated bloodstream-infections & preventive measures applied by medical personnel). The implemented ITM were largely positively evaluated by the participants, in particular the gaming and peer-teaching components. While the error identification component was judged to increase attention and analytical skills, concerns were raised over whether the wrong information could be accidentally memorized rather than the correct ones.
Conclusions: Our approach helps strengthening IPC-knowledge among CMS by combining several ITM within a single setting. Our results hint at a high interest among CMS for game-based, interactive and participative approaches in medical education. Therefore, implementing such approaches in teaching curricula might be of advantage, while further development is required.

Disclosure of Interest
None declared.

C7

Role of health care seeking behavior on antimicrobial resistance in bacterial infections: findings from an acute febrile illness (AFI) survey in a rural cohort of eastern India

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**C7

Abstract video clip description: Bacterial infections caused by multi drug resistant strains has been a growing health concern, posing difficulty to treat, extended hospital stay, further transmission of resistant strains and increased morbidity and mortality. Health care seeking behavior and practices like self-medication, over-the counter purchase of drugs, accentuate the problem further.
A facility based longitudinal acute febrile illness (AFI) survey for one year was carried out in a rural Health Demography and Environmental Surveillance System Cohort covering a population size of 76,379 in Eastern India. A total of 1015 acute febrile patients were enrolled and their blood samples were subjected for culture using BD BACTEC machine. 119 (11.7%) samples were found to be positive. Among the positive isolates, 87% were *S. Aureus* while rest 13% were other bacterial isolates. The samples were further investigated for antibiotic susceptibility (using Kirby-Bauer disk diffusion technique), MRSA identification (as per criteria of Clinical Laboratory Standard Institute) and Biofilm formation assay (using microplate method by Aslantaş and Demir). Socio-demographic data were recorded using a standardized questionnaire. Statistical analysis was carried out using STATA.
While 22.4% of participants had visited to facilities directly without doing medical consultation with any other health care provider, 42.5% had come as second consultation and rest 30.1% as their third consultation. 53% of participants had taken some antibiotics prior to their hospital visit. Other than medical doctors, patients consulted to pharmacists (31%), community front line health care providers (28%), informal health care providers (14%) and self-medication (27%). While 9.6% of samples were resistant to at least two antibiotics, 50.7% were resistant to three to five antibiotics. 27.4%, 46.6% and 26% of isolates formed strong, moderate and weak biofilm based on optical density.
Antibiotic resistance to multiple drugs is emerging as an important public health problem in rural areas. Implementation of strict drug Policies and adequate strategies including health awareness on antibiotic resistance needs to be urgently prioritized.

Disclosure of Interest
P. D. Dash Grant/Research support from: Laboratory support, S. Palo Employee of: Principal investigator.

C8

Study on the clinical and microbiological outcome of cases of meningitis at a tertiary care hospital

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**C8

Abstract video clip description: the main objectives of the campaign is the specific clinical features with which our patients in a teritiary care setting presented, and also the abnormalities in the CSF biochemistry (proteins, glucose, white blood cells (WBCs), lymphocytes, and adenosine deaminase (ADA)). We also have tried to examine the characteristic features that distinguished the various types of meningitis, the incidence and patterns of the CSF culture obtained, and the probable reasons for obtaining a sterile culture, among the various types of meningitis prevalent in our study population.

Disclosure of Interest
None declared.

C9

Train-the-trainers in hand hygiene in Iran

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**C9

Abstract video clip description: Introduction Healthcare associated infections and antimicrobial resistance are two major treats to patient safety and have become more important during COVID-19 pandemic. Objectives Hand hygiene is the best way to prevent these ominous events. Methods We planned two courses of training of infection control

nurses and physicians as a standardized approach to training, using a "Train-the-Trainers" (TTT) in Mashhad and Shiraz (two big cities in Iran) during 17–20 April 2017 and 30 October to November 1st 2019. Results During these two courses, we trained 95 IPC professionals in a three-day simulation-based TTT course based on the World Health Organization (WHO) Multimodal Hand Hygiene Improvement Strategy. Conclusion The TTT in hand hygiene proved to be effective in increasing knowledge of IPC professionals and to disseminate knowledge to other health care workers. Keywords: Healthcare-associated infection, antimicrobial resistance, Hand hygiene, Train-the-Trainers.

Disclosure of Interest
None declared.

C10

Innovation: the magic of disinfection is in your hands

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**C10

Abstract video clip description: The swift expansion of ultrasound (USG) use has yielded clinical advantages, albeit potentially exposing patients to avoidable risks of infection. Despite the apparently visible cleanliness of USG machines & probes, clinically significant pathogenic microorganisms have been cultured from them. Disinfection of USG equipment significantly reduces the microbial load. However, research indicates that individuals who perform USG engage in suboptimal cleansing practices and have inadequate training.
Decontamination of medical devices is vital for infection prevention. The high-level disinfection (HLD) is stage of a decontamination process can be achieved with machines or wipes. Wiping products are often assumed to be prone to human error, despite the lack of empirical data to support this. In order to train sonographers, this video is created demonstrating two main parameters: the complete coverage of the medical device (Coverage), and the presence of the chosen ClO2 solution for HLD (Chemistry). To observe coverage & chemistry, this study used an innovative formulation—blue dye molecule—which was impregnated onto a non-lint wipe in a single wipe sachet. The formula is designed to adhere evenly to the surface of a medical device and dry quickly, temporarily colouring the device blue. Upon contact with ClO2 the colour is oxidised, visually confirming that contact between the surface of the device and ClO2 has been achieved.
The use of a coloured formula can visually demonstrate complete decontamination and the absence of human error. By performing HLD, you eliminate the risk of healthcare-associated infection in your patients through the magic touch of your clean hands!

Disclosure of Interest
None declared.

C11

Myths and misconceptions facing COVID 19 testing and vaccine uptake in Nyahera sub county hospital, Kisumu County, Kenya

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**C11

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Nyahera sub county hospital.

Background: Pre and post-counselling plays a pivotal role in ensuring that the patient is well prepared for the next Activity to be undertaken. During the Covid-19 pandemic. Many myths and Misconceptions prohibited patients from accessing laboratory antigen, Antibody testing and Covid-19 vaccine uptake. This could have been avoided had the services of Medical psychological counsellors we been engaged.
Methods: A retrogressive study was conducted between June to August 2021 by using the Data in the laboratory testing Covid-19 register, and vaccine register at Nyahera sub-county Hospital to ascertain the reason for decline and low uptake of laboratory testing and Ccovid-19 vaccine Uptake. The data obtained was analyzed by use of Strata and represented in pie charts and graphs.
Results: A record of 210 patients sampled gave the following reasons as for not taking the test due to Irritation of test 20%(n-08), fear and painful procedure 32% (n-14), premature death if tested positive 45%(n-18), A record of 94 patients sampled gave the following reasons for the low uptake of the vaccine, impotence13.8%(n-13), premature death 11.7%(n-11), low libido23.4%(n-22), cancer 5.3%(n-05), experimental animal 12.7%(n-12, congenital abnormality12.7%(n-12), long side effects 6.3%(n-06), HIV infection 4.3% (n-04).
Conclusion: There is need for the Government to employ more medical phycologists to educate the public about the importance of vaccination and covid 19 laboratory testing. Lastly there is need to reach the general public through media, electronic advertisements and public engagements through Barraza's and community health volunteers.

Disclosure of Interest
D. Ongayi Employee of: none, Conflict with: none.

C12

Have you washed your hands?

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**C12

Abstract video clip description: Video clip description: Hand hygiene is the simplest yet the most important measure in reducing the transmission of microorganisms and preventing healthcare-associated infections. Adherence to the concept of 5 moments of hand hygiene and correct hand hygiene technique can effectively reduce the cross transmission between patients and healthcare workers (HCW). This video demonstrates the non compliance in hand hygiene among HCW during patient care has caused an impact towards patient's health, thus jeopardizing patient's safety in the hospital.
Objective: The aim of the video is to create awareness on the importance of adherence to 5 moments of hand hygiene during patient care in reducing germ transmission and preventing healthcare-associated infections, as well as patient's safety.

Disclosure of Interest
None declared.

C13

Antimicrobial resistance—the silent pandemic

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**C13

Abstract video clip description: The animation *Antimicrobial resistance—the silent pandemic* was produced within European Antibiotic Awareness Day (EAAD) 2022 campaign. This is an initiative of European Centre for Disease Prevention and Control (ECDC), acknowledging the growing problem of antimicrobial resistance and recognising that raising awareness about the need for prudent use of antibiotics and appropriate IPC measures are important steps in curbing antibiotic resistance.
The objective of the video is to raise awareness about antibiotic resistance and prudent antibiotic use among the general public, primary care prescribers and professionals in hospitals and other healthcare settings. Additionally, the video, which has caption subtitles in all EU/EEA languages, was produced to support national campaigns of the EAAD participating countries.
The animation is based on the ECDC data published in 2022 on antimicrobial consumption, antimicrobial resistance, and burden of antimicrobial resistance.
ECDC estimates that every year, throughout the EU, Iceland, and Norway, more than 35 000 people die from antibiotic-resistant infections—an estimate that has increased in recent years.
Over 70% of the health impact of antibiotic-resistant infections is directly linked to healthcare-associated infections. Resistance to antibiotics that are used for last-line treatment of bacterial infections, such as the carbapenems, has the greatest impact on health.
Overall, between 2016 and 2020, there were significantly increasing trends in the estimated number of infections and attributable deaths for almost all bacterium–antibiotic resistance combinations in the EU/EEA, although there was a small decrease from 2019 to 2020, during the first year of the COVID-19 pandemic.
There are several means to address this threat and ensure that antibiotics remain effective in the future. Using antibiotics prudently, only when they are necessary; implementing good IPC practices such as hands hygiene, screening for infections with multidrug resistant bacteria and isolating infected patients; and promoting research and development of novel antibiotics.
EAAD is a European public health initiative coordinated by ECDC that takes place on 18 November to raise awareness about the threat to public health of antibiotic resistance and the importance of prudent antibiotic use.

Disclosure of Interest
None declared.

C14

BR-PEBAR: the most effective weapon against viruses

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**C14

Abstract video clip description: The video emphasizes the importance of effective source control as a method of stopping viruses like COVID-19, specifically by using BR-PEBAR. It starts out with a scene highlighting the impracticality of isolation methods through two long-distance friends unable to meet up because one is stuck in a quarantine hotel. Next, the main character learns about the effectiveness of the most commonly used face masks: fabric, surgical, and N-95. Even N-95, the more effective mask, only prevents 95% of the 3 μm particles, highlighting the ineffectiveness of current receiver control methods. The video then explains the world's response to COVID-19 and ultimately concludes that an effective source control is the most efficient and effective in stopping viruses and pandemics. It then introduces the most effective source control device to date — the breath responsive personal exhaled breath aerosol receiver (BR-PEBAR). The video briefly explains its structure and filter system as well as its many advantages. Since the BR-PEBAR has a 99.9% efficiency, the next time a virus hits, the most logical thing to do would be to wear the BR-PEBAR to protect the environment and others.

Disclosure of Interest
None declared.

C15

Assessment of compliance with the risk prevention measures of Legionellosis contagion in the Sousse region over the years 2022/2023

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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**C15

Abstract video clip description: Legionella thrive in all water environments. They need a temperature between 20 and 50 degrees to proliferate. Explanations our knowledge solutions and treatments.
Introduction: Water is an essential element for the functioning of healthcare establishments, but it can be a source of serious infections, in the event of contamination, particularly for the most fragile patients. Among the main nosocomial respiratory infections of waterborne origin let us mention legionellosis which occurs following the inhalation of microdroplets of water contaminated by one of the species of the Legionella bacterium.
Objectives: The general objective of this work is to contribute to the prevention of the health risk linked to Legionella contamination in terms of infectious risk management (GRI) in healthcare settings.
The specific objective is the implementation of preventive measures against this bacterium as part of the control of the quality and safety of the healthcare environment (QSE).
Methods: This survey focused on the hot and cold sanitary water networks, the air-cooling towers at the level of public and private healthcare establishments in the Sousse region during the winter periods of the years 2022 and 2023.
The number of samples from the winter period of 2022 was:

17 samples in public health facilities
28 samples in private health facilities

The analyzes were carried out according to standard NF T90-431/2017.

Results: The results of the samples taken during the year 2022:

The compliance rate for domestic hot water in public establishments was 50%
Domestic hot water compliance rate for private facilities was 75%
Public facility cold water compliance rate was 50%
Private facility cold water compliance rate was 100%

Results for 2023 are in progress.

Conclusion: Following the results obtained and for better management of health risks related to water quality and preventing legionellosis disease, it is recommended to:

- Development a preventive program
- Curative treatment

Disclosure of Interest
None declared.

C16

Community perspectives regarding preparedness, response and prevention of Ebola virus disease amidst COVID 19 pandemic, an exploratory descriptive qualitative study using a community engagement approach (CES) in Mbale City

E. Kawala Kagoya[1,*], P. Waako[2] on behalf of Reviewer, B. Barugahare[3], A. Nsubuga[4], I. Atuhairwe[5], R. Kibuuka[6] on behalf of 1Enid Kawala Kagoya 2 Allan. G. Nsubuga 2Irene Atuhairwe 2Prossy Nakatudde 3Prisca Kizito 1Kibuuka Ronald 1Atugonza Jesca 1Ambrose Okibure 1Francis Okello 1Faith Nyangoma 1Racheal Namara 1Mark Nakabaale 1Ashley Nakawuki 6Paul Waako 7Julius Wandabwa 7Milt
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Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**

Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**C16
Abstract video clip description: Community perspectives regarding preparedness, response and prevention of Ebola Virus Disease amidst COVID 19 pandemic, an exploratory descriptive qualitative study using a community Engagement approach (CES) in Mbale city.
Methods. The study followed a descriptive qualitative study design. Data were collected using an interviewer-administered questionnaire with both close and open-ended questions. Data were analyzed using ATLAS Pro. Our results illustrate the lack of health education in the community among the different categories of people and this comes from an emic perspective (country). The explanations were explained by sensitivity to local culture, a mismatch between information circulated by the president during his national addresses and what was circulating on social media platforms and the local interpretative framework, which affected the response of the community emergency response teams and community members to take the time needed to listen and empathize with community needs.
We identified 4 high-level themes and 19 subthemes, (1) Knowledge on Ebola Virus Disease, (2) Prevention of EVD in the community, (3) Preparedness for Ebola Virus Disease and (4) community response to Ebola Virus Disease. Regarding thematic area (1) knowledge on Ebola Virus disease, we considered awareness of Ebola virus Disease, the sources of information which included presidential addresses, previous cases of Ebola, Media platforms and other sources of information. The modes of transmission which were both primary and secondary modes of transmission. Under the same thematic area, we considered misconceptions regarding Ebola Virus Diseases which were at community and individual levels.

Disclosure of Interest
None declared.

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We all love it !!!!!

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Abstract video clip description: This video shows how passion, enthusiasm and motivation play an important role in the success of hand hygiene (HH) programs. Effective HH programs are also due to the ownership and motivation shown by the different healthcare workers (HCWs) implementing and performing HH in their daily tasks.
The video highlights a vital component of the WHO multimodal HH strategy related to the accessibility and quality of the alcohol-based handrub solutions (ABHS). It shows how tolerability and acceptability of ABHS by HCWs are important factors influencing consistent use.
The quality of ABHS, including their antimicrobial efficacy, safety, ease of use, texture, fragrance, and other factors play a significant role in promoting HH. A texture that is perceived as smooth, comfortable and pleasant encourages HCWs to clean their hands more frequently. Furthermore, ABHS that have a pleasant scent can motivate staff to enjoy and use them consistently.
The quality of the ABHS can impact people's perceptions and encourage them to practice good HH, which can in turn reduce the spread of healthcare-associated infections.

Disclosure of Interest
None declared.

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