

A quality improvement project was initiated to reduce the overall dialysis CRBSI and CRBSI-MRSA by 50%. **Methods:** Following the formation of a multidisciplinary team, the catheter-insertion protocols and catheter-care protocols were standardized throughout the hospital. We adopted a well-established scientific quality improvement method, plan-do-study-act (PDSA) cycle model for all interventions that were implemented. The patients and general ward nursing staff were provided education and training in dialysis catheter care. **Results:** The project was initiated in January 2016, and the initial improvement was seen from July 2017 onward. Analysis of the data since 2016 showed a steady improvement in the overall CRBSI rates, as well as CRBSI-MRSA rates. The average CRBSI rate improved to 0.76 per 1,000 catheter days, and the average CRBSI-MRSA rates improved to 0.15 per 100 catheter days in the calendar year 2021. **Conclusions:** Because the causes of these infections are multifactorial, emphasis should be placed on improving care processes from the patient preparation phase prior to catheter insertion to regular catheter care in the inpatient wards and dialysis units. We attribute the success of our project to involving all stakeholders and obtaining constant feedback from the staff. We successfully applied PDSA cycles to make relevant incremental changes.

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Subject Category: Improvement science (quality improvement)

Abstract Number: SG-APUSIC1063

Building and application of e-learning software for infection control, Cho Ray Hospital

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Objectives: In the context of the COVID-19 pandemic over the past 2 years, training regarding infection and prevention control (IPC) has become essential in responding promptly to the pandemic. Many healthcare workers from Cho Ray Hospital and provincial hospitals need IPC training; however, human resources and facilities for continuous education and training are lacking. Therefore, IPC e-learning has become necessary for medical staff, and we designed IPC e-learning courses to meet healthcare workers' needs for efficient, time and cost-saving training to ensure safety during the COVID-19 pandemic. **Methods:** All medical staff of Cho Ray Hospital were invited to participate in the infection control e-learning study. The software was developed based on the existing lectures from practical infection control protocols. Healthcare workers were asked to study the software and take a test on their training. **Results:** We built the e-learning course of IPC for 5,000 participants as well as management software to manage lessons, member data, and test results. After implementation for 2 months in the hospital, 207 participants had taken the exam 2,234 times. Overall, 70.5% of participants were nurses and 14.9% were doctors. Moreover, 66.4% of participants passed the test the first time they took it, and 33.6% took the test a second time. After the second test, the percentage of members who passed the exam was 100%. **Conclusions:** Building and applying e-learning software for IPC training has brought about efficiency and quality of training, has reduced the use of human resources for training, and has decreased costs. The software application is being expanded to all hospitals in Vietnam.

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Subject Category: IPC in Special Settings

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Family caregivers in the patient room: Exploring the family involvement in care provision across hospital settings from an infection prevention and control (IPC) perspective

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Objectives: Across many Asian countries, family caregivers provide a wide range of patient care activities while staying in the patient's room. This unique care arrangement has been reported as a factor contributing to the spread of outbreaks including Middle East respiratory syndrome and coronavirus disease 2019 (COVID-19) in many Asian countries. We sought to understand the context in which direct patient care activities are provided by family caregivers and/or private caregivers in hospitals across Bangladesh, Indonesia, and South Korea from the infection prevention and control (IPC) perspective. **Methods:** We used a multimethod design with both quantitative and qualitative approaches. In total, 432 patients were surveyed from 5 tertiary-care hospitals across 3 selected countries, and 64 participants from 2 groups were interviewed: group A comprised patients, family caregivers and private caregivers and group B comprised healthcare workers. Survey data were analyzed descriptively, and the interview data were analyzed using thematic analysis. **Results:** The study findings highlight the different landscapes of care provision in the selected countries. Both the interviews and surveys highlighted 2 aspects of family caregiving. (1) Family caregivers inhabit in the patient zone for long periods, resulting in overcrowding, and (2) they provide a wide range of physically associated care activities, including those associated with the risk of healthcare-associated infections (HAIs). Despite the high number of family caregivers and their in-depth involvement in direct patient care, education and support provided to family caregivers around IPC/HAI were insufficient and varied. Also, challenges related to maintaining adequate hygiene in the environment for minimum IPC were reported. **Conclusions:** This study has elucidated the current landscape of family involvement in inpatient care provision and acknowledges their contribution to high risks of HAI, as well as their current lack of IPC knowledge and practice. These findings reveal that future updates in IPC strategy should acknowledge this arrangement with family caregivers and should address this role with IPC measures.

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Abstract Number: SG-APUSIC1105

The effectiveness of the infection control interventions in decreasing multidrug-resistant organism transmission in the Department of Neonatology of Hung Vuong Hospital

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Objectives: Infection control and prevention (IPC) is one of the most important factors in decreasing multidrug-resistant organism (MRDO) transmission. We evaluated the effectiveness of the IPC program in reducing the spread of MDROs at the Department of Neonatology of Hung Vuong Hospital. **Methods:** This research was conducted from April 2020 to September 2020 in the neonatology department in 3 phases: (1) We determined the compliance rate of hand hygiene and high-touch surfaces cleaning (via camera monitoring). (2) We conducted the following interventions: We developed specific cleaning protocols for the neonatology department. We provided training regarding MRDO transmission control and prevention for healthcare workers. We implemented a counseling program for active screening and isolation for hospitalized children; added isolation rooms for children with MRDO asymptomatic infections. And we improved feedback efficiency through an online group between the

infection control and prevention team and the department of neonatology. (3) We re-evaluated compliance with hand hygiene practices and cleaning of high-touch surfaces, then we compared the rates of positive MRDO cultures before and after these interventions. **Results:** Before the interventions, 453 hand hygiene observations were recorded and 322 high-touch-surface cleaning observations were recorded. The hand hygiene compliance rate improved significantly from 33.2% to 85.5% (PR, 11.9; 95% CI, 7.4–19.3; $P < .01$). The high-touch-surface cleaning rate increased from 82.4% to 93.5% (PR, 3.1, 95% CI, 1.5–6.4; $P < .01$). The rate of high-touch surfaces being cleaned with proper technique increased from 38.5% to 87.9% (PR, 11.6; 95% CI, 6.3–21.3; $P < .01$). In total, 103 swab samples were positive for MRDOs by culture before and after the intervention. The rate of positive MRDO cultures decreased from 80.8% to 64.7% ($P = .017$). **Conclusions:** Enhancing hand hygiene and high-touch-surface cleaning compliance helped reduce MRDO transmission in the Department Neonatology of Hung Vuong Hospital.

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Subject Category: IPC in Special Settings

Abstract Number: SG-APSIC1061

First-response infection prevention and control during COVID-19 outbreaks in residential aged-care facilities

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Objectives: COVID-19 has highlighted the importance of the hierarchy of controls and early implementation of transmission-based precautions during outbreaks in residential aged-care facilities (RACFs). The RACF outreach team is a service provided by the Sydney Local Health District (SLHD) that provides RACFs with expert clinical care and advice, along with outbreak management and infection control and prevention education. **Methods:** The RACF outreach team developed 2 unique IPC management tools designed to assist RACFs during the COVID-19 pandemic: (1) the comprehensive initial review and (2) first-responder assessment tool designed to assist the team in identifying high-risk issues during afterhours shifts. The tool reviews 5 key components in outbreak management: screening, PPE usage, resident care, communication and signage, and infection control and prevention. The outreach team provides an IPC report of the comprehensive initial review, which provides site-specific advice regarding zoning, cohorting, implementation of donning and doffing stations, safe staffing and workflows, ventilation, personal protective equipment (PPE) use, and PPE safety. The recommendations supplied in the SLHD IPC report are provided to facilities and are implemented at the facility level. These reviews are followed up in meetings of the outbreak management team conducted virtually via Zoom videoconferencing. These meetings include an RACF senior manager and a representative from the local PHU, the outreach service, the Australian Commonwealth, the Aged Care Commission, an SLHD executive manager, and an infectious diseases practitioner. **Results:** Since the outbreak of the SARS-CoV-2 o (omicron) variant began in Sydney, Australia, in November 2021, 58 facilities with >2,500 residents have been reviewed, and 57 of these facilities had a COVID-19 outbreak at some point during the pandemic. **Conclusions:** The RACFs in SLHD continue to report death rates <5% among all SARS-CoV-2–positive residents.

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Abstract Number: SG-APSIC1031

Reappraisal of the effectiveness of a care bundle for patients with candidemia

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Objectives: Candidemia has become one of the leading causes of healthcare-associated bloodstream infection, particularly in the intensive care

unit. The management of candidemia remains challenging. We reassessed the protective effectiveness of a comprehensive care bundle on the management of candidemia and the effects of compliance with each element on the outcomes of patients. **Methods:** This network meta-analysis was conducted using the frequentist method. The participants included adult patients both infected with candidemia and who received bundle care. The primary outcome was the all-cause mortality among the patients included. **Results:** Studies in which a care bundle was created for patients with candidemia were identified, and 5 eligible studies with 5,808 participants were enrolled for further analysis. The random-effects model of the overall odds ratio (OR) revealed a significant reduction in the risk of all-cause mortality compared with that of the controls (OR, 0.599; 95% CI, 0.378–0.949; $P = .025$), as well as a reduction in the risk of developing persistent candidemia compared with the controls (OR, 0.483; 95% CI, 0.245–0.952; $P = .008$). In addition, no single element reached a protective effectiveness to improve the clinical outcome. **Conclusions:** This meta-analysis demonstrated that the combination of core elements in the care bundle resulted in protective effects, in that the all-cause mortality rates and incidence rates were effectively reduced among patients with persistent candidemia.

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Subject Category: IPC in Special Settings

Abstract Number: SG-APSIC1146

Reducing bacterial contamination in the dental unit waterline (DUWL) in dental clinics

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Objectives: We evaluated the effectiveness of using appropriate chemical(s) to treat the dental unit waterline (DUWL), and we recommended appropriate strategies to manage the DUWL system to maintain bacteria concentration below minimum recommended levels. **Methods:** Initial water samples were collected aseptically from the handpieces of the DUWL in dental clinics to assess the bacterial load prior to treatment of the dental unit. The dental staff were educated on the management and treatment of the DUWL. Appropriate chemicals were introduced to the DUWL system. Following the treatment, samples of water from the DUWLs were collected to assess the bacterial load. **Results:** The US CDC recommends a safe level of bacterial load of <500 CFU per mL of heterotrophic bacteria in the standard for drinking water by the US EPA. Initial results for the DUWL water showed unacceptably high levels of bacterial load between 1,930 and 35,000 CFU per mL prior to treatment. Subsequent sampling of DUWL water with treatment of appropriate chemicals showed vast reductions of the bacterial loads in all the dental units, with bacterial counts between <1 and 72 CFU per mL. **Conclusions:** It is important to ensure ongoing education and regular treatment with appropriate chemical and effective management and monitoring of all DUWLs from dental chairs to ensure that the water produced meets safe drinking standards.

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Subject Category: Multidrug-Resistant (MDR) Organisms

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Surveillance and control efforts for carbapenemase-producing gram-negative bacteria at a high-burden tertiary-care healthcare facility in Ho Chi Minh City, Vietnam

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