

exposures to sharp injuries occur among 35 million healthcare workers (HCWs) annually. We report the 5-year incidence and trends of sharp injuries in an acute-care hospital. We compared the rates of injury, the distribution of injuries, and the type of exposure of HCWs during the pre-pandemic and pandemic eras. **Methods:** We conducted a retrospective analysis of a 5-year surveillance on self-reported sharp injuries in Changi General Hospital, a 1,000-bed acute-care hospital. The occupational groups, the type of sharps, and the incident activity involved were reviewed. The blood-borne pathogen statuses of the identified source patients were studied. **Results:** In total, 441 sharp injuries were reported from 2017 to 2021. Among the occupational groups, doctors reported the highest number of sharp injuries ($N = 272$, 61.7%), followed by nurses ($N = 129$, 29.3%) and other allied health professionals ($N = 29$, 6.4%). An increasing proportion of doctors reported sharp injuries from 2017 to 2019 (pre-pandemic era) and the proportion declined from 2020 to 2021 (pandemic era); 52 doctors (58.4%) reported sharp injuries in 2017, 61 (61.1%) in 2018, 72 (67.9%) in 2019, 47 (61%) in 2020, and 40 (57.1%) in 2021. Most sharp injuries were caused by solid sharps (212 of 441, 48.1%) and hollow-bore needles (205 of 441, 46.5%). Source patients were identified in 407 sharp injuries. From the known sources, 51 were seropositive: 20 for hepatitis B (HBV), 27 for hepatitis C (HCV), and 4 for human immunodeficiency virus (HIV). No seroconversion occurred. Overall, 198 sharp injuries (44.9%) were sustained during surgical procedures, 83 (18.8%) occurred during blood taking, and 44 (9.9%) occurred during injection administration. Also, 37.5% of sharp injuries among doctors occurred during surgical procedures, and 69.6% of sharp injuries in OT occurred among junior surgical doctors. **Conclusions:** The overall incidence of sharp injuries has decreased during the pandemic. Fewer elective surgical procedures were performed during the pandemic period. OT suturing training workshops and awareness programs on strategies for preventing sharps injuries in the operating theatre, targeted at surgical residents during the past 2 years, could have contributed to the decrease in the incidence of sharp injuries in our hospital. Sharp injuries pose a significant exposure to blood and body fluids and should be subject to continued epidemiological surveillance.

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Subject Category: Improvement science (quality improvement)

Abstract Number: SG-APSIC1154

Evaluation of disposable antimicrobial curtains in an ambulatory cancer center

Sin Hui Wong, National Cancer Centre Singapore, Singapore; Swee Peng Yap, National Cancer Centre Singapore, Singapore; Ming Zhen Priscilla Han, National Cancer Centre Singapore, Singapore

Objectives: The prevention of nosocomial infection is a challenge for all healthcare institutions. Privacy curtains are often changed infrequently, and they are difficult to clean. Contaminated curtains can be touched by healthcare providers and patients, which may result in indirect transmission of infectious disease. Hence, we evaluated the impact of the antimicrobial properties of disposable curtains and their cost-effectiveness. **Methods:** This descriptive exploratory study was conducted in an ambulatory cancer center in 2017. Privacy curtains were assigned to 2 cohorts, labelled E1 and E2. They were placed in the clinical areas for 6–12 months. Moist swab samples for MRSA, VRE, and CP-CRE cultures were obtained from the leading edges of the curtains during the evaluation period. Also, 10-cm × 10-cm swatches were cut from the high-touch areas of curtains and were tested for total aerobic count on the first of the month and quarterly thereafter. **Results:** All bacterial culture swabs obtained from the E1 and E2 cohorts of curtains were negative. The total bacterial plate count results from E1 curtains were negative for up to 1 year. However, the total bacterial plate count results for E2 curtains were positive in the sixth month. Using disposable curtains yielded an annual cost saving of ~50%. **Conclusions:** The use of appropriate impregnated antimicrobial disposable curtains can improve patient safety in the clinical areas. These curtains may eliminate potential sources of infection and thereby

decrease the rate of nosocomial infection. They also save significant institutional costs by reducing frequent laundry and manpower requirements needed for the installation of curtains.

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Finding the right fit: Our experience in quantitative N95 respirator fit-testing

Jin Min Sheena Ong, Singapore General Hospital, Singapore; Bushra Binte Shaik Ismail, Singapore General Hospital, Singapore; Sheena Ong Jin Min, Singapore General Hospital, Singapore; Gillian Lee Li Xin, Singapore General Hospital, Singapore; Lee Lai Chee, Singapore General Hospital, Singapore; Molly How Kue Bien, Singapore General Hospital, Singapore; Ling Moi Lin, Singapore General Hospital, Singapore

Objectives: Following a cluster of COVID-19 cases in a Singapore public hospital in April 2021, the local health authority mandated the use of N95 respirators in all inpatient wards. This increased the demand for N95 mask fit-testing to ensure that healthcare workers were donning respirators that fit their facial characteristics and hence provided protection through a good facial seal. The demand for fit-testing during the pandemic highlighted the scarcity of manpower and ergonomics concern, such as carpal tunnel syndrome experienced in long hours of qualitative fit-testing sessions. We evaluated the operational efficiency, cost-effectiveness, and difference in passing rate after the introduction of the quantitative method. **Methods:** Conventional qualitative fit-testing was conducted using manual pumping of a challenge agent, enabling the user to determine the fit of the respirator. The quantitative fit-testing protocol used a condensation particle counter (CPC) to measure the concentration of particles inside the mask and the atmosphere to determine the fit of respirator. The Occupational Safety and Health Administration (OSHA)-approved minimum fit factor of 100 was used as the criterion for a successful N95 respirator fit. Tubes used during quantitative fit-testing were reprocessed using thermal disinfection. **Results:** Quantitative mask fit-testing provided an objective numerical measure to assess adequate fit of N95 respirator, which provided users with confidence in the respirator fit. It addressed a manpower limitation issue because it did not require qualified trainers to conduct the test, and automation also prevented any potential occupational hazard from repeated actions required in qualitative fit-testing. An increase in the passing rate for N95 fit-testing from 94.5% to 95.5% was observed. However, the high cost of equipment, annual recalibration, and consumables must be considered. **Conclusions:** Quantitative N95 fit-testing, when adopted with careful consideration of its cost, is an approach to consider for hospital-wide fit-testing.

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Successful reduction in the number of hospital-acquired dialysis-catheter-related bloodstream infections: Quality improvement initiative

Sreekanth Koduri, Changi General Hospital, Singapore; Tan Seow Yen, Changi General Hospital, Singapore; Prasanna Thirukonda, Changi General Hospital, Singapore; Maria Theresa, Changi General Hospital, Singapore; Alvin Chew Zhen Jie, Changi General Hospital, Singapore; Wang Hwee May, Changi General Hospital, Singapore; Jane Caroline Van Der Straaten, Changi General Hospital, Singapore

Objectives: Patients undergoing hemodialysis using a catheter are at significant risk of developing central venous catheter-related bloodstream infections (CRBSIs), especially with methicillin-resistant *Staphylococcus aureus* (MRSA), resulting in increased morbidity, mortality, and cost. In our 1,000-bed regional hospital, the average CRBSI (any bacteria) rate in patients dialyzing via dialysis catheters was 1.44 per 1,000 catheter days, and the average CRBSI (MRSA) rate was 0.56 per 1,000 catheter days.

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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Abstract Number: SG-APUSIC1063

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

Nguyen Xuan Nhat Duy, Cho Ray Hospital, Ho Chi Minh City, Vietnam; Nguyen Xuan Nhat Duy, 201b Nguyen Chi Thanh, 12 Ward, 5 District, Ho Chi Minh City, Vietnam; Phan Thi Hong Thuy, 201b Nguyen Chi Thanh, 12 Ward, 5 District, Ho Chi Minh City, Vietnam

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

Ji yeon Park, University of New South Wales, Sydney, Australia; Holly Seale, University of New South Wales, Sydney, Australia; Jerico

Franciscus Pardosi, Queensland University of Technology, Brisbane, Australia

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

Ngo Nhung, Obstetrics and Gynaecology, Hung Vuong Hospital, Ho Chi Minh City, Vietnam; Tran Thi Thuy Hang, Infection Control Department, Hung Vuong Hospital, Ho Chi Minh City, Vietnam; Ngo My Nhung, Infection Control Department, Hung Vuong Hospital, Ho Chi Minh City, Vietnam; Ngo My Nhung, Infection Control Department, Hung Vuong Hospital, Ho Chi Minh City, Vietnam; Ngo Thi Thanh Tam, Infection Control Department, Hung Vuong Hospital, Ho Chi Minh City, Vietnam; Bui Thi Thuy Tien, Neonatal Department, Hung Vuong Hospital, Ho Chi Minh City, Vietnam; Phan Thi Hang, Vice President, Hung Vuong Hospital, Ho Chi Minh City, Vietnam

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