

Subject Category: Healthcare-Associated Infection (HAI) Surveillance

Abstract Number: SG-APUSIC1100

Healthcare-associated infections in COVID-19 patients in Vietnam: Are we able to respond better?

Thu Truong Anh, Bach Mai Hospital, Hanoi, Vietnam; Dao Xuan Co, Bach Mai Hospital, Hanoi, Vietnam; Do Ngoc Son, Bach Mai Hospital, Hanoi, Vietnam; Pham The Thach, Bach Mai Hospital, Hanoi, Vietnam; Luong Quoc Chinh, Bach Mai Hospital, Hanoi, Vietnam; Huynh Xuan Nghiem, Hung Vuong Hospital, Hochiminh, Vietnam; Nguyen Dai Vinh, Hoa Vang District Medical Center, Danang, Vietnam; Truong Thai Phuong, Bach Mai Hospital, Hanoi, Vietnam; Pham Hong Nhung, Bach Mai Hospital, Hanoi, Vietnam; Le Duc Nhan, Da Nang Hospital, Danang, Vietnam; Tran Thi Dung, Bach Mai Hospital, Hanoi, Vietnam; Tran Thi Nga, Bach Mai Hospital, Hanoi, Vietnam; Nguyen Quang Tuan, Bach Mai Hospital, Hanoi, Vietnam

Objectives: Studies have revealed that a relatively high incidence of severe infection and mortality in COVID-19 patients is attributed to healthcare-associated infections (HAIs). We implemented a study in 2 field hospitals dedicated to COVID-19 treatment in Da Nang, Vietnam (July–August 2020), and Ho Chi Minh City, Vietnam (August–October 2021), to identify pathogens, risk factors, and outcomes associated with HAIs. **Methods:** We applied a prospective study tool to estimate HAI incidence among 1,454 patients. HAIs are diagnosed and ascertained using surveillance criteria established by the US Centers for Disease Control and Prevention. All patients hospitalized for COVID-19 for at least 2 days were enrolled in this assessment of HAI risks, pathogens, and outcomes. **Results:** Among 1,454 sampled patients, 391 patients had 423 HAIs (27.1%). The highest proportion occurred in ICUs, with 422 HAI patients (34.1%). Pneumonia (n = 331, 78.3%) and bloodstream infections (n = 55, 13.1%) were the most common HAIs. Multidrug-resistant (MDR) bacteria, such as *Klebsiella pneumoniae* (27.9%) and *Acinetobacter baumannii* (25.3%), were the most commonly isolated organisms. Ventilators and central venous catheters were independently associated with HAIs. Regarding the mortality rates, 55% of deaths occurred in intensive care units. Patients with HAIs (70.3%) were twice as likely to die compared to patients without HAIs (38.8%). HAIs leading to septic shock caused almost triple mortality (n = 58, 90.6%) compared with non-HAI patients (n = 412, 38.8%). HAIs prolonged hospital stay: 24.7 days for patients with HAIs and 19.1 days for patients without HAIs (P < .001). **Conclusions:** Patients with COVID-19–related critical illnesses are at high risk of HAIs from multidrug-resistant (MDR) bacteria. HAIs prolong hospitalization, whereas HAIs with septic shock almost tripled mortality. Guidelines and procedures to prevent and control HAIs caused by MDR bacteria as well as training and monitoring on aseptic-compliant techniques during invasive clinical procedures are needed.

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Long-term effect of a bundled care program in reducing central-line-associated bloodstream infections

Yingchieh Liu, National Taiwan University Hospital, Taiwan; Ying-Chieh Liu, Taiwan, National Taiwan University Hospital, Taipei, Taiwan; Kuan-Yin Lin, National Taiwan University Hospital, Taipei, Taiwan; Chi-Tai Fang, National Taiwan University Hospital, Taipei, Taiwan; Yu-Jing Chang, National Taiwan University Hospital, Taipei, Taiwan; Sung-Ching Pan, National Taiwan University Hospital, Taipei, Taiwan; Jen-Tay Wang, National Taiwan University Hospital, Taipei, Taiwan; Wang-Huei Sheng, National Taiwan University Hospital, Taipei, Taiwan; Yee-Chun Chen, National Taiwan University Hospital, Taipei, Taiwan; Jia-Horng Kao, National Taiwan University Hospital, Taipei, Taiwan; Shan-Chwen Chang, National Taiwan University Hospital, Taipei, Taiwan

Objectives: Central-line-associated bloodstream infection (CLABSI) has been the leading cause of healthcare-associated infections (HAIs) in the

intensive care unit (ICU) setting. Previous studies have shown that a care bundle is effective in reducing CLABSI rates; however, the data on long-term sustainability and cost savings of bundled care are limited. **Methods:** From January 2011 to December 2020, a prospective surveillance was performed to monitor CLABSI at a university hospital in northern Taiwan. To reduce the CLABSI rate, a hospital-wide bundled care program for CLABSI prevention was implemented in 2013. We evaluated the long-term effect of the care bundle on CLABSI incidence and length of stay in the ICU. **Results:** During the study period, the overall CLABSI incidence decreased from 8.22 per 1,000 catheter days before the care bundle was implemented to 6.33 per 1,000 catheter days in 2020 (P for trend < .01). The most common pathogens causing CLABSI were gut organisms (1,420 of 2,363, 60.1%), followed by environmental organisms (734 of 2,363, 31.1%) and skin organisms (177 of 2,363, 7.5%). The decreasing trend was statistically significant in the incidence of CLABSI caused by skin organisms (P for trend < .01), but not in the incidence of CLABSI caused by environmental organisms (P for trend = .86) or gut organisms (P for trend = .06). In the multivariable analysis, implementation of this care bundle was independently associated with a decrease in the CLABSI rate (RR, 0.77; 95% CI, 0.66–0.88). Compared with patients without CLABSI, patients with CLABSI had a longer average ICU length of stay (27 vs 17 days). **Conclusions:** A sustainable reduction in the incidence of CLABSI caused by common commensals could be achieved through a cost-saving bundled care program.

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The role of infection control activities on healthcare-associated infections during 2017–2021 at intensive care units in Cho Ray Hospital

Dung Tien Phan, Cho Ray Hospital, Ho Chi Minh City, Vietnam; Phan Tien Dung, Cho Ray Hospital, Ho Chi Minh City, Vietnam; Le Thi Ven, Cho Ray Hospital, Ho Chi Minh City, Vietnam; Nguyen Anh Ly, Cho Ray Hospital, Ho Chi Minh City, Vietnam; Tran Thi My, Cho Ray Hospital, Ho Chi Minh City, Vietnam; Truong Anh Dung, Cho Ray Hospital, Ho Chi Minh City, Vietnam; Vu Thi Thuy, Cho Ray Hospital, Ho Chi Minh City, Vietnam

Objectives: Healthcare-associated infections (HAIs) are one of the greatest challenges and concerns in Vietnam and around the world. Many studies have shown that HAIs may result in an increase in hospital length of stay, antibiotic use, multidrug-resistant organism (MDROs) infections, treatment costs, and mortality. Therefore, in the past 5 years, the Department of Infection Control of Cho Ray Hospital has carried out many infection and prevention control (IPC) activities to reduce the rates of HAI and MDRO infection. We evaluated IPC activities and results achieved in these efforts at Cho Ray Hospital during 2017–2021. **Methods:** We described the implemented IPC activities and retrospectively collected data from HAIs surveillance reports during 2017–2021 for 3 intensive care units (ICUs): ICU-B, ICU-D, and the NICU. **Results:** In the past 5 years, we implemented synchronous IPC activities, including promoting hand hygiene training and surveillance, environmental cleaning surveillance, carrying out improvement projects such as a ventilator-associated pneumonia (VAP) prevention bundle, an MDRO prevention bundle, and an environmental cleaning quality improvement project. Many positive results were achieved, although a slight increase in the HAI incidence occurred in 2021 due to the COVID-19 pandemic. Overall, the hand hygiene compliance rate increased from 49.7% to 83.8%. The rate of HAIs per 1,000 patient days decreased steadily from 5.4 to 2.4. The VAP rate fell from 30.5 to 17.2 per 1,000 patient days, and the central-line-associated bloodstream infection (CLABSI) rate decreased gradually from 5.4 to 2.4 per 1,000 patient days. The catheter-associated urinary tract infection (CAUTI) rate decreased from 2.9 to 0.9 per 1,000 patient days, and the MDRO infection rate decreased significantly from 32.7 to 11.3 per 1,000 patient days. **Conclusions:** The synchronous implementation of HAI prevention bundles promoting hand hygiene and environmental

cleaning achieved significant effects in the efforts to decrease HAIs and MDROs in the ICUs of Cho Ray Hospital.

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Case series: Examining healthcare-associated infection cases caused by *Candida auris* at Cho Ray Hospital, Vietnam

Toa Vo Thi Hong, Cho Ray Hospital, Ho Chi Minh City, Vietnam; Phung Manh Thang, Cho Ray Hospital, Ho Chi Minh City, Vietnam; Tran Thi Thu Ha, Program For Appropriate Technology in Health, Hanoi, Vietnam; Nguyen To Nhu, Program For Appropriate Technology in Health, Hanoi, Vietnam; Bui Chi, Program For Appropriate Technology in Health, Hanoi, Vietnam; Amber Vasquez, Program For Appropriate Technology in Health, Hanoi, Vietnam

Objectives: *Candida auris* was first detected in Japan in 2009 and has been reported in >47 countries, typically causing outbreaks in healthcare settings. According to the US Centers for Disease Control and Prevention, this pathogen causes death in more than one-third of infected patients. This study describes characteristics of healthcare-associated infections (HAIs) related to *C. auris* and infection prevention and control (IPC) measures applied to control transmission in Cho Ray Hospital, a tertiary-care, referral, general hospital in southern Vietnam. **Methods:** We reviewed medical records of all patients with HAIs caused by *C. auris* at Cho Ray Hospital between April 2020 and March 2021, as well as the IPC measures applied for these patients. **Results:** Overall, 5 HAI cases caused by *C. auris* were identified in 5 patients, including 2 catheter-associated urinary tract infections, 2 ventilator-associated pneumonia cases, and 1 surgical site infection. These cases were sporadically detected in 4 different clinical departments; 2 cases occurred in the respiratory department in April and August 2020. The average age of the patients was 63, and 4 of 5 patients were male. The average hospital stay was 27.2 days; 4 patients died and 1 was discharged. IPC interventions were implemented to immediately respond to *C. auris* infection cases, including isolating the patients, applying standard and transmission-based precautions, supplying adequate personal protective equipment, cleaning environment surfaces and medical equipment in the patient's room, and marking isolation areas with signage. No additional cases of *C. auris* infection were detected in the affected units. **Conclusions:** *C. auris* can spread in healthcare settings via contact with contaminated equipment and surfaces or from person to person, causing outbreaks in hospitals and leading to severe illness and high mortality for patients. Prompt application of appropriate IPC measures effectively helped prevent additional cases of *C. auris* in our hospital.

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Reduction of hospital-onset MRSA bacteremia with chlorhexidine baths among MRSA-colonized patients

Maria Theresa Cabahug, Changi General Hospital, Singapore; Theresa Cabahug, Singapore, Changi General Hospital, Singapore; Li Jie, Changi General Hospital, Singapore; Foo Shi Yun, Changi General Hospital, Singapore; Wu Tuo Di, Changi General Hospital, Singapore; Chai Hairu, Changi General Hospital, Singapore; Harminder Kaur, Changi General Hospital, Singapore; Suhailah Binte Nasir, Changi General Hospital, Singapore

Objectives: Methicillin-resistant *Staphylococcus aureus* (MRSA) is a major concern for hospitalized patients in Singapore. Hospital-onset (HO) MRSA bacteremia is monitored at the national level as an indicator of hospital quality. Patients who have colonized with methicillin-resistant *Staphylococcus aureus* (MRSA) are more likely to develop an MRSA infection in the future. A topical antiseptic solution or cloth called chlorhexidine gluconate (CHG) is effective against several gram-positive and

gram-negative bacteria, including MRSA. **Methods:** The following control measures were present before and throughout the study period: (1) active screening of MRSA upon admission; (2) initiation of contact precaution once MRSA is detected; and (3) emphasis on strict hand hygiene. In January 2021, an intervention was for routine application of CHG bathing as follows: (1) training materials were developed; (2) train-the-trainer sessions were organized; (3) compliance regarding the application of CHG baths was monitored; and (4) the postimplementation process was reviewed. **Results:** There was no change of hand hygiene rate before and after implementation. In 2020, 17 cases of MRSA bacteremia occurred in the hospital, with an infection incidence of 0.54 per 10,000 patient days. In 2021, there were 10 cases of HO-MRSA bacteremia infection, with an overall rate of 0.30 per 10,000 patient days. **Conclusions:** Daily bathing with chlorhexidine reduced the risk of MRSA acquisition and of hospital-acquired bacteremia.

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Subject Category: Improvement science (quality improvement)

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Effect of quality improvement in medical devices preparation on increasing customers' satisfaction in services of the Central Sterile Supply Department of Srinagarind Hospital

Sasithorn Ruangprasertkul, Srinagarind Hospital, Faculty of Medicine, Khon Kaen University, Khon Kaen, Thailand; Ponsawan Quobuwun, Srinagarind Hospital, Faculty of Medicine, Khon Kaen University, Khon Kaen, Thailand

Objectives: Preparation of medical devices from central sterile supply department (CSSD) for use in hospital services requires quality and readiness for use. A guideline for good practice is necessary for safety, assurance, and maximum customer satisfaction, and to accommodate effective healthcare services. We sought to develop and improve medical-device preparation guidelines to satisfy clients. **Methods:** This action research was based on the concepts of Kaizen and eliminate–combine–rearrange–simplify (ECRS). The research was conducted in 3 phases. In the first phase, we designed the study, conducted problem analysis, and developed a plan for improving the preparation of medical devices. In the second phase, we improved the plan for implementation of medical-device preparation guidelines that the research team adapted and developed. We added inspection categories, trained staff members, conducted a focus group. We improved cleaning processes and the inventory system. In the third phase, we conducted an improvement evaluation for (1) quality improvement of medical device preparation and (2) client satisfaction. The research took place from January to December 2019. **Results:** The monthly percentages of medical equipment that passed quality criteria before and after the implementation plan were 91.82±1.19% and 95.33±1.25% ($P \leq .005$). The average client satisfaction score increased from 76.80% to 83.40% ($P = .006$). **Conclusions:** The implementation of Kaizen and ECRS principles for quality improvement successfully increased the quality of equipment preparation and introduced standardized, quality guidelines. The plan–do–check–act (PDCA) process improved client satisfaction, staff performance, and operational efficiency while preventing damage to medical devices and improving readiness of use.

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

Helen Oh, Changi General Hospital, Singapore; Mervis Mak, Changi General Hospital, Singapore; Tuodi Wu, Singapore, Changi General Hospital, Singapore

Objectives: Sharp injuries are frequent occurrences in healthcare settings. According to the World Health Organization, >2 million occupational