

Abstract

The Impact of COVID-19 Pandemic on Health Care-Associated Infections in Intensive Care Units: Results From the Egypt National Health Care-Associated Infections Surveillance, 2019-2020

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Abstract

Background: The COVID-19 pandemic resulted in the unexpected influx of patients leading to high rates of hospitalization. Focusing resources to mitigate the pandemic unintentionally reduced attention to health care-associated infections (HAIs) prevention programs. Intensive care units (ICUs) have suffered the most burden due to requirement of ventilation.

Objective: In this paper, we aimed to estimate the national HAI rates at ICUs before and during the COVID-19 pandemic to better identify the pandemic's impact on HAIs.

Methods: Egypt's HAI Surveillance was established in 2016 in 177 governmental ICUs. CDC case definitions and questionnaire were used to collect patients' data. The types of HAIs targeted included bloodstream infections, pneumonia, and urinary tract infections. Pathogen identification and antimicrobial resistance were performed at the central laboratory. Surveillance data 2019-2020 were obtained, and a descriptive data analysis was performed. HAI rates per 100 patient days and device-associated infections (DAIs) per 1000 device days were compared between 2019 and 2020.

Results: In 2020, 4028 HAIs were reported, including 777 (19.3%) ICU-acquired reports; however, in 2019, 6242 were reported, including 1084 (17.4%) ICU-acquired ones. Incidence significantly decreased in 2020 compared with 2019 (2.67 vs 2.72, $P<.001$). The percentages of bloodstream infections, pneumonia, and urinary tract infection in 2020, compared with 2019, were 64.0% versus 61.6%, 10.9% versus 12.1%, and 25.1% versus 23.8%, respectively. DAIs decreased significantly, including CLABSI (2.6 vs 2.5, $P<.001$), VAP (0.75 vs 0.87, $P=.04$), and CAUTI (1.5 vs 1.6, $P=.02$). *Klebsiella spp.* was the predominant pathogen in both years representing (35.6% and 38.1%), followed by *S. aureus* (11.2% and 15.4%). The rate of carbapenem-resistant *K. pneumoniae* insignificantly increased (25% vs 23%, $P=0.3$), and that of Methicillin-resistant *S. aureus* decreased (68% vs 70%, $P=0.4$).

Conclusions: Egypt's HAI Surveillance successfully described the impact of COVID-19 pandemic on HAIs. It identified a significant decrease in ICU-acquired HAIs and DAIs at the first pandemic year, which could reflect better the infection control measures. The types of HAIs, causative pathogens, and antimicrobial resistance pattern did not change significantly. Surveillance should be maintained to guide HAIs' preventive and control measures.

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KEYWORDS

COVID-19; hospital-acquired infection; intensive care unit; device-associated infection

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