


Letter to the Editor

Effect of coronavirus disease 2019 (COVID-19) pandemic on catheter-related bloodstream infections: Control measures should not be relaxed

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To the Editor—Patient safety is a healthcare discipline that aims to minimize adverse events and eliminate preventable harm in health care.¹ Patient safety strategies involve the implementation of interventions, supervision, surveillance of critical processes, and prevention and control of infections. These strategies include the control of healthcare-associated infections (HAIs) by recognizing risk factors for infection in patients as well as implementing preventive procedures, education, and good practices.²

Among HAIs, central-line-associated bloodstream infection (CLABSI) has a high impact on the health of patients, causing thousands of deaths annually and costing billions of dollars globally. Several strategies have been implemented to reduce the incidence of CLABSI in health institutions, including the implementation of surveillance programs, which has reduced these infections.^{3,4} However, Patel et al⁵ investigated the effect of the COVID-19 pandemic on catheter-related bloodstream infections (CRBSI) cases in the United States. In this study, the CLABSI increased rate from 0.68 to 0.87 events per 1,000 catheter days.⁵

The Fundación Santa Fe de Bogotá (FSFB) is a teaching hospital in Colombia focused on the fulfillment of national and international standards of higher-level and patient-centered care, such as the Joint Commission or Planetree. Due to the COVID-19 pandemic, a patient surge was expected in parallel with the epidemiological surges in Europe and the United States and the first COVID-19 case in Colombia in March 2020. The FSFB restructured its care services in response to the oncoming pandemic. One strategy was to separate areas and beds of general hospital wards, intensive care unit (ICUs), and emergency departments (EDs) for patients with and without COVID-19 using a progressive process that considered the number of cases reported in Bogotá and the rest of the country. During the expansion phase, new personnel were hired to manage COVID-19 patients, and employees were transferred among several nursing and respiratory therapy areas. Despite previous actions to improve the quality and safety of patients, the rates of CLABSI increased.

In the FSFB, an epidemiological surveillance system was implemented in 2002 to monitor different strategies implemented to reduce the number of CRBSIs (Fig. 1.A). With the addition

of COVID-19 patients, the use of central vascular access, length of hospital stay, and in-hospital mortality increased. CLABSI rates also increased (Fig. 1B).

In an analysis by Patel et al,⁵ the increase in CLABSI cases was accompanied by changes in adherence to institutional infection control policies to mitigate the increase in the number of patients and the lack of personnel and supplies. Other contributing factors included reduced contact time with patients and the difficulties in catheter-related revisions and activities, especially during pronation of COVID-19 patients.

In our institution, the SHELL model (software, hardware, environment, liveware, liveware) was used to develop hypotheses about intervention measures to control CLABSIs.⁶ No explicit or implicit modification to the care or surveillance protocols was made. The staff education process was maintained with the usual intensity. Initially, the permanent use of gloves during the work shift was considered to address the increase in CRBSI events due to the difficulty in performing hand hygiene. However, this protocol was modified to allow hand hygiene and changing gloves during the work shift, without a concomitant change in the number of CLABSI cases. During the pandemic, FSFB guaranteed the availability of all the necessary supplies for patient care, including all of the elements for the insertion of vascular devices and care bundles. Hospital areas were modified to accommodate the high number of patients. The distance between patients in the intensive care unit was less than normal. Pronating COVID-19 patients caused a decrease in direct monitoring of catheter conditions and possibly reduced device-maintenance activities. Also, new employees for or personnel transferred to COVID-19 areas may have neglected maintenance and monitoring procedures. Most of these new workers are professionals with no experience in catheter care bundles. Although they received training, their lack of experience and the overwhelming increase in the use of invasive devices related to COVID-19 patient care, as well as burnout in the course of dealing with the pandemic, likely contributed to carelessness in catheter maintenance. Although educational activities were similar in intensity, direct surveillance and supervision activities decreased as entry to isolation areas was curtailed for members of the HAI surveillance team.

Our analysis identified a systematic, multiple-cause failure associated with the loss of control over CLABSI indicators. Therefore, to reduce the number of cases, an intervention bundle across many areas was necessary. As part of the improvement process, systematic education for and feedback to the medical

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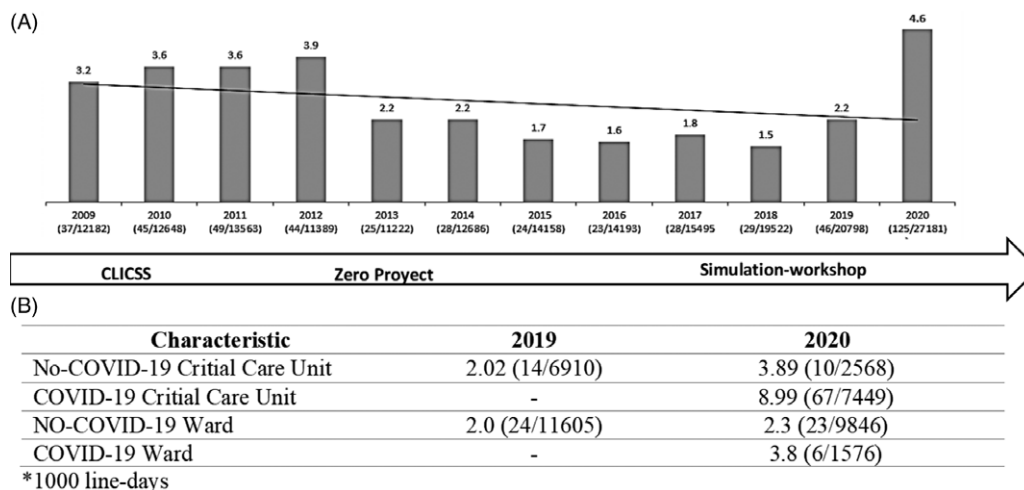


Fig. 1. (A) CLABSI rate and the interventions carried out by the institution. After the CLICSS and zero project interventions, there was a 14.3% decrease in the number of CLABSI cases, and in 2016 a 4.2% decrease with a sustained trend. (B) CLABSI cases in 2019 and 2020 in intensive care units and the general ward, discriminated by COVID-19 and no-COVID-19 area.

and nursing staff were verified. The institutional commitment to patient safety and quality care was reinforced. Proper functioning of the surveillance process was confirmed, as well as the supervision and notification of cases. In addition, new physical elements were added for catheter insertion and care bundles.

Regardless of the circumstances, along with guaranteeing the availability of supplies and personnel, it is essential to guarantee the safe care of patients. The prevention and reduction of health-care-associated infections is a urgently needed to avoid morbidity and mortality, longer hospital stays, and additional care costs due to the COVID-19 pandemic, which has required the national health system to provide timely and safe care for a significantly larger number of patients.

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