

## Commentary

# Healthcare-associated infections during the coronavirus disease 2019 (COVID-19) pandemic

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In a coronavirus disease 2019 (COVID-19) ward in 2020, preventing a catheter-associated urinary tract infection was probably not always the foremost consideration for healthcare staff. Nurses and doctors were trying to save the lives of surges of critically ill infectious patients while juggling shortages of respirators and, at times, shortages of gowns, gloves, and disinfectant wipes as well. Infection control staff were working around the clock to ensure that their healthcare colleagues were wearing proper protective gear and that patients and visitors were screened for symptoms, were tested for severe acute respiratory coronavirus virus 2 (SARS-CoV-2), and were wearing masks. All available resources were directed at minimizing the risk of SARS-CoV-2 transmission in the hospital.

Sometimes these efforts went terribly wrong. Infection control practices in COVID-19 wards often adapted to shortages of personal protective equipment (PPE), responded to the fears of healthcare personnel, and did not always lend themselves to better infection prevention. Examples include reuse of PPE and use of double gowning or gloving. Some specific practices have been implicated in transmission of multidrug-resistant organisms.<sup>1,2</sup> Because of limited capacity and staffing shortages, some hospitals suspended their infection prevention activities altogether or redirected them entirely toward the prevention of SARS-CoV-2 transmission, which resulted in spikes in multidrug-resistant organism activity.<sup>2</sup> These focused views from the COVID-19 trenches provide clear insights into the challenges and complexities that have faced healthcare epidemiologists during the pandemic.

A broader view, however, contributes additional perspective. The COVID-19 pandemic has taken an enormous toll on our society. The health impact is obvious, with >615,000 lives lost in the United States alone. The economic impact has been severe: many businesses have closed, millions of people are out of work, and families are struggling to stay afloat. The mental health aspects of the pandemic cannot be overstated. Quarantine, self-isolation, physical distancing, separation from families and loved ones, stress, and uncertainty have been constant companions for most citizens. The concept of 'business as usual' has virtually disappeared. Perhaps no venue has been more affected than health care. Hospitals throughout the nation have dramatically altered their business and operational practices, precluding elective surgeries and admissions, barring visitors, and creating COVID-19 clinical and intensive care units. Some hospitals have struggled to remain solvent. Emergency rooms have been flooded with COVID-19 patients. During surges,

acute-care hospitals have been overwhelmed to overflowing. Hospital staffs have been stressed, often to the breaking point, while trying to provide the best possible clinical and critical care to numerous patients, many of whom succumb to the disease in isolation with no family members present. The impact of this cataclysmic pandemic on traditional health care has been profound.

In this issue of *Infection Control and Hospital Epidemiology*, Weiner-Lastinger et al<sup>3</sup> from the CDC National Health Safety Network (NHSN) team in the Division of Healthcare Quality Promotion present data demonstrating the impact of COVID-19 on healthcare-associated infections in NHSN-reporting hospitals in 2020. Their results will not surprise hospital epidemiologists, many of whom (as did we in our own institution) observed an increase in several classes of HAIs. In their study, Weiner-Lastinger et al demonstrate that healthcare-associated infection rates in acute-care hospitals increased significantly in 2020 compared with 2019 in the hospitals for which they had data for both years. Their analysis shows that despite a lower number of admissions, the actual number of infections exceeded the expected number, resulting in higher standardized infection ratios (SIRs) for several key healthcare-associated infection categories: catheter-associated urinary tract infections (CAUTIs), central line-related bloodstream infections (CLABSIs), ventilator-associated events (VAEs), and MRSA bacteremia. The successes of the previous several years, with steady declines in rates of these nosocomial and device-related infections, further accentuate the upswings that occurred in 2020. Device-related infections in 2020 had a longer time to infection than in 2019.

The rates of surgical-site infections and CDI did not increase during 2020. Fewer hysterectomies and colon surgeries were performed in the hospitals described in this report, but a lower denominator does not explain the declines in SIRs. We hypothesize that surgical-site infection prevention relies on ingrained practices in antimicrobial stewardship, the preoperative arena, and the operating room, which were not as directly affected by the diversion of hospital infection control resources toward COVID-19. The considerable decrease in outpatient antimicrobial prescriptions<sup>4</sup> may have played a role in lowering the rate of CDI. Interestingly, the hospital factors that led to greater rates of other HAIs did not contribute to higher rates of CDI.

Several factors likely contributed to the increases in several categories of HAI, among them, the fact that hospital leadership and staff were laser-focused on the pandemic. Many institutions faced dramatic staff shortages, with large numbers of staff ill or quarantined. Staff who were able to work faced both an increased workload and a set of patients who had increased acuity of illness, with

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more patients acutely or critically ill on admission. Staff were often asked to work in unfamiliar areas, sometimes in makeshift units, often with patients who had diagnoses with which they were unfamiliar and to perform care that they had previously not performed, such as use and care of central venous catheters. Staff were severely fatigued, and, unfortunately during surges, virtually exhausted.

One of the substantial negative effects of this nearly across-the-board increase in HAIs is the fact that hospital 'pay-for-performance' compensation from the Center for Medicare and Medicaid Services is tied to hitting SIR targets. Hospitals that are already struggling economically may suffer even more in the future. Interestingly, the Centers for Medicare and Medicaid Services excused hospitals from the obligation to report to NHSN in the first and second quarters of 2020. Although only 12% to 14% paused reporting of CLABSIs, ~1 in 4 hospitals used the exception to omit VAE reporting, and an even higher proportion held off on reporting SSI for colon procedures and hysterectomies during those quarters.

Finally, hospital infection prevention staff also had to focus primarily on the pandemic. Infection prevention staff were inundated with COVID-19 problems and issues that simply had to be addressed emergently. For this reason, much of the effort typically given to traditional hospital infection prevention and control activities received less intense scrutiny than during nonpandemic times.

As a discipline, we need to develop strategies that can be effective in maintaining the highest possible quality of infection prevention and control activities while still supporting a pandemic response. Basic infection control practices must be hard-wired into practice so that they are less vulnerable when the healthcare system

is stressed. Healthcare epidemiology teams need to be actively involved in pandemic preparedness planning. One approach might be to designate clinical staff to be added to the hospital epidemiology team to allow for rapid expansion of effort to support a pandemic response. As pointed out by Weiner-Lastinger et al, resiliency in the healthcare epidemiology team is essential. In the absence of additional resources, in similar circumstances, one might anticipate similar outcomes.

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