Infection Prevention News
Volume 15 Number 8
August 2020

DUKE INFECTION CONTROL OUTREACH NETWORK

CLABSIs in the Time of COVID19

Introduction

Hospital infection prevention programs face increasing demands to meet the challenges posed by the COVID19 pandemic. At the same time, hospitalized patients remain at high risk for hospital-acquired infections (HAI). Managing both threats simultaneously can be challenging for hospitals coping with diminishing resources. In recognition, Center for Medicaid Services (CMS) suspended mandatory reporting of HAI in March 2020.[1]

Central-line associated bloodstream infections (CLABSIs) constitute a significant proportion of HAIs. Studies estimate that CLABSIs account for roughly 25,000 preventable deaths per year, with a predicted annual cost of $25 billion.[2] Surveillance data from several DICON hospitals suggest that CLABSI rates are at least 20% higher during the COVID-19 pandemic compared to the pre-pandemic period (unpublished data). This newsletter addresses reasons for and strategies to address this increase in CLABSI rates, while also confronting coronavirus.

Increasing CLABSI Rates

There are likely several factors contributing to the observed increase in CLABSI rates. Many of these factors broadly fall into one of four categories: patient factors, staffing factors, regulatory factors, and supply-related factors. We will address each of these categories individually and offer solutions to meet the needs posed by each.

Patient Factors

Patient factors can be traced directly back to individual patients and their medical care needs. Many hospitals have noted an influx of critically-ill patients with COVID-19. These patients often require central lines for monitoring and medications, and experience prolonged ICU stays, resulting in an increase in both the total number of patient days, and the total number of device days.

Furthermore, there are challenges associated with insertion and maintenance of central lines in patients with COVID19. Patients presenting in fulminant distress are more likely to have central lines placed in high risk sites (e.g. femoral veins) under suboptimal conditions, placing them at higher risk for CLABSI. Maintenance of lines in this population is also more difficult. The use of proning for severe acute respiratory distress syndrome heightens the difficulty of routine line care for nursing staff. Increased blood culture utilization in critically ill patients requiring enhanced PPE may lead to staff fatigue and risk of contamination[3].

Patient-care factors are mitigated through continued attention to the presence of lines, attention to insertion and maintainence practices, and appropriate use of blood cultures. Removal of unnecessary lines is the most important intervention to reduce the risk of CLABSI.[4,5] In addition, use of ICU and floor rounding checklists to remind nurses, physicians, and other members of the primary care teamto address the presence and ongoing need for central lines is important. In addition, unit staff must continue to pay attention to line maintainence practices in both COVID and non-COVID patients. Physicians should review the need for repeated blood cultures, and limit unnecessary culturing.

Staffing Factors

Staffing factors refer to issues arising from increasing demands on the hospital workforce, staffing furloughs, and new practices created in response to the coronavirus pandemic. Most, if not all, hospital workers have assumed additional duties, leaving less time for each individual responsibility. Instead of focusing on HAIs, infection preventionists and nursing champions may now find their focus turned primarily to exposure investigations, reporting, and adapting to changing guidance related to COVID19.

Moreover, to comply with certain COVID-19 restrictions and limit room entries, many DICON hospitals anecdotally report changes with usual central line practices. In some cases, additional IV tubing was affixed to central lines allowing nurses to access IV infusion pumps without entering the patient's room. As a consequence of bundling care to minimize entry, there has been a decrease in direct observation of central line entry sites. While such practices

may conserve PPE and limit transmissible exposure risk, a potential unintended consequence is decreased vigilance of central lines.

Hospital should promote teamwork among nurses and clinicians to foster good central line practices. Calls for additional unit-based patient safety champions from volunteers can counter fatigue, especially if usual champions are pulled to other tasks. Physicians should continue to inspect central lines during daily rounds to ensure ongoing need and integrity.

Supply Factors

Supply factors relate to PPE, hand sanitizer, hand soap, and environmental disinfectant play in preventing CLABSIs and other HAIs.[6,7] In a recent survey, about a third of DICON reported shortages of PPE, hand sanitizer/soap and environmental disinfectant (Figure 1)[8].

As different cleaning products have variable dwell times and instructions for use, use of multiple agents increases staff dissatisfaction, occupational risks and time spent on training environmental services workers to use multiple products. We recommend that hospitals work with vendors to establish a reliable, steady supply of one predominant product. This will help prevent burnout of employees and reduce misapplication of various cleaning products.

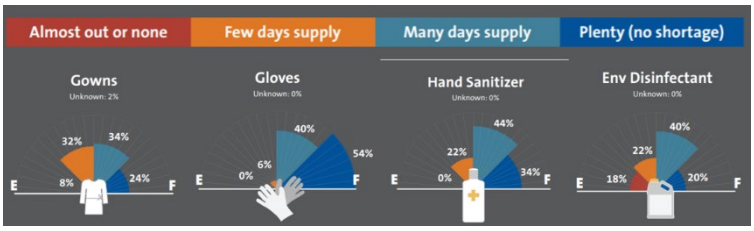

Figure 1. Adapted from a survey of SARS-CoV-2 preparedness in DICON hospitals

Regulatory Factors

Concern about increasing workloads and demands led to the suspension of HAI reporting to CMS.[1] While well-intended, relaxation of mandatory reporting may result in decreased awareness of current CLABSI rates, and decreased vigilance needed to prevent CLABSI.

Even if hospitals elect to forgo HAI reporting to CMS, they should continue to internally track HAI rates to recognize and react to potential lapses in care.

Summary

CLABSI prevention requires continued use of evidence based approaches, checklists and bundles. This newsletter highlights the need to focus on horizontal infection prevention strategies: emphasizing hand hygiene and environmental cleaning, reducing central line days, practicing line maintainence, assessing staff workload, obtaining feedback from nurse managers and safety champions, and monitoring CLABIS rates internally.

Highlights

- **CLABSI rates have increased across most hospitals during the COVID19 pandemic.**
- **Increase in CLABSIs during the COVID-19 pandemic are likely due to patient factors, staffing factors, regulatory factors, and supply-related factors.**
- **There is no "one-size-fits-all" solution to reduce CLABSI rates.**
- **Hospital infection prevention progam should focus on evidence based approaches, including hand hygiene, environmental hygiene, removing unnecessary central lines, focusing on line insertion and maintainence practicies, and improving blood collection practices.**

References

1. CMS Announces Relief for Clinicians, Providers, Hospitals and Facilities Participating in Quality Reporting Programs in Response to COVID-19. https://www.cms.gov/newsroom/press-releases/cms-announces-relief-clinicians-providers-hospitals-and-facilities-participating-quality-reporting. Updated March 22, 2020. Accessed August 24, 2020.
2. Umscheid CA, Mitchell MD, Doshi JA, Agarwal R, Williams K, Brennan PJ. Estimating the proportion of healthcare-associated infections that are reasonably preventable and the related mortality and costs. *Infect Control Hosp Epidemiol.* 2011;32(2):101-114.
3. Sepulveda J, Westblade LF, Whittier S, et al. Bacteremia and Blood Culture Utilization during COVID-19 Surge in New York City. *J Clin Microbiol.* 2020;58(8).
4. Parenti CM, Lederle FA, Impola CL, Peterson LR. Reduction of unnecessary intravenous catheter use. Internal medicine house staff participate in a successful quality improvement project. *Arch Intern Med.* 1994;154(16):1829-1832.
5. Faruqi A, Medefindt J, Dutta G, Philip SA, Tompkins D, Carey J. Effect of a multidisciplinary intervention on central line utilization in an acute care hospital. *Am J Infect Control.* 2012;40(6):e211-215.
6. Bell T, O'Grady NP. Prevention of Central Line-Associated Bloodstream Infections. *Infect Dis Clin North Am.* 2017;31(3):551-559.
7. Marschall J, Mermel LA, Classen D, et al. Strategies to prevent central line-associated bloodstream infections in acute care hospitals. *Infect Control Hosp Epidemiol.* 2008;29 Suppl 1:S22-30.
8. Advani et. al. SARS-CoV-2 Preparedness among Community Hospitals in Southeastern United States. IDWeek. October 2020.