

EXECUTIVE INSIGHTS

RESILIENCY + RECOVERY



NEW INITIATIVES TO PREVENT BLOODSTREAM INFECTIONS

Improving hospital infection prevention and patient safety
while balancing pandemic demands

A vertical decorative image on the left side of the page showing a microscopic view of biological cells and viruses. The cells are in shades of red and pink, while the viruses are green and spherical with a textured surface.

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An influx of critically ill patients during the COVID-19 pandemic has had an enormous impact on health care systems, with many infection-prevention resources diverted to outbreak management. Although these efforts have understandably taken immediate priority, after years of decline, the increase in health care-associated infections (HAIs) highlights the need to return to traditional infection prevention and control practices and build resilience to future outbreaks. Over the past 10 years U.S. health care providers have made significant progress in eliminating HAIs and, as a result, health care is safer. As the field looks to build on this success and continue eliminating HAIs, new initiatives are being explored in preventing bloodstream infections. Hospital-onset bacteremia and fungemia (HOB) is a new area of focus for infection preventionists and front-line clinical staff to help reduce avoidable infections and enhance patient safety.

KEY FINDINGS

- 1** Hospitals executives discussed experiencing **higher rates of HAIs among patients with COVID-19 vs. those who did not have COVID-19.** Patients with COVID-19 have longer hospital stays, higher incidence of intensive care unit (ICU) admission, additional comorbidities and a longer duration of device use. Workforce shortages, high staff turnover and medical supply disruptions put additional pressure on infection-prevention efforts.
- 2** To balance pandemic-related demands with more routine hospital infection prevention, **hospitals are using data and analytics to predict infections, and clinical dashboards to monitor trends.** Additionally, they are leveraging technology such as electronic health record (EHR) systems to set up automatic alerts for certain infections, such as catheter-associated urinary tract infections (CAUTIs). There is also a recommitment to rounding, daily bedside monitoring and having a focused approach to all infections.
- 3** To support hospitals in their efforts to **reduce avoidable infections,** additional resources are needed to engage clinical staff in ongoing infection-prevention training and monitoring.

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MODERATOR (*Kristen Hayes, American Hospital Association*): **How is your hospital or health system balancing pandemic-related demands with more routine hospital infection prevention?**

JOAN BUCKNER (*University of Virginia Health System*): Like other organizations, we have experienced an increase in central line-associated bloodstream infections (CLABSIs), along with our uptick in COVID-19 cases.

The infection preventionists (IPs) round in our units, including the units with a high COVID-19 census. They assess every patient with a central line or Foley catheter and talk to the nurses about the catheter indication, and any maintenance bundle compliance. Because of the number of patients admitted with COVID and the nursing shortage, if the nurse needs assistance changing a dressing or applying StatSeal, they either help the nurse with the dressing change, or do the dressing change. We call this, “support at the elbow.” They’ve even helped with chlorhexidine gluconate bathing or they’ll help turn a patient. They let the nurses know that we’re here to help.

We started unit-based leadership, including the physicians and unit leaders with our performance improvement coaches and IPs, to assess compliance of the nine bundle elements by unit over time.

RICHARD RIGGS (*Cedars-Sinai*): Given that our average length of stay for our COVID-19 patients is twice as long as that of any other patient, an analysis of our CLABSI data showed that our non-COVID-19 CLABSI rate did not increase. It didn’t budge at all during the surge. Was there something particularly different, besides a long length of stay, in this group of patients with regard to their susceptibility to this type of infection?

KALVIN YU (*BD*): Richard, you bring up a good point. We publish on a national database within BD. It consists of more than 200 hospitals. We published

three of the earliest COVID-19-related manuscripts. One of them showed that COVID-19 patients vs. those who were tested for SARS-CoV-2, but were negative, had a longer length of stay, but also had higher rates of ICU admission, longer stays in the ICU and higher mortality. Before COVID-19, if you had patients with a multidrug-resistant organism, they would be isolated, the care sometimes faltered, because some staff do rounding by the door and that could deconstruct the bundles that were meant to be in person and at the bedside.

During surge capacity times, you may have to hire traveling staff, and they’re not as familiar with the policies and procedures. That might be a contributing factor to the discordance that you’re seeing.

RIGGS: We were onboarding lots of travelers during that period and we were distributing them across the hospital. We weren’t putting them just in the COVID-19 units. Our mandate was to take care of COVID-19 patients in rooms with four walls. Many of our non-ICU and many of our ICU and regular patients were in alternate care units, like post-anesthesia care units (PACUs) and recovery areas during our surges. We thought that the rates would have increased in our alternate care units but they didn’t. It’s a combination of the complexity of the patients, the length of stay, use of central lines and other criteria.

TONY EZELL (*BD*): To your point, Dr. Riggs, there must be some connection with the length of stay. There was a study earlier this year that looked retrospectively at the impact of employee turnover or nurse turnover on CLABSI. Just with turnover, you tend to see an uptick in CLABSI. As we look forward, the challenge of per diem strategies with nursing staff will be something all of you are going to have to manage through and whether it affects how you manage CLABSI or hospital-onset bacteremia.

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BUCKNER: We also found that proning patients with COVID-19 pulls on the line and the lines tended not to be as secure, requiring frequent dressing changes which increases the patient risk for CLABSI.

MODERATOR: Have you identified or explored any new initiatives to address hospital-acquired infections, whether it's bacteremia or CLABSI, specifically, but then moving beyond CLABSI?

EZELL: Looking forward to where the CDC is going with HOB, we're trying to understand what you've learned and what you think will make a difference. Dr. Riggs, you've talked about data and analytics and how that has helped you. Has anyone else looked at how you leverage data and predictability to manage staff reductions and where you might have issues?

RIGGS: Our clinical impact dashboard is accessible to every nurse manager, associate nurse manager and associate director to see the trends in their unit by month. Every infection gets a mini root-cause analysis right then and there to facilitate learning.

NANCY FOSTER (*American Hospital Association*): In the initial few months of COVID-19, we saw waves hitting different parts of the country. Was there a mechanism for all of you to pick up — clinical information, strategies, safely proning people, etc. — from other health care organizations that might have been through this before, or at least to get an early warning that this is going to be a problem?

RIGGS: At Cedars, one of our ICU physicians came down with COVID-19 early in the pandemic, and then trained in New York. He went there for their

surge and brought back those learnings.

KRISTI WILKINS (*UVA Health*): We leveraged our clinical nurse specialist colleagues and LISTERV when we were able. We were on the front line, in the moment, being facile, creating different ways of doing things, troubleshooting and seeing what we could learn from our colleagues. It was extremely challenging and it's almost more challenging now as the staffing issues continue to worsen. The ability to train is significantly impacted. And, knowing what's going to be in the supply cart or the bin on any day is extremely challenging.

Even with trying to make sure you have some senior people around, those clinicians are also pulled in many directions. They're not always able to be the resource needed for that traveler who received only two or three days of orientation. Coupled with onboarding people as fast as possible, from new graduates and other novice clinicians, we were trying our best with team nursing to plug up the hole in the dam.

YU: One of the common themes that I'm hearing is that during the pandemic, when you tried to double down on the infection-prevention practices, you tried to do it across the board. Infection prevention is still important and all the bundles still need to be in place. We know that the CDC intends to segue CLABSI to hospital-onset bacteremia. That invokes a similar theme, where a lot of invasive devices that might precipitate bacteremia and were not reportable before, could be in the future. Has this COVID-19 experience expedited your expectation of what HOB might look like as a metric?

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Health System

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RIGGS: In some of the work we're studying with regard to colon surgical-site infections, the National Healthcare Safety Network (NHSN) dataset is different from the one Centers for Medicare & Medicaid Services (CMS) utilizes. They don't utilize procedure duration, our teaching hospital or facility size, which are often proxies for more complex care in their rates. When you look at the seven measures that CMS includes, they are different. We go from a 1.24 ratio of observed antimicrobial days to expected antimicrobial days to an NHSN of 0.92 with the different risk factors.

If CMS is going to use one ruler for everybody as we migrate to new standards, we must be careful to understand what the unintended consequences of that might be for transient bacteremia vs. true sepsis.

YU: Cedars is a huge tertiary care center with a lot of transplant patients. If the HOB metric was risk adjusted not simply to consider teaching/nonteaching, but tertiary status and some sort of severity of patient case mix, would you find that helpful? It would be a risk-adjustment coefficient, essentially, instead of everyone being graded on the same metric.

RIGGS: I don't know if you can risk adjust for huge populations of patients with inflammatory bowel disease and for trauma if you don't have those in the set. CMS doesn't include trauma. If there's risk adjustment, then usually it's done on a pool of general patients coming to the hospital, as opposed to where you may have specialty programs.

JASON BOWLING (*University Health*): We're a 700-bed hospital, academic center, tertiary care referral. I share a lot of Dr. Riggs' concerns about the hospital-

onset bacteremia with the risk adjustment. There's a lot of published data showing that tertiary referral centers, academic centers, have higher rates, even with risk adjustment. There's only so much risk adjustment you can make and still have comparable measures from facility to facility.

The hospital-onset bacteremia gives increased sensitivity, but you lose a lot of specificity. There are going to be some challenges in making attributions to other devices that are in place, but you don't know how causative they are. When you have complicated, longer-term patients who remain in the hospital for weeks to months with complicated surgical issues, they can have transient bacteremias that are difficult. These patients also will have devices in play. You won't see that in places that have shorter lengths of stay.

Even with statistical analyses of the logistic regressions used for the risk adjustment and adding numerous risk factors, there are limits to what the risk adjustment can do as far as making it equitable. You don't want to have a system in which there will be financial complications for centers that take care of sicker people.

YU: I agree with all those statements. How prepared do you all feel in terms of infection prevention for, let's just keep it simple, the invasive devices that go into a vein? It would be peripherally inserted central catheter lines, midlines, central lines and even peripheral IVs. Traditionally, infection prevention has been, in my experience, the least-funded department in a hospital setting. Can they take on the burden of teaching best practices for prevention if you add all that to the existing wheelhouse?

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MODERATOR: In conjunction with feeling prepared, are there any supports or guidance that you might proactively offer as a recommendation to us?

WILKINS: The challenge is whether we feel prepared or we have the bandwidth to teach to best practices for all those things. What I have identified as our continued challenge is ongoing competency and the traditional ways that nursing or even ancillary staff have been trained. We don't have the experience at the bedside that we used to have to be able to depend on our preceptors. We must be more creative in how we do continuous competency in the moment.

There's a role for simulation. The ability to check competency in real-life scenarios is important and something we must figure out, not only for our nursing staff but also within our licensed independent practitioner staff, to know what they were taught. The way we train needs to be done differently.

We've been doing some experimentation within a targeted group — hematology oncology. It's not about figuring out how to focus on CAUTI vs. CLABSI vs. pressure injuries. It's looking at all those things at the same time, including the patient as a whole, instead of breaking it down to individual problems. What we have learned is when focus is on just one thing, then everything else drops off.

YU: Well said. Different products that you use have different levels of education and best practices to help mitigate unintended consequences. Is this an opportunity for the field to assist in that education, help guide it, or maybe build an infrastructure that includes annual training to help offload that burden? What if we partnered with the CDC or the Infectious Diseases Society of America and it was co-sponsored?

WILKINS: Help is always welcome. Figuring out the platform is key. When we talk about how we're inserting our central lines, there are companies that come in and provide simulated, targeted education or more in-depth education. There's a lot of computer-based learning that is challenging for any type of retention.

From a surveillance perspective, you asked about resources. Infection-prevention departments conducting best practice bundle surveillance would need additional resources and education to meet that additional request.

It takes a considerable amount of time to work up a CLABSI with a complicated patient with endocarditis when you're trying to determine if it meets all the criteria. It's a critical point because otherwise, if inter-rater reliability is weak, it can impact the reliability of the data that ultimately can be used for prevention and improvement.

YU: As an infectious disease physician and former hospital administrator from a multihospital system, it's interesting because what the CDC published for public comment was termed HOB, but it was hospital-onset bacteremia and fungemia. I believe they were thinking of the *Candida* genus — a different

patient demographic than bacteremia per se. I wonder what the group's take is on making it into a metric on which you are graded.

RIGGS: When managing complex patients, it is difficult to throw antibiotics at every culture or any type of culture, because we're defeating the purpose of antibiotic stewardship. It's tough in complex patients — oncology, inflammatory bowel disease, transplant and other immunosuppressed populations. The details of how the risk adjustment is made will reveal whether it's fair or not, or

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whether it moves the needle.

YU: The pandemic playbook always struck me as something that, if there were a true pandemic, had the potential not to fly well. Now that the worst pandemic in 100 years has occurred, is the feeling the same? Are you going back to revitalize your pandemic playbook, not just for the licensing surveys, but for practicality and operational feasibility?

FOSTER: Everybody is rewriting their playbooks or throwing their old ones out and starting all over. If you all had any thoughts about what should be in the national playbook, we'd love to have them, because we need to make this work better together.

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