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Q & A: AORN Speaker G. Rumay Alexander

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LITERATURE REVIEW

ENVIRONMENTAL SERVICES
10 Infection Preventionists Flag Dirty Laundry
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11 Vaccine Hesitancy in Health Care Workers
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IN ADDITION
6 Chairman’s Letter

HAND HYGIENE
8 Bug of the Month
By Frank Diamond

14 Medical World News®

16 Interactive News

34 Product Locator

FEATURES

PREVENTION
Changing NICUs
How COVID-19 Forced Innovation
By Michelle Ferrant, DNP, CNS, RN, RNC-NIC, ACCNS-N, CBC; and Jenny Hayes, MSN, RN, CIC, GAIP, CASSPT

18

IN ADDITION

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18

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18
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CHAIRMAN’S LETTER

Expanding Coverage of IPs’ Expanding Roles

ow do we live with COVID-19? What started out as a pandemic that we’re still dealing with—thanks to waves of variants—will always be with us. Viruses change. They adapt. We need to, as well. Certainly, infection preventionists (IPs) and other health care professionals have had to change and adapt over the last 19 months or so just to keep the worst at bay.

Our cover story on page 18 by Michelle Ferrant, DNP, CNS, RN, RNC-NIC, ACCNS-N, CBC; and Infection Control Today® Editorial Advisory Board (EAB) member Jenny Hayes, MSN, RN, CIC, CAIP, CASSPT, looks at how COVID-19 forced neonatal intensive care units to foster innovations to save the lives of these most vulnerable of patients.

COVID-19 isn’t the only adversary IPs face. There are a host of dangerous pathogens out there. EAB member Heather Saunders, MPH, RN, CIC, on page 26 explains how we can avoid a future without antibiotics. Her game plan includes putting IPs on antimicrobial stewardship teams.

One of the pathogens that IPs wrestle with constantly is *Clostridioides difficile*. Jan Dyer on page 22 talks about how—even with a new and improved armamentarium that can be used against it—*C difficile* continues to come at us. It’s relentless. IPs need to be relentless as well.

These pathogens come at all of us. On page 28 you’ll find our Q&A with G. Rumay Alexander, EdD, RN. She is the American Nurses Association scholar-in-residence working with the National Commission to Address Racism in Nursing. She offers compelling advice about how best to address racial and ethnic inequities in health care. If it seemed as if, during the COVID-19 surges, IPs were everywhere in hospitals, that’s because they were, and that included operating rooms. On page 32, EAB member Linda Spaulding, RN, BC, CIC, explains how IPs can forge stronger ties with the professionals who work in ORs.

There’s a lot to digest in this month’s ICT®, and our stable of excellent writers and EAB members serves it to you busy professionals in a professional manner. And please, by all means, keep us informed. Send feedback to Vice President of Content Alexandra Ward at award@mjhlifesciences.com.

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I’m Tricky and Obvious at the Same Time

I can fly, traveling in droplets whenever someone I’ve infected sneezes, coughs, or even sings or talks. You either inhale me, or I attach to your hands if you touch a surface I’m on. You’ll touch a table, smartphone, or computer keyboard and then you’ll touch your face. Bang! I’ve got you! I’ll soon show up in your nose, throat, and lungs.

I’m an unusual mix of obvious and tricky, especially this year. Obvious in the way I attack you, obvious in the symptoms I’ll make you display, obvious in the choice of people I’m most likely to infect. Tricky not only because I resemble the common cold but because it’s difficult to distinguish me from that other viral infection whose name I won’t mention for 2 reasons: First, because you’ve heard it a billion times since March 2020 and second, because it has made me “that other viral infection,” and I don’t like playing second fiddle.

You want numbers? How about these: I kill about 61,000 Americans a year, according to the US Centers for Disease Control and Prevention (CDC). The CDC also says that since 2010, I’ve infected between 9 million and 45 million Americans annually and have hospitalized between 140,000 and 800,000 more.

Why the discrepancies? The CDC pulls the information from a database in which thousands of providers report the number of patients that they’ve seen who display my symptoms. That database, however, doesn’t include every health care provider, and it tracks patients with my symptoms, not those in which a laboratory confirms my presence.

I go after the vulnerable. They include:
- People with weakened immune systems
- Native Americans
- Children under age 5, and especially those under 6 months
- Adults older than 65
- Pregnant women and women up to 2 weeks after giving birth

I might seem like the common cold—with runny nose, sneezing, sore throat—except I hit hard, and I hit fast. Usually, a cold sort of builds up, crests, then fades away.

You often can shake off a cold—even go about your daily activities, such as school or work or play, more or less normally—even when a cold is at its most virulent. You can’t do that with me.

You might have to go to the emergency room if I become too obvious.

For adults, my obviousness includes:
- Seizures

Antiviral drugs might help you recover more quickly or at least stop the more serious problems I can cause. But there’s no reason for it to ever come to that because I almost forgot this little gem. Your best bet for avoiding me completely? A vaccine. Just like with that other viral infection.

So, cough it up. Who am I?
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Friday, October 8th 9:00 AM – 1:00 PM EST
» Navigating the Gauntlet: Coding and Documentation Best Practices
» Financial Fitness Test: Practice Finance/Revenue Cycle Management
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The COVID-19 pandemic underscored the need for infection preventionists (IPs) to work closely with other departments in hospitals such as environmental services, operating rooms, vascular access, and sterile processing teams. There has also been discussion about how, despite demographic challenges, IP expertise may be needed beyond the health care setting, because the pandemic forces schools, businesses, public agencies—nearly every segment of society—to become more familiar with common infection prevention and control processes.

But even IPs who intend to stay with hospitals might need to expand their reach beyond the walls of those facilities, according to study results published in Clinical Infectious Diseases (CID). An outbreak of mucormycosis among transplant patients spurred the intervention of IPs and administrators at the hospital. According to the US Centers for Disease Control and Prevention (CDC), mucormycosis is a rare fungal infection. “Mucormycosis mainly affects people who have health problems or take medicines that lower the body’s ability to fight germs and sickness.”

As a study published in the American Journal of Medicine states, “mucormycosis is an increasingly well-reported invasive fungal infection that affects recipients of solid-organ transplant...and hematopoietic stem cell transplant and is associated with a high morbidity and mortality.”

The CDC says mucormycosis “most commonly affects the sinuses or the lungs after inhaling fungal spores from the air. It can also occur on the skin after a cut, burn, or other type of skin injury.”

In the CID study, the IPs at the hospital investigated and found that health care linens (HCLs) delivered to the facility by an outside vendor were contaminated by Mucorales, one of the causes of mucormycosis. They conducted an on-site inspection of the laundry service, according to investigators with the University of Pittsburgh School of Medicine who conducted the CID study, which helped them find the source of the infection and implement mitigation strategies.

“Targeted laundry facility interventions guided by site inspections and step-wise culturing significantly reduced Mucorales-contaminated HCLs delivered to our hospital,” the study concludes. “Collaboration between infection prevention and laundry facility teams was crucial to successful remediation.”

When the problem first surfaced, IPs began conducting Replicate Organism Detection and Counting (RODAC) cultures of linens when they arrived at the hospital. When they inspected the laundry service, they found a significant number of Mucorales cultures despite the fact that the processes and layout of the laundry facility met industry standards.

“Prior to remediation, 20% of HCLs were culture-positive for Mucorales upon hospital arrival,” the study states. “Laundry facility layout and processes were consistent with industry standards. Significant step-ups in Mucorales and mold culture-positivity of HCLs were detected at the postdryer step (0% to 12% \( P = .04 \)) and 5% to 29% \( P = .01 \), respectively. Further increases to 17% and 40% culture-positivity, respectively, were noted during pretransport holding.”
Vaccine hesitancy among health care workers (HCWs) concerned health care experts even before there were COVID-19 vaccines, and it surfaced in a headline-grabbing manner as more hospitals made employment contingent on getting the vaccine, cheered on by medical associations whose members often have to deal with infectious diseases. This issue especially resonates with infection preventionists because they’re often the ones who oversee vaccination efforts in hospitals and other health care institutions.

But where to begin? The term “health care workers” encompasses about 18 million people in the United States, according to the US Centers for Disease Control and Prevention (CDC). If HCWs comprised a state, it would be the most populous state in the country.

Start COVID-19 vaccination efforts first among female health care workers under 30 years old, say study results published online in the *American Journal of Infection Control* (*AJIC*). Investigators with Hangzhou Medical College in China concluded that “targeted strategies of COVID-19 vaccination need to be formulated and implemented for female health care workers under the age of 30 years who have no history of influenza vaccination in order to address the issue of vaccine hesitancy among HCWs.”

“Nine records with a total of 24,952 subjects were included in this meta-analysis,” the study states. “The results of this meta-analysis revealed that the pooled effect value of COVID-19 vaccination willingness among HCWs using a random-effects model was 51% (95% CI 0.41-0.62). Male, aged 30 years or older, having a history of prior influenza vaccination were facilitators for HCWs’ intention to vaccinate against COVID-
Investigators note that their meta-analysis focuses on HCWs who say they intend to get the vaccine, as opposed to those who actually get the vaccine, and while for the most part intention predicts behavior, that’s not always the case.

What they did find gives pause: Only 51% overall COVID-19 vaccine acceptance among HCWs. “One possible contributor for this finding is that HCWs are exposed to more professional information, and therefore have more concerns about the effectiveness and safety of COVID-19 vaccine, which may affect their decision to get vaccinated and hinder their recommendation of vaccination to patients,” the study states.

This finding dovetails with a study conducted in early May by investigators with McGill University–Faculty of Medicine in Montreal, Canada, that says HCWs want to see more data on the COVID-19 vaccines and may want to see how the vaccines affect fellow workers before they take the plunge. In the United States, some medical experts have argued that full approval of the COVID-19 vaccines by the US Food and Drug Administration—that is, moving them out of the emergency use authorization (EUA) silo—would help lessen vaccine hesitancy among the entire population, including HCWs.20

Hangzhou Medical College investigators in the AJIC study concluded: “In the case of newly-available COVID-19 vaccine, little is known regarding its efficacy and safety at this moment for most individuals. Thus, global governments should expand and intensify their health education efforts urgently to improve knowledge, attitude and practice regarding COVID-19 vaccination that are beneficial to promotion of COVID-19 vaccination.”

Investigators collected their data from English databases PubMed, EMBASE, Web of Science, and the Cochrane Library. They also collected data from Chinese databases the Chinese National Knowledge Infrastructure, the Chongqing VIP Chinese Science, the Wanfang Database, and the China Biomedical Literature Database.

The investigators also touch on the subject of mandatory COVID-19 vaccination for HCWs. They note that although most countries recommend that HCWs get vaccinated, Italy—“after suffering from the most severe effects of COVID-19 among European countries”—mandates it. They cite another study that suggests that a majority of HCWs would get the vaccine if mandated to do so.

Also, a “free vaccination policy may also contribute to increase vaccination rates and the result has been validated by a study conducted in China.”

REFERENCES AVAILABLE AT INFECTIONCONTROLTODAY.COM

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Lambda Variant Continues to Be Investigated

BY FRANK DIAMOND

Scientific investigators continue to try to get a bead on the lambda variant of COVID-19, which initial and—as yet—not peer-reviewed research suggests might display a degree of resistance. That’s the conclusion reached by investigators with the University of Tokyo, in a study posted on bioRxiv. Their conclusions mirror those of a study released several months ago—also not peer-reviewed—by investigators in Chile.

So how concerned should we be by the lambda variant? By all means don’t panic, Marco Binder, PhD, a virologist at the German Cancer Research Center, tells Chemical & Engineering News, reminding that both studies need to undergo peer review. He believes that lambda shouldn’t be a game changer in Europe and the United States. “I have a hard time imagining a variant that could displace Delta as easily as Delta replaced Alpha.” He says. Binder points out that the lambda variant has taken its toll in Peru and other South American countries where delta is less prevalent.

The Chilean study states that data were collected from a “pseudotyped virus.” Investigators “determined the impact of the lambda variant on infectivity and immune escape using plasma samples from health care workers…who received the 2-dose scheme of the inactivated virus vaccine CoroNaVac,” a vaccine manufactured in China that does not rely on mRNA technology.

The study by the University of Tokyo investigators states that 2 mutations in the lambda variant—T76I and L452Q—make it more infectious than the variant that had health care systems throughout the world reeling this time last year, D614G, the so-called wild type. It’s not known as of this writing whether the lambda variant is more infectious than the delta variant, which in many places in the world, including the US, is now the dominant variant and also comes with a host of challenges to health care systems.

In addition, the study states that “the RSYLTPGD246-253N mutation, a unique 7-amino-acid deletion mutation in the N-terminal domain of the lambda spike protein, is responsible for evasion from neutralizing antibodies.” The investigators discovered the mutations in lab experiments.

The World Health Organization (WHO) says the lambda variant—or C.37 variant—has been the COVID-19 carrier in about 81% of infections in Peru since April. The variant was first identified in Peru in August 2020. WHO declared the lambda variant a variant of interest (VOI) on June 14, a designation that means it could cause a greater risk than the wild-type variant. That’s an understatement, according to the investigators at the University of Tokyo, who want WHO to label the lambda variant a variant of concern (VOC) to put health care systems around the world on notice that this might be their next big challenge. (As of this writing, WHO has not made this move.) University of Tokyo investigators write that “because the lambda variant is a VOI, it might be considered that this variant is not an ongoing threat compared with the pandemic VOCs. However, because the lambda variant is relatively resistant to the vaccine-induced antisera, it might be possible that this variant is feasible to cause breakthrough infection.”

Kei Sato, PhD, a senior researcher at the University of Tokyo and 1 of the 2 lead authors of the study, tells Reuters that lambda “can be a potential threat to the human society.”

The study states that “since the lambda variant has dominantly spread according to the increasing frequency of the isolates harboring the RSYLTPGD246-253N mutation, our data suggest that the insertion of the RSYLTPGD246-253N mutation is closely associated with the massive infection spread of the lambda variant in South America.” According to the data-collecting organization GISAID Initiative, there have been 1037 cases of lambda in the United States as of this writing.

Pablo Tsukayama, PhD, is a molecular microbiologist at Cayetano Heredia University in Lima, Peru, and has been tracking lambda since its initial appearance. He told Al Jazeera on July 27 that “when we found it, it did not attract much attention. But we continued processing samples, and by March, it was in 50% of the samples in Lima. By April, it was in 80% of the samples in Peru….That jump from [1%] to 50% is an early indicator of a more transmissible variant.”

REFERENCES AVAILABLE AT INFECTIONCONTROLTODAY.COM
Pair of Digital Health Startups Acquired

BY KEITH A. REYNOLDS

Elehealth giant Amwell has acquired a pair of digital health startups in a bid to expand its longitudinal and behavioral health care. According to a news release, the company has spent $320 million in a mix of stocks and cash to acquire digital mental health platform SilverCloud Health and automated virtual health care leader Conversa Health. The aim is to add the two companies to Amwell's virtual care platform, enhancing the differentiated value provided to current and future patients through the use of interactive tools that strengthen the connection between physical and virtual care.

"We believe that future care delivery will inevitably blend in-person, virtual and digital care experiences; and as such, we are uniquely building a global platform to support such advanced, coordinated care," Ido Schoenberg, chairman and co-CEO of Amwell, says in the release. "By integrating SilverCloud Health and Conversa Health into our platform we are demonstrating Amwell's fundamental and repeatable design to continually scale digital health care services across the different sites of care. These acquisitions will amplify the presence and reach of care teams and reaffirm that as the needs of the health care marketplace evolve, so too will the Amwell platform." Both of the acquired companies have proven records of enabling a more efficient blend of in-person, virtual, and digital care and have helped lower operational and health care costs. Amwell hopes the acquisitions can accelerate its work to make always-on health care companionship a part of the practice of medicine, according to the release.

"There is a tremendous unmet need for mental health solutions in today's world. While SilverCloud Health's mental health programs have been used to support over 750,000 people to date, in partnership with more than 300 organizations globally including the Irish Health Service Executive and over [80%] of the U.K.'s NHS mental health services, our work has only just begun," Ken Cahill, CEO of SilverCloud Health, says in the release.

The combined company will work to create new digital care workflows and programs improving patient engagements and care team reach. The acquisitions will expand Amwell's current client base to include hospital, health system, health plan, and employer clients of Conversa Health and SilverCloud Health, according to the release.

"Conversa Health pioneered automated virtual care to transform traditional care delivery and dramatically improve patient access, experience, and outcomes while lowering cost," Murray Brozinsky, CEO of Conversa Health, says in the release. "We're thrilled to join forces with Amwell, the clear telehealth platform leader, and together to usher in the hybrid care delivery model of the future. Blending physical, virtual, and automated care is a game changer for patients and providers alike. This is a big step for Conversa, and a giant leap for health care."
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**Exploring the Potential of Ultraviolet Light Disinfection**
Ashish Mathur, PhD: “Today, there are no uniform industry standards to evaluate the efficacy of UVC devices. The onus is up to the infection preventionist to make sure and confirm that whatever claims have been made for the device are being substantiated by clinical evidence and third-party testing.”
WATCH: infectioncontroltoday.com/uvc-light

**Gathering Storm: Future Without Antibiotics Is Coming at Us**
Heather Saunders MPH, RN, CIC: “I think [infection preventionists] really need to be aware of what the efforts are at their state health departments and how they can collaborate with those efforts. IPs need to also have their own surveillance systems.”
WATCH: infectioncontroltoday.com/antibiotics

**When Exhausted Infection Preventionists Saved the Day**
Tania Bubb, PhD, RN, CIC: “I think there are many heroes to celebrate, but specifically, because we’re talking about infection preventionists, I want to highlight the work that they have done.”
WATCH: infectioncontroltoday.com/ip-heroes

To see more interviews with expert clinicians and healthcare professionals, visit www.medicalworldnews.com

**Notable Quotables**

“The issue of breakthrough infections is increasingly coming up. How frequent are they? How infectious are they? Simply put, we know the COVID-19 vaccines do not offer sterilizing immunity. They are very effective at keeping people from getting seriously ill and/or dying. In all honesty, understanding breakthrough infections will be challenging, especially if they are in asymptomatic people.”

—Saskia Popescu, PhD, MPH, MA, CIC
Infection Control Expert

READ MORE: infectioncontroltoday.com/breakthrough-infections

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The emergence of the SARS-CoV-2 virus swiftly effected change in every facet of society, with health care delivery being the frontline to the COVID-19 pandemic. This agent of change spared no population. Rapid process changes infiltrated neonatal intensive care units (NICUs) to protect the most vulnerable newborn babies who made their entry into the world during a global pandemic. Just as the virus has adapted to its global host with variant strains, health care delivery in the NICU has adapted with evolving and sustainable practices.

The NICU at the Hospital of the University of Pennsylvania provides care to a level 3 NICU patient population. The American Academy of Pediatrics defines a level 3 NICU as a hospital setting that offers expertise of care providers and specialized equipment needed to provide “comprehensive care for infants born < 32 weeks gestation and weighing < 1500 g and infants born at all gestational ages and birth weights with critical illness.”

Four open bays comprise the 38-bed unit with only 2 negative pressure capable isolation rooms located in 1 of the bays. The NICU includes a separate resuscitation space adjacent to the labor and delivery (L&D) unit with 3 available bed spaces. To adapt to potential census fluctuations, many bed spaces are capable of accommodating overflow and multiple gestation infants in a single-bed space footprint.
Crisis Operations
Operational challenges in the NICU were quickly unveiled with the emergence of COVID-19. Staff illness or exposures to COVID-19 from community and workplace venues resulted in prolonged furlough periods. Severe supply chain shortages in personal protective equipment (PPE) and disinfectant products compounded these operational challenges, prompting conservation and reuse.2 The NICU was thrust into a crisis capacity mode from a baseline of conventional capacity operations.3 Unlike other areas of the hospital, the NICU could not reduce admissions or defer scheduled procedures. This prompted emergent planning for contingency operations.4

Expert Guidance
To continue safe delivery of care, immediate process changes were developed by a collaborative multidisciplinary team. Expert guidance was enlisted from the NICU and L&D nursing leadership and physician provider teams along with hospital partners from infection prevention and control, lab and pathology services, perioperative services, environmental services (EVS), facilities, and materials management (MM). Internal and external supply chain shortages of disinfectant products prompted EVS and MM to forge a plan to make and distribute disinfectant wipes.

Infection prevention in the NICU begins in the L&D setting. Prior to the availability of universal COVID-19 testing for the antepartum population upon admission, the patient history and physical (H&P) included screening for community exposure to COVID-19 and presence of signs or symptoms of COVID-19 infection.5 Any positive findings on the H&P resulted in a person under investigation (PUI) for COVID-19 status with laboratory testing to confirm diagnosis.6

Three negative pressure L&D rooms were designated for PUIs or COVID-19–positive patients. An operating room (OR) for cesarean-section deliveries was also designated for this patient population, with terminal cleaning commencing at the end of the case or upon discharge of the patient from the L&D room. A hospital nursing team of subject-matter experts (SMEs) was deployed to enhance PPE training with donning and doffing procedures as well as safe handling of N95 masks that were reused.7

An infant who was born to a mother who was a PUI required airborne and contact isolation pending the maternal COVID-19 result. This challenged the limitation of 2 NICU isolation rooms, prompting the conversion of the adjacent open bay to a negative pressure airflow to accommodate a third infant who would require isolation. Precipitous deliveries leave little time for the NICU to prepare for an admission, requiring airborne isolation resources to be in a state of readiness.

The admission of a third patient to the negative pressure bay requires imminent transfer of up to 4 other patients to other locations in the NICU. For this reason, the goal is to preserve this open bay for the most stable patients. Testing of the infant of the COVID-19–positive mother requires 2 negative COVID-19 tests 2 days apart. This time delay adds to the challenge of ensuring available isolation beds.


THIS CHALLENGED THE LIMITATION OF 2 ICU ISOLATION ROOMS, PROMPTING THE CONVERSION OF THE ADJACENT OPEN BAY TO A NEGATIVE PRESSURE AIRFLOW.

How to COPE
Because of the highly specialized nature of the neonatal population, the NICU adapted the hospital nursing SME model and implemented a unit specific team of SMEs. This core group of RNs served as trained observers for appropriate donning and doffing of PPE in the delivery room and during the admission and stabilization of the infant in the isolation bed space. This role quickly evolved into a dedicated resource for the interprofessional staff of the NICU. The acronym COPE was coined by a team member, Jennifer Roman, BSN, RN, CBC, to describe the team of COVID-19 operations and patient-care experts. In this role, nurses served as communication liaisons for unit leadership to disseminate the rapid evolution of guidance in the initial wave of the pandemic, which led to rapid process changes.

The COPE team was tasked with remaining knowledgeable on current processes, readily guiding the interprofessional team to unit resources and protocols and providing direct and indirect support to staff. In order to sustain preparedness, the COPE team created specific checklists and supply par levels that are utilized by all staff members to ensure isolation admission spaces are always at the ready. Identifying appropriate supply par levels and paring down admission supplies to the necessities also aided preserving supplies and minimizing waste during the terminal cleaning process of isolation spaces.
staff members. The COPE team members were able to filter out the overwhelming volume of information being shared hospital-wide, much of which did not pertain to the specialized neonatal patient population, and provide concise, timely, and pertinent information to the neonatal team.

Testing of the infant of the COVID-19–positive mother requires 2 negative COVID-19 tests 2 days apart. This time delay adds to the challenge of ensuring available isolation beds.

Ongoing assessments of patient and staff safety prevailed as more information about the transmission of SARS-CoV-2 virus and supply chain challenges became available. The interdepartmental collaboration and frequent virtual communications sustained the contingency plans and required resources through the peak of the pandemic, providing a pathway to a new conventional capacity operations model. Increased testing capacity and widespread vaccination for the SARS-CoV-2 virus has alleviated the contingency capacity operations with improved supply chain and decreased staffing burdens.

**New Model**

Sustained changes in the delivery of care in the NICU have forged new conventional capacity operations in the setting of the COVID-19 pandemic. Negative pressure in L&D rooms is no longer a requirement because updated information became available. A designated OR remains in use for COVID-19 positive patients as intubation may take place. Terminal cleaning procedures follow use of the L&D room or designated OR used for a COVID-19–positive patient. Infant resuscitation continues to be performed in the delivery room or in the OR. Delivery teams for COVID-19–positive patients continue to be limited to essential personnel with N95 masks used in aerosolizing procedures. The responding neonatal team has expanded to include pre-pandemic staff level participation.

Due to the increased potential for a neonate to require an aerosolizing procedure including initial resuscitation steps, neonatal responders continue to utilize N95 masks and viral filters for all neonatal respiratory equipment in L&D. Clean supply carts are maintained outside the room with a “clean” team member to hand off the supplies as needed to the delivery team. A daily checklist for supplies in each NICU isolation room is utilized to ensure capacity for airborne and contact isolation. Universal testing for hospital admissions continues. Visitors and employees are screened for symptoms of COVID-19 infection or exposure to sick contacts upon entry to the facility.

COPE team members continue to pro-
Other Successes
Survival for all hospital acquired infections as required by the state of Pennsylvania continued throughout the pandemic. No central line associated bloodstream infections (CLABSIs) were identified in over 400 days, nor were any other device-associated infections identified. There was no increase in nondevice-associated infections. Recent hand hygiene observations conducted by college co-op/volunteer students on all shifts revealed 95% compliance in 175 observations for 1 month.

This infection surveillance data indicates proven success in both contingency and new capacity models, with COVID-19 serving as an agent of change to facilitate improvement in infection prevention. A recently published study demonstrates the increased risk of maternal complications and preterm birth when COVID-19 infection occurs in pregnancy. This is a critical reminder that contingency planning and sustained operations are essential to the needs of our maternal and NICU population.

MICHELLE FERRANT, DNP, CNS, RN, RNC-NIC, ACCNS-N, CBC, is a clinical nurse specialist in the level III Intensive Care Nursery at the Hospital of the University of Pennsylvania.

JENNY HAYES, MSN, RN, CIC, CAIP, CASSPT, has 15 years of experience as an infection preventionist, serving both in-patient and ambulatory care populations in multidisciplinary settings. She is an infection preventionist at the Hospital of the University of Pennsylvania.

REFERENCES AVAILABLE AT INFECTIONCONTROLTODAY.COM
Can We Ever Get Rid of C difficile?

BY JAN DYER

Last spring, investigators with the Centers for Disease Control and Prevention (CDC) had some good news to report about an infection that had for years sat at the top of the threat list: Clostridioides difficile. The estimated national burden of C difficile infection (CDI) and associated hospitalizations, they said, had dropped 24% between 2011 and 2017, “owing to a decline in health care-associated infections [HAI].”

Despite that welcome decline, though, recurrent CDI remains one of the most important treatment challenges. In 2017, for instance, there were an estimated 38,500 health care–associated cases.2 Since the early 2000s, CDI has multiplied in incidence and severity, becoming the most common nosocomial infection.3 Part of that increase is due to more sensitive testing, which can contribute to higher case detection. And although health care–associated C difficile has been trending downward, the same is not true of community-acquired C difficile, which is on the rise.

C difficile infection is costly—both in economic and human terms. Between 1986 and 2013, CDI was among the top 5 most expensive HAI s in the United States.5 The burden of CDI adds an estimated 3 to 20 extra hospital days per patient with an additional cost of $1 billion in the US.3

Avalere Health, a health care consulting firm, conducted a retrospective cohort study of more than 268,000 Medicare recipients diagnosed with C difficile and recurrent CDIs (rCDIs) from 2010 through 2016. The investigators evaluated health care resource utilization and all-cause, direct medical costs associated with the infection. They found that 1 in 3 patients with C difficile had a recurrence within 12 months, and more than half of the patients with at least 1 recurrence experienced 2 or more after that first episode. Patients with C difficile spent 18 days in the hospital on average compared with 13 days for those with no recurrence.1

Admission Rates
Total all-cause, direct medical costs per patient over 12 months were highest in those with 3 or more recurrent episodes, primarily driven by hospitalizations. Inpatient costs were $31,614 per patient with 3+ recurrences versus $22,722 per patient without an rCDI episode. Recurrent CDI was also associated with higher overall health care costs and higher out-of-pocket costs for patients.

“Significantly,” the Avalere investigators say, “during the 12-month follow-up period, hospital admission rates increased in parallel with the number of recurrences”: 13% of patients with CDI experienced 4 or more hospitalizations within 12 months, while 25% of those with 3 or more recurrences were hospitalized 4 or more times.

C difficile carries a hefty price tag: $5 billion in direct health care costs annually.2 Most of the cost is due to morbidity and mortality. Between 1998 and 2008, the proportion of patients with complicated disease (eg, mega-colon, perforation) jumped from 7% to 18%, and 30-day mortality nearly doubled, from 4.7% to 13.8%.5 More than 15,000 people die of CDI every year in the US; CDI and recurrent CDI is the seventeenth leading cause of death in people 65 and older.3

Co-infections are another complicating factor. COVID-19, for instance, manifests with GI symptoms similar to those of CDI.6 In a small Mayo Clinic study of 21 patients given a diagnosis of COVID-19 and CDI within 4 weeks of each other, 30-day mortality was 19%, mostly in the elderly. “Whether co-infection results in worsening mortality or more complications remains unanswered,” the investigators write. They note that the patients were not treated with antibiotics for COVID-19, and CDI seemed to have developed due to prior antibiotic exposure for other indications.

Sepsis takes the harmful potential of C difficile and turbocharges it. In an online interview with HCPLive® about an Avalere study of patients with CDI, economist Christie Teigland, PhD, vice president, Advanced Analytics, Avalere Health, said, “The main takeaways [from the study] were really the very high rates of sepsis among patients who get C difficile and particularly those who have recurring instances of C difficile. And that carried through with all of the health care resource utilization metrics we looked at, from inpatient stays to post-acute care use, lots of skilled nursing facility use, where they also have a high risk of sepsis and C difficile, and longer stays in the ICU.

“The costs are strikingly high for these patients—$42,000 a year for patients with recurrent C difficile, with sepsis, and those were the patients who died, but the costs
were even high in patients who did not die. For those who died, the follow-up was really short. I think the shortest was 12 days. These patients, once they have *C. difficile* and sepsis, have higher odds of dying. So, the whole message here is what can we do to, number 1, prevent *C. difficile* and number 2, sepsis, because the combination of those two is deadly.”

Many current estimates of the poor outcomes and costs associated with CDI “do not take into account the underlying severity of illness among patients who develop CDI and may overestimate the true attributable outcomes,” according to a 2020 meta-analysis that found a pooled incidence of hospital-onset CDI of 8.3 cases per 10,000 patient-days.

### CDI Management

This June, the Infectious Diseases Society of America (IDSA) and Society for Healthcare Epidemiology of America (SHEA) released a new clinical practice guideline on management of CDI in adults. Since 2017, the authors say, when the guideline was last published, “new relevant evidence has emerged for treatment options.” This 2021 “focused update” specifically addresses the use of fidaxomicin and bezlotoxumab (a monoclonal antibody that targets toxin B produced by *C. difficile*). Both agents have increased clinical efficacy and other advantages over older agents, the authors say, but implementation may be challenging because of initial monetary cost and logistics.

The new guideline also notes that the FDA has published 3 separate safety alerts on fecal microbiota transplantation (FMT) (which is recommended, although only for patients with multiple recurrences of CDI for whom antibiotic treatments have failed, and where appropriate screening has been performed). Two alerts document transmission of pathogenic *Escherichia coli* from donor to FMT recipients. The other alert concerns the potential for transmission of SARS-CoV-2. According to researchers from Mayo Clinic, with appropriate screening, FMT is safe to perform during the pandemic. In their study of 57 patients who underwent FMT for rCDI, none developed COVID-19.

CDI is an old enemy and health care professionals have gathered an armamentarium of weapons against it, but it can be relentless. “Clearly,” says Teigland, “we know that hospitals and nursing homes take precautions to prevent sepsis and *C. difficile*. … The impact is just so devastating in this frail elderly population, you know, they’re already suffering from multiple chronic conditions, hypothyroidism, hypertension, diabetes, asthma, COPD, many comorbidities. *C. difficile* and sepsis on top of all that is just devastating.

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### Table. Health Care Resource Utilization and Cost During 6-Month Preindex Period

<table>
<thead>
<tr>
<th></th>
<th>DIED</th>
<th>SURVIVED</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Primary CDI only</td>
<td>Any recurrent CDI*</td>
</tr>
<tr>
<td>No sepsis</td>
<td>N = 74,804</td>
<td>N = 20,332</td>
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<tr>
<td>Sepsis</td>
<td>N = 84,093</td>
<td>N = 33,526</td>
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<tr>
<td>No sepsis</td>
<td>N = 56,713</td>
<td>N = 34,991</td>
</tr>
<tr>
<td>Sepsis</td>
<td>N = 105,312</td>
<td>N = 76,055</td>
</tr>
<tr>
<td><em>(Any recurrent CDI during follow-up of up to 12 months)</em></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Baseline HRU and quality outcomes**

- Inpatient hospitalization (%): 70.7, 74.7, 72.5, 77.8, 50.4, 62.2, 55.5, 69.6
- ICU (%): 31.4, 37.5, 31.2, 40.3, 19.2, 29.0, 20.9, 32.4
- ED (%): 42.3, 39.8, 44.6, 42.6, 40.2, 39.5, 42.5, 43.0
- Outpatient (%): 98.1, 97.9, 98.8, 98.4, 98.2, 97.8, 99.0, 98.6
- Postacute Care** (%): 69.8, 73.1, 68.8, 74.0, 44.7, 59.2, 46.5, 62.8

**Baseline Total Cost**

<table>
<thead>
<tr>
<th></th>
<th>Total health care (mean, SD)</th>
<th>Medical (mean, SD)</th>
<th>Pharmacy (mean, SD)</th>
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<tbody>
<tr>
<td>DIED</td>
<td>$55,396 ($106,316)</td>
<td>$52,511 ($100,446)</td>
<td>$2885 ($58,780)</td>
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<tr>
<td>SURVIVED</td>
<td>$69,790 ($125,946)</td>
<td>$66,798 ($119,684)</td>
<td>$2992 ($62,262)</td>
</tr>
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<td></td>
<td>$56,713 ($105,312)</td>
<td>$53,556 ($99,008)</td>
<td>$3157 ($6304)</td>
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<tr>
<td></td>
<td>$76,055 ($136,611)</td>
<td>$72,835 ($130,391)</td>
<td>$3220 ($6220)</td>
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<td></td>
<td>$34,991 ($81,494)</td>
<td>$32,308 ($75,918)</td>
<td>$2683 ($5576)</td>
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<tr>
<td></td>
<td>$53,182 ($110,498)</td>
<td>$50,049 ($103,991)</td>
<td>$3134 ($6502)</td>
</tr>
<tr>
<td></td>
<td>$39,738 ($90,503)</td>
<td>$36,746 ($84,172)</td>
<td>$2992 ($6331)</td>
</tr>
<tr>
<td></td>
<td>$60,645 ($118,211)</td>
<td>$57,251 ($111,052)</td>
<td>$3393 ($7160)</td>
</tr>
</tbody>
</table>

CDI, Clostridioides difficile infection; ED, emergency department; HRU, health care resource utilization; ICU, intensive care unit.

* Any recurrent CDI (rCDI) during follow-up of up to 12 months

** Postacute care settings include skilled nursing facility, home health agency, hospice, inpatient rehabilitation facility, and long-term acute care hospital

- During the baseline period, patients with CDI (*C. difficile* infection) with sepsis had higher health care costs vs those without sepsis; costs were highest for those with any rCDI (recurrent *C. difficile* infection) who developed sepsis and died

- Source: Avalere Health

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September 2021 • ICT® 23
Ultimately, more attention needs to be paid to those high-risk patients.” But, she adds, “We can predict who’s high risk because we know what the preceding risk factors are. Our study even looked at what the risk factors were in the most recent 7 to 12 months, right before the *C difficile* happened. Their conditions got much worse in the 6 months right before they had their first case of *C difficile*. So when you see those worsening effects happening, you really need to pay much more attention to the protocols that they have in place already. We know hospitals have protocols in place to prevent sepsis and *C difficile*, you really need to pay attention to these patients because it’s still happening way too much.”

The bedside is still a good place to keep watch. A paper-based bedside *C difficile* screening tool to reduce inappropriate testing could make a big cost difference to the 25% of hospitals that don’t use clinical decision support in their electronic health records, say investigators from Adventist Health-Simi Valley. Nurses used the screening tool to determine whether stool should be sent for *C difficile* testing. The researchers collected data on the number of *C difficile* stool tests performed before and after the intervention: They found a 31% drop in the mean monthly number of tests performed and a 56% reduction in CDI diagnoses.10

In an intervention tested at Hospital General Universitario Gregorio Marañón, in Madrid, after a positive *C difficile* test, patients immediately received a bedside visit from an infectious disease physician. The timely visit allowed for more targeted treatment, reducing overdiagnosis. Identifying the patients who do not meet the criteria for diarrhea and are simply carriers makes it possible to withdraw treatment from a large contingent, the researchers say.11

The ID physician was instrumental in identifying 29 cases as only colonized with *C difficile*, in which fecal sample collection was unnecessary. In 22 of those cases (76%), physicians in charge accepted the ID consultants’ recommendations to stop or not initiate CDI treatment in asymptomatic patients. Unnecessary non-CDI antibiotics were discontinued in 19% of cases. Only in 13% of the 214 cases were the ID recommendations not accepted by physicians in charge.

The cost of the intervention was estimated at €6800 (approximately $7800) during the study period, while the estimated costs of savings from antimicrobial discontinuations only were estimated at €1799 (approximately $2000).

### Less Is More

The CDC investigators who reported on the decline in health care-associated *C difficile* infection say several factors were probably involved, including a decline in the epidemic strain ribo-type 027, which might be partly driven by reduced fluoroquinolone use.1 They cite a 2020 study that found

#### Table 2. Health Care Resource Utilization and Cost During Postindex Follow-Up

<table>
<thead>
<tr>
<th></th>
<th>Died</th>
<th>Survived</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Died</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No sepsis</td>
<td>91.2</td>
<td>99.2</td>
</tr>
<tr>
<td>Sepsis</td>
<td>95.7</td>
<td>99.2</td>
</tr>
<tr>
<td><strong>Survived</strong></td>
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<td></td>
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<tr>
<td>No sepsis</td>
<td>81.6</td>
<td>81.6</td>
</tr>
<tr>
<td>Sepsis</td>
<td>97.9</td>
<td>97.9</td>
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</table>

<table>
<thead>
<tr>
<th>Length of follow-up (median, days)</th>
<th>22.0</th>
<th>12.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inpatient hospitalization (%)</td>
<td>10.2</td>
<td>12.1</td>
</tr>
<tr>
<td>ICU (%)</td>
<td>15.1</td>
<td>29.1</td>
</tr>
<tr>
<td>ED (%)</td>
<td>23.1</td>
<td>20.4</td>
</tr>
<tr>
<td>Outpatient (%)</td>
<td>65.7</td>
<td>56.1</td>
</tr>
<tr>
<td>Postacute Care (%)</td>
<td>76.5</td>
<td>65.8</td>
</tr>
</tbody>
</table>

CDI, Clostridioides difficile infection; ED, emergency department; HRU, health care resource utilization; ICU, intensive care unit.

* Any recurrent CDI during follow-up of up to 12 months

• The median length of follow-up varied in the patient population who died from a low of 12 days for those with primary CDI to 88 days for those with recurrent CDI

• Hospitalization was common for all cohorts (range 81%–99%)

• Patients with sepsis vs without sepsis had longer ALOS of about 3 days and 2x or higher ICU use

• Source: Avalere Health
hospitals that reduced fluoroquinolone use by 30% also saw a 19% reduction in hospital-onset CDI. They also point to a “greater emphasis on diagnostic stewardship” and reducing inappropriate testing.

Sometimes, less is more. Most hospitals implement interventions simultaneously in “bundles,” say researchers from the University of Michigan and the University of Wisconsin, and more than half of the bundles in a recent review included at least 6 components. But that may be costly overkill.

In their economic evaluation study, these researchers used an agent-based simulation of *C. difficile* transmission at a 200-bed model tertiary acute care hospital to compare the cost effectiveness of nine single-intervention strategies and 8 multi-intervention bundles. They defined cost effectiveness by two measures: cost per hospital-onset CDI averted and cost per quality-adjusted life-year (QALY).

Five of 9 enhanced-level strategies were “dominant,” reducing cost, increasing QALYs and averting CDI: Daily cleaning was the “most clinically effective and cost-effective intervention by far,” saving $335,268 and 36.8 QALYs annually, while averting 26 CDIs. Next came health care worker hand hygiene, patient hand hygiene, terminal cleaning, and reducing intrahospital patient transfers. (Daily cleaning prevented more than 16 times as many infections as the patient transfer intervention.) Contact precautions, while a mainstay of CDI prevention programs, are based on slim evidence, the researchers say, given that *C. difficile*-targeted studies are lacking. In their study, they found neither health care worker nor visitor contact precautions were cost effective. Enhanced-level health care worker contact precautions cost $123,364 per QALY, and the ideal-level implementation $136,135 per QALY. “The results were even worse,” hand-hygiene, which, the researchers point out, is “rarely incorporated into *C. difficile* bundles,” was cost saving at both the enhanced and ideal levels. Their back-to-basics advice: Institutions should “seek to streamline their infection control initiatives and prioritize a smaller number of highly cost-effective interventions.” Daily sporicidal cleaning, for example, they suggest, might be more useful and money-saving than minimally effective, costly strategies, such as visitor contact precautions.

Suggesting using fewer (albeit highly effective) interventions “runs contrary to the current infection control climate,” the researchers acknowledge. And while many of the interventions in their study saved money, they were not without upfront costs. Even at the enhanced level, each intervention required additional infection control nursing staff.

“Hospital administrative buy-in and financial support is key,” they emphasize, “to both the initial implementation of an intervention and sustaining its long-term success.” Throwing more money at the problem isn’t the solution—but throwing the right kind of money could be.

JAN DYER is a writer and editor specializing in clinical topics. She lives in Suffern, New York.

REFERENCES AVAILABLE AT INFECTIONCONTROLTODAY.COM

FOR MORE INFORMATION
The charts on pages 23 and 24 were first unveiled at the Digestive Disease Week conference held (virtually) May 21-23, 2021, and sponsored by the American Gastroenterological Association. They were published in the *Journal of Managed Care and Specialty Pharmacy.*

The study and more accompanying charts can be found here: https://bit.ly/3ssXghl

The charts on pages 23 and 24 were first unveiled at the Digestive Disease Week conference held (virtually) May 21-23, 2021, and sponsored by the American Gastroenterological Association. They were published in the *Journal of Managed Care and Specialty Pharmacy.*
Antimicrobial Resistance Is Futile Without IPs’ Help

BY HEATHER SAUNDERS, MPH, RN, CIC

In 1918, the world was swept by a terrifying novel influenza pandemic that killed about 50 million people. The primary cause of death, however, was not the influenza virus itself but the secondary bacterial pneumonia that so often followed. Antibiotics wouldn’t be discovered by Alexander Fleming until 1928, so physicians during the 1918 pandemic had nothing with which to treat bacterial pneumonia. Before antibiotics, people were at risk of dying from the same common bacterial infections we so often take for granted being able to treat today. When Fleming received his Nobel Prize for the discovery of penicillin, he warned that misuse of antibiotics could lead to resistant bacteria. True to that warning, bacteria, and now yeast, have developed ways to resist antimicrobial treatment. And if we don’t act quickly to prevent and contain antimicrobial resistance, we may see a time in which the inability to treat common infections will once again be our reality.

The World Health Organization lists antimicrobial resistance as one of the top 10 global public health threats. Regarded as serious a threat as climate change, antimicrobial resistance threatens to rob us of the antibiotics we rely upon for the treatment of infectious diseases, and of many of our modern medical advances. A review about antimicrobial resistance estimated that “globally, at least 700,000 people die each year of drug resistance from illnesses such as bacterial infections, malaria, HIV/AIDS, or tuberculosis.” This same report warns that, without quick and strategic action, “this toll will exceed 10 million each year by 2050 and cost the world over 100 trillion USD in lost output.” Because of the role antibiotics play in the development of antimicrobial resistance, much of the conversation around containing resistance revolves around the stewardship and development of antibiotics. We need antimicrobials to treat infections and must therefore be judicious in our use of those antimicrobials. However, we have learned over time that the prevention and control of infectious diseases should never rely on 1 strategy alone. Instead, a combination of strategies enables us to most effectively prevent infections. To prevent the spread of antimicrobial resistance, we must address the horizontal transmission of antimicrobial-resistant organisms in addition to addressing antimicrobial stewardship. Antimicrobial resistance is worsening, but not solely because of the inappropriate use of antimicrobials. Resistance is spreading. Drug-resistant organisms and resistance mechanisms are spreading from person to person, primarily in health care settings, through lapses in basic infection prevention and control. To prevent this horizontal spread of antimicrobial resistance, we need infection preventionists (IPs) to lead in the fight against drug-resistant organisms.

I. Back to the basics: When outbreaks hit or increases in infection are seen, we sometimes mistakenly look for a rare causative event, such as a contaminated medical device. However, more commonly, outbreaks and increases in infection are linked to lapses in basic infection prevention and control. To prevent and decrease infection, including antimicrobial resistance, we have to get back to the basics. The US Centers for Disease Control and Prevention (CDC) notes that primary prevention measures for Candida auris, a drug-resistant fungal infection, include hand hygiene, environmental cleaning, and adherence to transmission-based precautions—strategies that are all too familiar to IPs. Although these strategies are the foundation of infection prevention and control, all too often, we find that adherence to these basic measures is lacking. As IPs, we have an incredible opportunity to significantly reduce the transmission of antimicrobial-resistant organisms by focusing on improving adherence to the most basic of infection prevention practices. Sometimes, prevention really is that simple.

II. Surveillance: The cornerstone of infection prevention and control will always be surveillance. Without effective systems in place to identify infections and outbreaks, we cannot prevent and control them. Antimicrobial resistance requires unique surveillance systems and close collaboration
between clinical laboratories and infection prevention and control departments. IPs need to understand what their laboratories have the capability to identify and how they communicate when resistance is confirmed. Additionally, IPs need to have their own surveillance systems for reviewing, tracking, and trending antimicrobial resistance. The IP is usually the first to notice trends in antimicrobial-resistant organisms, leading to the identification of outbreaks and resistance.

III. Education: It is still not uncommon to find a provider who has never heard of Candida auris or the carbapenemase New Delhi metallo-beta-lactamase. Not only do health care workers need to be educated on novel and emerging resistance, but IPs also must have a firm understanding of these organisms and how they spread. As they say, knowledge is power, and so we must empower ourselves and our health care coworkers with the knowledge needed to win the fight against antimicrobial resistance. The Centers for Disease Control and Prevention (CDC) has developed a wealth of information for IPs, public health professionals, and health care workers on drug-resistant organisms including Candida auris and CRE.5,6

IV. Communication: Education, surveillance, and basic infection prevention are incredibly important to our efforts in containing antimicrobial resistance. But to be really effective at preventing and containing resistance, we must understand that resistance is not just an institutional problem but a regional one. And to fight a problem outside our own walls, we must establish clear lines of communication with other health care facilities in our region. Failure to document or communicate infection status or isolation needs is the No. 1 reason for antimicrobial resistance to spread across the health care spectrum. When a health care facility does not know that a patient is colonized with a drug-resistant organism, they fail to place the patient on the appropriate transmission-based precautions or put other measures in place that can aid in containing resistance. To fight resistance, we must all work together and develop ways to ensure communication during patient transfer. IPs can encourage the use of transfer forms, such as the Inter-Facility Infection Control Transfer Form from the CDC, to help ensure that isolation and infection status is always communicated as patients travel throughout the health care network.7

V. Collaboration: Finally, IPs must seek to understand and collaborate with the efforts of state health departments that provide enhanced surveillance and response efforts for novel and targeted antimicrobial-resistant organisms. In the event that novel or targeted resistance is identified, state health departments and state public health laboratories may assist with facility and regional containment efforts. According to Jamie Rubin, infection prevention and control program administrator for the Maryland Department of Health, “When our public health lab identifies one of these novel or targeted organisms, they activate a coordinated response from the state health department team of infection preventionists, epidemiologists, and medical experts who then work with the health care facility to investigate potential contacts.” Occasionally, the identification of antimicrobial resistance will require enhanced surveillance methods to assist with prevention and containment, which state public health departments and laboratories can also assist with. “I hope IPs know that there is support available from their public health partners and that we can work together to reduce the development and spread of antimicrobial resistance,” Rubin said. IPs should seek to understand what their state’s health care-associated infections and antimicrobial resistance programs are doing to prevent and contain resistance.8 Furthermore, IPs should learn how they can partner and participate in public health containment efforts through ensuring their understanding of public health reporting requirements, participating in containment efforts, and quickly communicating resistance when it is identified.9 It is not alone but together that we will win the battle against antimicrobial resistance.

The world is quickly moving toward a postantibiotic era in which we may no longer be able to rely upon antimicrobials to treat infections. To prevent and contain antimicrobial resistance, we need to use a multilayered approach. It will take enormous effort and involve a number of disciplines.

At the front line of the battle are IPs, armed with the knowledge and tools needed to prevent and control the spread of antimicrobial resistance. And through using best practices in basic infection prevention, implementing strong surveillance systems, collaborating with public health partners, educating about the problem of resistance, and communicating clearly across the health care spectrum, IPs can help win the war against antimicrobial resistance.

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REFERENCES AVAILABLE AT INFECTIONCONTROLTODAY.COM
Infection Control Today®: How do you define the social determinants of health? How would an operating room nurse or an infection preventionist apply that in their everyday jobs?

G. Rumay Alexander, EdD, RN: Really great question. Actually, social determinants of health have been a part of public health and community health curriculums and conversations and dialogue of for many, many, many decades. It seems that all of a sudden now it's just surfacing in a very visible way, probably because COVID-19 really gave it a light. COVID-19 just actually pulled the curtain back and brought to the surface inequities of care, inequities in access to health care, inequities in the ability to communicate with different populations. So social determinants of health care are really about the principle, 1, that individuals have places where they live, work, play, worship. We're a bit more unforgiving when those 2 places don’t live up to what they say they are about. And that it doesn’t matter what you look like; it doesn’t matter about your race or your gender or your economic status. So social determinants of health are around the environments that people live in that are basically man-made, or human-made, situations. They come out of systems that set people up for either an equitable form of care or an inequitable form of care. And so, if you think about it, it's like a pathogen, but it's in the air, it's in the ethos. Quite frankly, we're all products of our environment. So where we live and where we worship, and where we play matter. About 80% of health outcomes are related to the physical environment, the social determinants, and behavioral factors. Only 20% of a person’s health and well-being is related to access and quality of care. As people who are providing people care—we must understand them. And in order to do that, you have to really understand how social determinants play into the whole matter of thinking. You're thinking about things like socioeconomic factors. You're thinking whether there's education or job status...
or family supports or community or income. You could be thinking about health behaviors like tobacco use, or diet and exercise, or alcohol use, or sexual activity. And then there’s the whole access to care piece, economically. “I can’t afford health insurance,” right? Then what’s done for me, or not done for me, is based on whether I can pay for it or not. That. As health providers, we’re responsible for understanding the whole being of a person. We’re literally going to be giving postsurgical instructions, discharge planning. We’re going to give preadmission instructions. If we can’t communicate with the patient, then now we’ve created what I call a moral insult that says that you don’t value me as a human, and therefore that affects my trust. Now my stress level is up. I’m not in my best place for surgery because these things are playing out in physical ways in my body. This is important work. This is also about…we’re on interprofessional teams now. Professions have their own cultures. They’re different, even though we’re all under the health care umbrella, right? Physicians are socialized to come toward the patient in a certain way. Nurses, another. Anesthesiologists would be another. The point is, if you think about culture as the way we do the things you do—to quote the Temptations, and I know that’s aging me, but they’re great philosophers…they say it best. Culture is how we do what we do, the way we do the things we do. That’s about decision-making. That’s about policy development. That’s about how we approach individuals. This is all a part of understanding the determinants of health. What determines good health? What determines the best outcomes? How to get the optimal health outcome for a patient. It’s proper for an organization to really help its members understand the environment that people live in but also who we’re working with. And when we’re not communicating, or we’re misunderstanding each other, or when racism or supremacy eats into our relationships, people shut down and stop talking to each other as professionals, because we’re all human, right? And all of us want to be respected. None of us wants to be insulted. Once health care providers aren’t talking to each other, the patient is really at risk and danger. You can see how this permeates the operating room, the larger health care organization itself—the hospital or the surgery center, where people are—and it messes with our relationships and our ability to come together for the good of the patient, which is why we’re all in the business we’re in.

ICT*: Do you see concern about the social determinants of health care forcing hospitals into a more activist role in communities?

Alexander: There’s what I call the business of health. And then there’s the business of health care. Now, the business of health care says you need to understand your market share. You need to understand who it is in your community that has access to your service. And you want to be culturally appropriate and culturally relevant to that market share. Because these are the people who are going to be coming into a respectful place and a place that understands them. “They get me.” [An institution] that knows about my cultural tendencies. Now, that’s not to mean generalization, as [when some might] say all Hispanics are Catholic, or all people of I group is biased, and another group is not. In fact, that’s an interesting thing that I just said, because we all have our biases. It has no color. That issue in itself, understanding your own biases, which play into who we’re willing to care for, and how we’re willing to care for them. And so, yes, this pushes you into understanding your community, and having community responsibilities around understanding those individuals, so that you can be in the business of health. The two go together. One should not supersede the other. It’s not about the inhumane piece. It’s about the humane piece as well. One of my mottos is “all encounters are cultural encounters.” You’re never in a place where you’re not having a cultural encounter. And people come not only with their bodies, but with their experiences of people who are surrounding them for the care. When experience shows up, it speaks, and it speaks loudly. It usually shows up as a feeling, or a thought, or a belief, or a decision about who’s worthy of getting

“We’re in the business, and we take the oath to do no harm. We’re responsible for understanding everyone, not just the majority, and we’re responsible for serving everyone to the best of our ability.”

*ICT: Information on Community Topics

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And there’s a shift going on right now in who’s majority, who’s minority. And that matters. Because as the majority typically is making decisions, it’s making decisions [based on] its own value systems, its own beliefs, its own experiences. And unless by design, you work on understanding those who are not of the majority, you’re going to do harm. We’re in the business, and we take the oath to do no harm. We’re responsible for understanding everyone, not just the majority, and we’re responsible for serving everyone to the best of our ability. And this is why understanding those social determinants and what people have the agency to do or not [is so important]. Because at the end of the day, it’s the systems that set people up for the conditions they live in. You need to understand that full array. It’s not that they’re just lazy people, or they’re just not [intelligent] people. They’re often held hostage in situations that they did not themselves decide to live in. The decision to put the toxic waste dump in a certain neighborhood, or to put lead in the water like they did in Flint, Michigan, and intentionally give it to certain populations knowing that it would harm and not giving it to others, because we value them more. All of that’s tied into the social determinants of health.

ICT®: What part does trust play in this? If I’m a Native American and the government says to me, “Hey, we’ve got a vaccine for you. Do you want to come and get it?” I might have second thoughts about that. How do you deal with that?

Alexander: Trust is a huge, huge piece. You just went back to the experience that Native Americans have had when they trusted the system, and they expected it to be thoughtful about them, caring about them, and having their best interests at heart. And they can point to times when that wasn’t true. The same is true with African Americans and the Tuskegee experiment where trust was an issue. We’re living right now dealing with trust issues. In order to be trusted, you have to be trustworthy. Trustworthy means that you do what you say you’re going to do. This is why I made that comment earlier about the people not forgiving very inhumanely, or dehumanized is another way of thinking about it. Once you dehumanize someone, you can do anything to them. So why would I place myself in your hands if I don’t trust you? There’s a power inequity there. If I’m unconscious on the table, and you’re in charge, I’ve turned over my agency

“If we’ll just think about ourselves, or think about our mind, like a computer with a ‘maximize’ and ‘minimize’ button: You want to maximize curiosity and minimize certainty. Curiosity means you ask questions; you don’t assume.”
what I mean, by the trust factor: You’re saying one thing; you’re doing another.

**ICT**: The two groups who least want to get the COVID-19 vaccine are African Americans and Republican males. It’s strange how this lack of trust can manifest itself in such different groups.

**Alexander**: Trust is a very human factor, just like empathy is. And you were talking a minute ago about putting yourself in someone else’s place. Part of the ability to be culturally appropriate and relevant is that ability to have empathy for others, to put yourself in their shoes. If I lived where they lived, and if I were born at the time they were born, would I be different? How would I feel? “Here I am. I made it. I don’t know why you can’t make it.” One of the things that is really tied to this whole social determinants piece—and notice it’s social, meaning man-made—is what’s called deaths of despair. There are about 20 million Americans experiencing what is called a demographic depression. And most of them are relatively young, they’re predominantly White, less than college-educated, and have not benefited from economic growth, or they’ve lacked access to care, they’ve suffered from debilitating pain on a daily basis, usually due to some form of disability, which is often observed in later life. But there’s this—with these groups, as I said, it’s predominantly White, but it’s also populated by all the other racial and ethnic groups as well—[there’s] a higher rate of death. And the researchers refer to it as deaths of despair: suicides and alcohol- and drug-induced deaths. And that has contributed to a decline in life expectancy by 3 to 4 years. There’s a lot going on with people when they’re in environments where they’re not able to have the basics, where they’re not able to flourish, where they’re not in a healthy space to live, work, play, worship. It’s an important piece for us to understand, and if trust isn’t there, and I am someone who is self-medicating to cope with my despair, and I don’t trust that you will understand that so I don’t tell you in the patient history, you [the provider] could have an outcome that you can’t explain. Or you could be administering something or doing something that normally you wouldn’t, and have an adverse outcome. But because they didn’t trust you and you were missing that piece of information which was vital, you now have a bad outcome. That bad outcome could lead to being in intensive care. If that person doesn’t have insurance, the cost of care goes up because they don’t have the coverage. My point is I feeds the other. The healthier we are as a whole of people, the more the systems are healthy as a whole.

**ICT**: Is there something that I neglected to ask that you think is pertinent to this conversation that you want your fellow health care professionals to know?

**Alexander**: The main thing is we have to remember that we’re in the business of patient care. And we need to be patient-centered in all of our thinking. We should really give some thought to how our decisions are being made. We need to really work on self-awareness. And that’s an important piece, understanding what pushes your buttons, asking yourself questions about “Why do I think this?” about this individual or not. And like I said, we all have biases, most of them are invisible, but they’re operating—unconscious bias or implicit bias. The more you know what your biases are and you’re working on them by design, you’re going to give better care. You’re going to naturally start working on “How can I be the best health care provider for this person who’s in their most vulnerable state, and has turned their life, or the life of their precious one, [over] to me?” Which is a space that’s sacred, and it’s a space that not everybody gets exposed to. If we’ll just think about ourselves, or think about our mind, like a computer with a “maximize” and “minimize” button: You want to maximize curiosity and minimize certainty. Curiosity means you ask questions; you don’t assume. Curiosity means you go learn things. That you come to an honest place of saying, “Here’s what I don’t know.” Because that’s what true education is about. Getting to know what you don’t know and learning it—filling in that void. I think when we do those things, we’re bringing our best selves. And we’re meeting our obligation to our patients. And I think that’s where I’ll leave it.

This interview has been edited for clarity and length.
This Way to the OR, Infection Preventionists

BY LINDA SPAULDING RN, BC, CIC, CHEC, CHOP

In 2016, I was on my way to work at 8 AM on a Monday when my cell phone rang. It was the surgical department of a 350-bed acute care hospital in Texas where I served as an infection prevention (IP) consultant. They wanted to report that some instruments were used on a patient over the weekend even though the biological indicator failed.

To be of help in an operating room (OR), an IP must grasp 4 key concepts about biological indicators: what a biological indicator is (an indicator that goes into each pack of surgical instruments to determine that each instrument gets sterilized), where it is placed in the instrument pack (in the middle), how it is documented (in a freestanding notebook in the OR), and what to do with a patient who had surgery with potentially nonsterile instruments (notify the infection control department).

Luckily, I knew all these things because I have the experience of being a consultant and working for many hospitals. I reviewed the case, then set up a protocol to monitor the patient for possible infection.

Although that was resolved quickly, what happens if the scenario is more complicated, as it was for me in summer 2019? At 5 PM on a Friday, I received a call moments after I turned off my computer eager to start the weekend.

The surgery department of a 250-bed acute care hospital in Washington needed my help because they had experienced problems during the week with wet packs (packages or containers that hold surgical instruments that become moist after sterilization is completed). They were frustrated because they couldn’t figure out why.

I was told they had already reviewed all documentation showing that staff members followed policies and procedures. Because there was a record of staff who had signed off indicating that the sterilizer trap was cleaned twice a day, they didn’t suspect that was the problem. Meanwhile, they called the sterilizer company to come troubleshoot the issue. However, the staff wondered if there was something else they should do.

I thought about factors that could lead to wet packs and asked:

1. “Has the trap of the sterilizer been cleaned?” Their response: “Yes. We have staff documenting that it is cleaned and checked every morning.”
2. “Were the packs overloaded?” Their response: “No.”
3. “Is there a problem with the function of the sterilizer?” Their response: “The vendor is coming to check this.”
4. “Is there a problem with how packs are stored post sterilization?” Their response: “We don’t think so.”

I decided to go to the OR to verify and validate everything I had been told. I reviewed the department’s practices to see if I could determine the problem and work with the department to develop an action plan. I did a quick walk-through of the area to look for anything that might be causing the problem but found nothing. So I decided to look at the documentation for each sterilizer, paying close attention to the sterilizer for which the problem packs were processed.

The staff had documented that all Bowie-Dick, biological, and chemical indicators had passed inspection.

I thought, “What should I do next?” Do I know what I’m looking for? Do I know the sterilizer in question needs to be put out of service until the issue is identified and corrected?” I felt pressure because having 1 sterilizer down might mean canceling some surgical procedures.

The Checklist

I scanned the checklist to ensure that the trap had been emptied at the beginning of the shift each day and that someone had signed the form verifying that the sterilizer trap had been cleaned everyday per hospital policy. I asked the sterilizer technician to remove the trap. Inside I found a sticker that had a date of a week and a half earlier, which caused the wet packs.

Essentially, personnel were falsely documenting that they had cleaned the trap when it had not been cleaned appropriately for a few days. I told the staff that they must not only run their fingers through the trap to clean it but also look inside because a sticker that is stuck in the trap will not come out with a finger swipe. Management of the department took disciplinary action. (I do not know what that included.)

These 2 scenarios are examples of why IPs must verify and validate everything they are told. Many IPs have a misconception that the surgical suite is the cleanest and most sterile area in the hospital. Because of this, many IPs trust that everyone working in the OR knows what they are doing and often shy away from going into the OR because they do not have a comfort level in their knowledge of OR practices.

Many IPs spend most of their time on the computer developing policies and procedures, submitting data to the National Healthcare Safety Network, reviewing charts for patient infections, developing education programs, attending meetings, etc., but very little time in the OR.
and putting out fires. This leaves little time to learn about infection prevention in the OR.

Yet there may be many issues related to infection prevention in the OR that staff in the area do not see. They have worked in the area for so long that their ability to identify incorrect practices decreases because what they see every day appears normal to them. For this reason, it is crucial that IPs make regular rounds in the surgical suite as well as perform direct observation of cases and observation of cleaning, disinfection, and sterilization processing areas.

These actions can help IPs identify any practices or shortcuts staff are taking that may contribute to decreased patient safety.

For instance, a vendor for a particular instrument might accompany the surgeons in the OR to teach them about the instrument during the procedure. But earlier in the day, the IP saw the vendor walking in the hallway in the same scrubs now being worn in the OR. In addition, the IP can tell the scrubs aren’t hospital scrubs because they are a different color. Although the OR staff should have noticed, in the rush to get the case under way, they missed it. A fresh set of eyes can help identify issues that others may overlook.

Where to Start
Because IPs are familiar with areas such as biological and chemical indicator documentation, they should begin there. Ask staff to show how they document the indicators and where the records are kept. From there, see if there is documentation for every pack.

Next, expand upon that knowledge by studying what it means if there is a failed indicator. What is the proper action staff should take? As IPs make rounds, they should strike up a conversation with OR staff and have them explain what they would do if there is an indicator failure and then compare that response to the hospital policy. If there are discrepancies, talk with the manager and determine if there was a misunderstanding. This may also alert the manager that the staff could use a policy refresher. Working side by side with OR staff and learning the ropes will benefit the IP, putting another level of patient safety in place.

Another way for IPs to learn more about surgical cases and decontamination processes is to review the DNV Accreditation Standards and/or the Joint Commission accreditation standards.1,2

The IP’s role is to be the verifier and validator of the OR and decontamination policies and procedures. Therefore, IPs need to observe practices in these areas to ensure all policies, procedures, standards, and guidelines are being followed. This can be accomplished through collaboration with OR managers and staff. The IP should also be a member of the surgical committee.

IPs should be notified of the following: failure of a Bowie-Dick test, problems with wet packs as indicated by biological or chemical indicators, or concern about unsterile instruments in the surgical suite and whether they were used on a patient. If any of these incidents occur, an IP can properly monitor a patient or group of patients for a surgical site infection.

The IP and surgical department need to catch near misses and put corrective action plans in place.

Infection prevention cannot be entirely learned in the OR, but continuing education will help IPs become experts in the surgical suite.

The many references that IPs should obtain include the following:

- Association of periOperative Registered Nurses standards1
- Association for the Advancement of Medical Instrumentation standards4
- Disinfection & Sterilization, a website maintained by William A. Rutala, PhD, MPH5
- Centers for Disease Control and Prevention standards for prevention of surgical site infections7

These references will provide IPs with a strong knowledge base, allowing a complete review of surgical suites and decontamination/sterilization areas to assist in preventing poor practices and increasing patient safety.

By understanding the information in these references, the IP will be able to verify and validate proper practices in these areas. IPs must remember that practices are as good as people are taught. Proper training is the responsibility of the facility and the IP, who should take advantage of all opportunities to improve their knowledge.

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REFERENCES AVAILABLE AT INFECTIONCONTROLTODAY.COM
Product Takes Aim at Foodborne Infection

Every industry needs help with infection prevention these days, not just health care. Foodservice industries, of course, have always been obsessed with cleanliness. About 1 in 6 Americans suffer from a foodborne illness each year, according to the Centers for Disease Control and Prevention.

PDI, which manufactures infection prevention products, just unveiled a new product that will help in that endeavor: Sani Professional Degreasing Multi-Surface Wipes, which are contained in a Softpack. PDI says in a press release that “the new Softpack provides a convenient and portable format containing 75 extra-large, heavy-duty disposable wipes that are pre-moistened and ready to use. Powered by a grease-fighting formula, the product is designed for frequent grease cleaning during the day to make the end-of-shift heavy-duty grease cleaning less cumbersome.”

Esperanza Carrion, vice president and general manager of Sani Professional, the division of PDI that makes the product, said in the press release that “the Sani Professional Degreasing Multi-Surface Wipes in the new Softpack format make cleaning simple, efficient, and effective so businesses can focus on delivering satisfying customer and employee experiences.”

The PDI press release further states that “the new flexible packaging format was developed in response to customer requests for products that are more portable and save space. Through careful design, the Softpack format has reduced plastic packaging by more than 85% while also requiring less storage space than a pail format.”

https://pdihc.com/global/

Device Said to Continuously Disinfect Rooms

The idea behind its continuously disinfecting light emitting diode (LED) fixture is to draw in air, disinfect it with ultra-violet C light (UVC), and let the disinfected air back into the room. Because the product—the Active Airflow LED fixture—is mounted on the ceiling, UVC disinfection of pathogens can be done even in occupied rooms, the company claims.

In a company press release, Michael Fischer, president of Energy Harness Corporation, said that one of the best ways to combat airborne viruses is to “continuously recycle individual room air while safely treating it with UVC radiation.”

The device was tested at a nationally recognized testing laboratory (NRTL) called Intertek Laboratories. (The Occupational Safety and Health Administration uses NRTLs as part of its approval process.)

Energy Harness Corporation said in the press release that its product “was shown to be 99.9% effective in eliminating airborne pathogens. Further laboratory testing directly on the SARS-CoV-2 virus has shown the LED technology produced in the Active Airflow fixture showed a 99.998% inactivation of the virus—within one second. A virus reduction rate of 99.999% is the maximum sensitivity that the testing mechanism could measure.”

Peter Lehrer, Energy Harness Corporation’s vice president for project development, said in the press release that “to know that our technology maxed out the testing equipment, that’s a pretty exciting moment. It says that we’ve got the ultimate virus killer on our hands.”

https://energyharness.com

Borescope Designed to View Hard to Reach Places

Business management expert Peter Drucker gets credit for coining the adage that’s become a golden rule, not only in health care, but in many industries: “If you can’t measure it, you can’t improve it.” Of course, you usually can’t measure “it”—whatever “it” happens to be—unless you can see it. Healthmark Industries recently unveiled a tool that should make viewing easier with its FIS-007, which the company added to its Optical Inspection product line.

The instrument is a “borescope designed to visually inspect internal channels of potentially soiled or damaged items with enhanced light, vision, and magnification,” the company says in a press release.

The FIS-007 features a modular design with interchangeable flexible inspection scope attachments available in diameters of 1.06mm and 1.9mm. These scopes have a working length of 110cm and attach to a 13.3W x 9.9L x 4.7H cm control box, allowing for light level adjustments, image capture*, and video recording. (These features are only available for the USB control box with FIS-007 software, which is included and installs on Windows 10 PCs.) The company states that “the 1.06mm scope is designed to inspect internal channels of 1.1mm in diameter or larger, and the 1.9mm scope is designed to inspect internal channels of 2.0mm in diameter or larger.”

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1. GHX Intelligence Date 2020 Q4
2. In comparison to weight of plastic for similar canister format; data on file