ADVANCES IN HEALTH CARE TECHNOLOGY

How Necessity Made COVID-19 the Mother of Inventions

CONFERENCE COVERAGE
APIC Gives Sterilization, Disinfection a Close Look

HAND HYGIENE
There’s More To It Than Just a Checklist

HEALTH CARE-ACQUIRED INFECTIONS
How IPs Can Mitigate Candida Auris Threat

COVID-19
Ways To Refute Misinformation

HAND HYGIENE
Bug of the Month: “Move Fast Or I Win”
The two Elementum formulations were born from the fusion of 4 robust chemical forces in the form of POWERFULL NEW ENZYMES. These ALL NEW Protease, Amylase, Lipase, and Cellulase Enzymes are synergistically blended to produce two BEST-IN-CLASS formulations which rapidly break down tough-to-clean medical soils including the multi-layers of bioburden. Clinically tested for use in manual cleaning AT-THE-SINK, in Ultrasonic Machines and in Automatic Washers ELEMENTUM HAS SIMPLY BEEN OPTIMIZED TO CLEAN BETTER* Use it and experience ELEMENTUM'S STAR POWER! *ELEMENTUM EXCLUSIVELY MEETS THE QUALIFYING CHARACTERISTICS OF AN OPTIMAL DETERGENT PER AORN, AAMI AND ASTM D8179 GUIDELINES.

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* **ELEMENTUM EXCLUSIVELY MEETS THE QUALIFYING CHARACTERISTICS OF AN OPTIMAL DETERGENT PER AORN, AAMI AND ASTM D8179 GUIDELINES.**
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## COVID-19

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Vetting new technology usually takes time. That’s a luxury in a pandemic.

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Post COVID-19 Life Includes Unique Challenges

You can’t go through what we’ve gone through since March 2020 and simply hit reset, but there will be some sort of normal after COVID-19. The health care system in the United States, however, will certainly never be the same. Infection preventionists (IPs) know this all too well.

The new normal will include inventions created to fight COVID-19. Linda Spaulding, RN-BC, CIC, CHEC, CHOP, a member of Infection Control Today’s Editorial Advisory Board (EAB), examines and evaluates some of these inventions in our cover story on page 14.

The IP’s role will probably expand to include more oversight of sterilization and disinfection. That was the subject of a conference hosted by the Association for Professionals in Infection Control and Epidemiology, which we cover on page 17.

On page 22, Jan Dyer investigates ways to mitigate the threat from Candida auris, which grows more immune to antifungals. Hand hygiene adherence will continue to be a challenge, but one that can be met, reports EAB member Mary Jean Ricci, MSN, RN-BC, and Mary Yost, PhD, RN, on page 25.

December is International Sharps Safety Awareness Month. EAB member Jenny Hayes, MSN, RN, CIC, CAIP, CASPPT, reminds us that no health care worker is immune from the danger of handling sharps, and she relates ways to reduce that danger on page 27.

EAB member Sharon Ward-Fore, MS, MT(ASCP), CIC, FAPIC, offers a primer on how IPs can build teams to take on health care–acquired infections (HAIs) on page 29.

It seemed IPs and other health care professionals fought a 2-front war: 1 front against COVID-19, and the other against misinformation about COVID-19. EAB member Rebecca Leach, MPH, BSN, RN, CIC, outlines how IPs can lead the way in fighting misinformation on page 32.

There is a lot to digest in this issue. The world of infection prevention and control is changing faster than ever. Help us keep up. Please send feedback and ideas to Alexandra Ward, vice president of content, at award@mjhlifesciences.com.

Thank you for reading,
Mike Hennessy Sr
Chairman and Founder
MJH Life Sciences™

CHAIRMAN’S LETTER
I Think I’m Scarier Than COVID-19 (and Some of You Do, Too)

Most of you reading this are health care professionals. You probably already guessed who I am just by my photo on this page. So much for suspense. I am almost as famous as that spikey little ball that’s caused so much misery in the world.

The element of suspense works differently in different murder stories, and I am a murderer; my mortality rates are anywhere from 30% to 60%. The suspense in my story involves whether you’ll ever find an effective way to thwart me. So pay attention, even if you’ve already guessed who I am.

I am relatively new on the scene. I was first detected in Japan in 2009. Since then, I’ve been spotted in about 40 countries, including the United States, where I popped up in 2015.

I am a species that grows as yeast and can resist the antifungals that are thrown at me. In fact, some of my strains can resist all 3 classes of antifungals. Such a strain appeared this year in Washington, DC, and Texas. Even with all the attention being paid to COVID-19, that appearance set off alarms throughout the health care system.

I’m sneaky. The Centers for Disease Control and Prevention (CDC) warns that I’ll evade standard laboratory methods in most hospitals. In fact, many labs often misidentify me, which sets the stage for inappropriate treatment. You’ll want to stay in close contact with local and/or state health departments and the CDC, which can confirm whether it’s me you’re battling. Get suspect samples to the agency as quickly as possible.

In 2018, the CDC said health care facilities should routinely screen for my presence in patients who stayed overnight in a health care facility outside the US within the past year, especially in those countries where I’ve made an appearance. The CDC also suggests screening patients who’ve been hospitalized outside the US and who’ve been infected with carbapenemase-producing Gram-negative bacteria. Also—and this one hits home—the CDC says health care workers who’ve been in close contact with patients who I’ve infected need to be screened as well.

If you infection preventionists (IPs) think you had your hands full battling COVID-19, wait until I show up. IPs must take immediate action to contain me if I am found in even 1 patient. In June, Infection Control Today® reported on how quick action on the part of IPs stopped my outbreak at Scripps Memorial Hospital La Jolla in San Diego, California. Elizabeth Jefferson, PhD, CIC, and an IP there, told us that “you have to really pay attention and make sure it stays contained so you don’t have an outbreak. It just takes 1 case.”

By this point, those of you who’ve guessed who I am might be feeling a bit cheated. This little narrative does nothing to help you fight me. Well, buck up. On page 22, you’ll find an entire article on how to mitigate my spread. First things first, though. Who am I?
Children Could Incubate Next COVID-19 Variant

BY FRANK DIAMOND

The COVID-19 vaccine rollouts for children aged 5 to 11 years that began last month were just what the doctors ordered. That is, the doctors who wrote a study published in the *Journal of Infectious Diseases*. They warned that children have the potential to be major spreaders of COVID-19 and incubators for new variants, including one that might be able to rebuff antibodies from prior infection or vaccines. In addition, investigators with Massachusetts General Hospital said that children may be more infectious than adults who display similar symptoms of the disease.

Investigators argued that their data add to the argument that a vaccine needs to be created for children and that children should get it. “Our results suggest that the low rates of transmission in settings such as schools and daycares cannot be attributed to low viral loads, low rates of viral shedding, or rapid clearance of virus in younger patient populations,” the investigators said.

Data were collected from a prospective cohort of 110 patients 21 or younger (median age of 10) who sought care at the hospital or its satellite urgent care centers between April 20, 2020, and April 20, 2021. Investigators relied on respiratory swabs that had been collected from the children, and the SARS-CoV-2 viral loads were measured by reverse transcription polymerase chain reaction tests.

The 36 (33%) children who had to be hospitalized were mostly older (ages 15 to 21, for the most part), and 18 of those children required supplemental oxygen or respiratory help. Thirty (27.3%) of the cohort were asymptomatic. Data collected from the pediatric population were compared with data from adult patients collected from April to August 2020.

“Symptomatic and asymptomatic children can carry high quantities of live, replicating SARS-CoV-2, creating a potential reservoir for transmission and evolution of genetic variants,” the study concludes. “As guidance around social distancing and masking evolves following vaccine uptake in older populations, a clear understanding of SARS-CoV-2 infection dynamics in children is critical for rational development of public health policies and vaccination strategies to mitigate the impact of COVID-19.”

The study’s authors state that there’s not yet enough data to determine just how infectious children can be, and that “the role children play in viral transmission remains poorly understood. Epidemiologic studies suggest children exhibit lower transmission rates than adults... however, these findings are potentially confounded by higher rates of asymptomatic or paucisymptomatic [those with few symptoms] infection in children, increased social isolation by children early in the pandemic, and reduced COVID-19 testing in children. To date, 1 small study demonstrated that live virus can be cultured from children.”

REFERENCES AVAILABLE AT INFECTIONCONTROLTODAY.COM
When it comes to what circumstances help breed *Clostridioides difficile* infection (CDI), there are some that could be called the usual suspects. They include increased age, hospitalization, use of proton pump inhibitors, and use of antibiotics, according to a recent study out of Pakistan. That study, published in *Cureus*, looked at data from 200 patients diagnosed with *C. difficile*–associated diarrhea (CDAD) at a tertiary care hospital in Pakistan between June 2020 and March 2021, along with 200 patients without CDAD in a control group.

“Identifying and addressing the risk factors associated with CDI will help [reduce] the incidence of infection and associated complications,” the authors, led by Aarzoo Gupta of Vardhman Mahavir Medical College and Safdarjung Hospital in Faridabad, India, wrote.

In the case group, 31 patients were older than 65 (15.5%), compared with 16 (8%) in the control group (OR [odds ratio], 2.10 [1.11-3.99]; *P* = .02). “This age group is not only termed as a risk factor for CDI but such patients also demonstrate poor prognosis, leading to increased clinical severity and death rates,” the authors wrote.

Patients with CDI also had significantly higher hospitalization (25.5% vs 6%; OR, 5.36 [2.75-10.42]; *P* < .0001), use of proton pump inhibitors in past 30 days (23.0% vs 10.5%; OR, 2.34 [1.45-4.45]; *P* = .001), and use of antibiotics in the past 30 days (36.0% vs 10.5%; OR, 4.76 [2.80-8.19]; *P* < .0001).

“Studies have suggested that almost every antibiotic results in an increased chance of developing CDI,” the authors wrote. “This also includes the drugs that are used to treat CDI, namely metronidazole and vancomycin.”

Other risk factors included a BMI above 25 kg/m2 (31% vs 21%; OR, 1.69 [1.07-2.65]; *P* = .02), diabetes (27% vs 16%; OR, 1.94 [1.18-2.17]; *P* = .008), CKD (19% vs 9.5%; OR, 2.23 [1.23-4.03]; *P* = .007), and malignancy (6% vs 2%; OR, 3.12 [0.99-9.86]; *P* = .05).

The use of almost every antibiotic increases the chances of *Clostridioides difficile* infection, and that includes the drugs that are used to treat *C. difficile*, a study states.

“Given the findings [above], our study suggests that the use of acid-suppressive agents should be carefully considered, and the over-the-counter availability of these agents should be discouraged,” the authors wrote. “This would help the doctors to keep a check in order to avoid overdose. Moreover, hygiene practices, such as hand washing practices, sterilizing used [equipment] at the hospital, using clean medical devices, etc, should be adopted to avoid infection risk. Maximum management of antibiotic intake should also be taken into consideration.”

CDI is the leading cause of health care–associated infections, causing about a half million infections and $1 billion in health care costs each year. Although CDI is often associated with health care settings, a recent study by investigators at the University of Houston found that the bacterium is prevalent in a variety of settings, including on 45% of shoe soles. Healthy people can carry CDI without illness or symptoms.
Holidays set the table for the gathering of family and friends indoors. However, that could lead to trouble, as the Centers for Disease Control and Prevention (CDC) has pointed out during much of the COVID-19 pandemic.1 The horrific surge resulting from last year’s holidays taxed the US health care system and forced infection preventionists (IPs) and other health care professionals to work to the point of exhaustion.2,3 COVID-19 also exposed some serious systemic problems in the country’s health care system, most notably with nursing homes and other long-term care facilities (LTCFs).4 But COVID-19 also underscored the need for proper ventilation in buildings, not just hospitals and LTCFs but office buildings and especially schools.

A preprint study in the American Journal of Infection Control (AJIC) shows how easily COVID-19 can spread via ventilation units in college dormitories. Proper ventilation in schools is crucial.5 As Kevin Kavanagh, MD, a member of Infection Control Today®’s (ICT®’s) Editorial Advisory Board (EAB), told us in July6: “We need to change our infrastructure for schools with ventilation systems, increasing complete air exchanges.”

In the AJIC study, investigators with East Carolina University sampled the air in 2 multilayer dorms in search of SARS-CoV-2, detecting COVID-19 in multiple places and concluded that air sampling could be an effective way to monitor the safety of buildings.

The air samples were collected in the spring semester from January 19 to April 29, 2021, using the quantitative reverse transcription polymerase chain reaction (RT-qPCR) method. The 2 dorm buildings used in the study contain 225 rooms that include student dorms, offices, staff apartments, bathrooms, and storage space.

“We conducted the current study as a cleaner, easier, and safer alternative method to the wastewater track tracing method, and we have shown it is possible to detect viruses in HVAC air samples collected at 1 location from the dorm’s return air,” the study states. “It is possible that performing air sampling for SARS-CoV2 on each floor of a large building may yield greater sensitivity.”

In 2 large dorm rooms, investigators detected COVID-19 in 11 samples. “When compared with student nasal swab RT-qPCR testing, we detected SARS-CoV-2 in air samples when a PCR-positive COVID19 student was living on the same floor of the sampling location with a detection rate of 75%,” the study states.

Investigators argue that their study underscores the crucial role air monitoring can play in detecting pathogens in large buildings. “Future building designs should include HVAC access for such sampling, and public health policies should consider implementation of HVAC surveillance testing either routinely or during times of contagion,” the study states. “Our data suggest air sampling at each floor would be beneficial and that more distant sampling is less sensitive.” Just how much their advice will be followed remains to be seen.

REFERENCES AVAILABLE AT INFECTIONCONTROLTODAY.COM
COVID-19 Boosters Need to Be Encouraged

BY KEVIN KAVANAGH, MD

In October, the US Food and Drug Administration (FDA) and the Centers for Disease Control and Prevention (CDC) approved boosters for the Moderna vaccine after 6 months with similar guidance as that given for the Pfizer/BioNTech vaccine.\(^{6}\) The Johnson & Johnson vaccine, which was previously a single-dose vaccine with 72% efficacy in preventing symptomatic infections,\(^{8,9}\) has been authorized for a booster for everyone after 2 months. This should not be viewed as a booster but as part of the standard Johnson & Johnson vaccination schedule. Many are asking, “Why was the Johnson & Johnson vaccine not authorized as a 2-dose vaccine from the start?” The answer is that a greater than 70% efficacy would be considered a well-performing vaccine if immunity did not wane, and most of the population would have become vaccinated and afforded added community protection.

However, in August, data from the Veterans Health Administration found that vaccine efficacy in preventing infections dropped to 3% compared with 64% for Moderna and 50% for Pfizer/BioNTech.\(^{10}\)

Who Should Get a Booster?
The disagreement over who should get a booster is not one of interpreting science, but one over the goals of giving boosters. As with most other infectious diseases, many feel the goal should be the prevention of disease and spread of disease, not just hospitalizations and deaths. The term mild COVID-19 is an oxymoron. The devastating long-term effects of COVID-19, along with future emergence of cardiovascular disease in those with minimal initial symptoms, remind us that all SARS-CoV-2 infections may pose grave dangers to those who contract the virus. As stated by Scott Gottlieb, MD, former FDA commissioner: “[T]he administration sent a signal to the pharmacy that they wanted this to be a frictionless process, so I think they want these to be generally available for people who deem themselves to be at sufficient risk of contracting COVID-19 or spreading COVID-19...”\(^{11}\)

Natural Immunity
Data regarding natural immunity have consistently shown a benefit from vaccination. Francis Collins, MD, PhD, director of the National Institutes of Health, presented data in February 2021, which showed that in those who have been previously infected, a single dose of an mRNA vaccine resulted in a 10- to 20-fold increase in antibody response compared with those who had never been infected.\(^{12,13}\) After a second dose, the difference was 10 times greater. There have also been 2 clinical studies that have demonstrated a lower incidence of reinfection in previously infected individuals who have become fully vaccinated.\(^{14,15}\) The exact dosage recommendations and whether a booster plus vaccination is indicated in those who have had previous infections have not been determined. It needs to be remembered that antibody tests are not a reliable way of determining immunity. “The protective antibodies and their thresholds still haven’t been fully worked out” and “all antibodies bind [to the virus] but only some neutralize.”\(^{16}\)

In addition, varying degrees of infection can produce varying degrees in immune responses. Ibarrondo et al called “for caution regarding antibody-based ‘immunity passports,’ herd immunity, and perhaps vaccine durability.”\(^{17}\)

Mixing and Matching
The FDA has authorized the mixing and matching of boosters.\(^{18}\) Mixing and matching may be beneficial to those who have received the Johnson & Johnson vaccination. It was observed that if an mRNA booster is given after a Johnson & Johnson vaccination, immunity is augmented 76-fold as opposed to 4-fold if a Johnson & Johnson booster is given.\(^{19}\)

An analogous mix and match benefit has been reported with the AstraZeneca vaccine in combination with a Pfizer/BioNTech booster.\(^{20}\)

Boosters are of utmost importance not only to protect an individual from reinfections but also to prevent individuals from developing low antibody levels, which may permit viral replication and, through immunological pressure, foster immune-resistant variants. How long the immunity will last after a booster is unknown, but there are signs that it may be more durable because an increased percentage of individuals who received a booster developed swollen lymph nodes.\(^{21}\)

We must encourage and administer boosters, but it is also of utmost importance that we decisively counter the movement against vaccinations in the United States and increase the primary vaccination rates in our country.

EDITOR’S NOTE: This article is a condensed version of a much longer article. The references in parentheses note the order of their appearance in the original article. To see the original article scan the QR code.

REFERENCES AVAILABLE AT INFECTIONCONTROLTODAY.COM
How Analytics Can Help Close SDOH Gaps

BY MICHAEL DULIN, MD, PHD

Clinicians provide better care when they understand the social and environmental factors that significantly affect the health of their patients. For example, knowing the neighborhood where a patient lives, whether they are employed, whether they have access to transportation, or whether they have food insecurities can give providers a holistic view of the patient that can't be obtained from measurements of vital signs. These social determinants of health (SDOH), such as income, education, race/ethnicity, sexual orientation/gender identity, and literacy, have been found to be the most important indicators of health. Thus, clinicians must have access to this information to meaningfully improve health outcomes and address health disparities.

A 360-degree view of the patient also is imperative for providers who are moving to alternative payment models that reward better patient outcomes and lower the cost of care. These new care delivery models require SDOH data to understand the overall health care needs and risks within a defined population. Leveraging advanced analytics enables clinicians to quickly sift through volumes of data—including SDOH—to get actionable information at the point of care. Here are 6 ways analytics at the point of care can improve patient care:

Enabling evidence-based clinical decisions. When clinicians have full, accurate, and well-organized patient data at the point of care, they are far more likely to make decisions that result in better patient outcomes. Real-time advanced analytics provide clinicians with insights into a patient’s current health status, medical history, and nonclinical factors, such as SDOH.

Identifying nonclinical factors that drive health inequities and affect patient outcomes. Capturing and analyzing SDOH data at the point of care helps providers recognize whether a patient has issues with food access, housing insecurity, lack of transportation, physical danger, and other nonclinical factors that can affect individual health. Armed with this information, as well as additional information gleaned during the patient’s visit, clinicians can offer actionable recommendations and referrals to community-based support programs.

Closing care gaps by addressing health behaviors. Tobacco use is far higher in some regions of the US than others and among certain population groups, such as low-income individuals, military veterans, lesbian/gay/bisexual adults, and people with behavioral health issues. At the point of care, clinicians can use analytics to identify patients at potentially higher risk of unhealthy behaviors and refer them to treatment, support groups, or even clinical trials.

Gaining a meta view of the population. Advanced analytics can process data from all people treated at a health care facility to flag those who may need treatment for a chronic condition that has gone unchecked because they are overdue for an appointment with their primary care provider or a specialist. Health care organizations can reach out to these patients to schedule an appointment and determine whether they are adhering to prescribed medications.

Accelerating the transition to VBC models. Information and insights provided through advanced analytics can improve operational efficiency across a health care organization. This is critical as the health care system transitions from a fee-for-service reimbursement model to one based on improving care while controlling costs.

Enabling team-based care delivery. The future of high-quality care delivery will depend upon interdisciplinary care teams working together from the same information and care plan. This type of coordinated care requires advanced analytics so each member of the team understands their role and works toward the same goal. For example, the care team should include a social worker who has access to SDOH data and who can connect patients to needed resources in the community.

More medical and SDOH data are available now than ever before to clinicians, health care organizations, and payers. Advanced analytics allow providers and health plans to make sense of this data, enabling evidence-based clinical decisions at the point of care that lead to better patient outcomes, enhance the quality of care, and advance operational efficiency. In this way, analytics are a key driver of VBC.

EDITOR’S NOTE: This article is a condensed version of a much longer article. To see the original article scan this QR code.

MICHAEL DULIN, MD, PHD, is chief medical officer for Gray Matter Analytics and a professor at the University of North Carolina at Charlotte in the Department of Public Health Sciences, where he directs the Academy for Population Health Innovation.

REFERENCES AVAILABLE AT INFECTIONCONTROLTODAY.COM
Featured in our Medical World News® Broadcast

Environmental Services Workers Need to Be Certified
Darrel Hicks, a presenter at the ISSA Show North America 2021: “EVS teams work around professionals who are certified.... If we ever hoped to elevate their status, we need to certify environmental services workers to a certain level of knowledge....”
WATCH: https://bit.ly/3EEdvoc

Why COVID-19 Vaccine Mandates Are Necessary
Anthony Harris, MD, MBA, MPH: “We know that mandates, such as the COVID-19 vaccine mandate, don’t exist in isolation. For any school-age child who wants to attend public school, guess what. Be vaccinated....”

Delta Variant of COVID-19 Will Burn Itself Out
Jason Tetro, author of The Germ Code: “Moving forward, I think we’re going to be going into this idea of seasonality, or as I like to say, cold, flu, and COVID-19 seasons.” And the so-called monster variant? It’s already here, says Tetro. It’s called Delta.

Notable Quotables

“The bottom line is that all need to be vaccinated, even those who have had previous infections. The definition of fully vaccinated for mRNA vaccines needs to be changed to 3 doses, making previous comparisons of infection vs 2 doses of a vaccine moot. In addition, those previously infected should also become vaccinated. How many doses and the exact vaccination schedule is still under investigation.”

—KEVIN KAVANAGH, MD, FOUNDER AND PRESIDENT HEALTH WATCH USA
READ MORE: https://bit.ly/3Fk4z0P

Top Tweets

Insightful article by @SaskaPopescu on the need for PPE that can be reprocessed. Love it! https://bit.ly/2Kc59NG

PIPEDINE MEDICAL @PipelineMedical

@ICT_magazine examines the growing threat of #antimicrobialresistance. Read @PreventionChick’s full piece through the link. #amr #superbugs https://bit.ly/3JW4ebW

OPGEN, INC. @OpGen

Grim but essential reading. You really don’t want anyone in your family getting a ‘mild’ or even asymptomatic case of [COVID-19]. The longer term negative impact on heart and brain function can be profound. https://bit.ly/3q0VlRV

MSKATHLEENQUINN @mskathleenquinn

Interesting article here as our #ZeroHarm awareness campaign highlighting the impact C Diff has on our patients in #TUH continues https://bit.ly/3mKhpFF

CECILIA EDSTRÖM @EdstromCecilia

Very unfortunate developments. The silent tsunami of AMR will remain when [COVID-19] subsides. Infection prevention has never been more important. #AMR #HAI #infectioncontrol https://bit.ly/3mCEpz

INFECTION PREVENTION AND CONTROL #TUH @InfectionTuh

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Necessity Made COVID-19 the Mother of Inventions

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

COVID-19 rocked the world of health care so much that the system turned not only to the government but also to private industry for help. Many businesses wanted to contribute in some way with the cleaning and disinfecting of products, masks, and other personal protective equipment (PPE). Bars started making hand sanitizers when there was a shortage. Oil companies in Texas supplied barrels of hand sanitizer to rural critical access hospitals, which could have harmed health care workers. Storing 50 gallons of hand sanitizer in a hallway rather than in a fire-rated cabinet could cause it to explode under certain conditions because of the amount of alcohol it contains. It is unclear whether hospitals were checking the ingredients of the hand sanitizer that had been donated to them. As months went by, the US Food and Drug Administration (FDA) banned some hand sanitizers because they contained toxic chemicals, such as methanol/1-propanol, or because the alcohol level was found to be too low to be effective.

However, the overarching question remains: How does a hospital, nursing home, or surgical center decide what infection prevention products they need to invest in to improve or maintain patient safety? More products than ever are being promoted as a way to decrease infection rates within health care settings since the arrival of COVID-19. Some products have been approved under the FDA's Emergency Use Authorization (EUA). Under an EUA, “the FDA allows the use of unapproved medical products or unapproved uses of approved medical products in an emergency to diagnose, treat, or prevent serious or life-threatening diseases or conditions when certain statutory criteria have been met, including that there are no adequate, approved, and available alternatives.”

Reprocessing Masks
On April 11, 2020, the FDA issued an EUA for decontaminating compatible N95 or N95-equivalent respirators using Advanced Sterilization Products STERRAD Sterilization Systems, enabling health care facilities to conserve their supply of respirators during the COVID-19 pandemic. This EUA came with specific instructions on how masks were to be handled. There was only 1 company that was paid $400 million to offer their services to hospitals.
COVER STORY

It is yet to be determined whether this process posed any harm to health care workers.1 The outstanding question is: Will the reprocessing of N95 masks receive full FDA approval post COVID-19?

Contact Tracing
The contact tracing of thousands to millions of people throughout the country went from a discussion to a reality almost overnight. No one, except the Centers for Disease Control and Prevention, had experience in contact tracing millions of people. Health care systems scrambled to develop a system to contract trace employees who developed a COVID-19 infection and who may have exposed patients or other coworkers. The number of patients in the emergency department waiting for an intensive care unit (ICU) bed were tracked daily. Many contact tracing companies appeared on the market.5

Many hospital infection preventionists (IPs) and employee health or human resource departments utilized Microsoft Excel to track all health care exposures as well as patient and family member exposures. This is a very inefficient use of time. This is an area that IT departments should assess post COVID-19 to develop or purchase a system that will help IPs collect and analyze data during an outbreak or pandemic. This should become part of emergency preparedness programs. Look at technology for improving infection prevention programs and patient safety that hospitals can vet and implement when COVID-19 recedes. Products that can clean the air in buildings, protect staff, and improve cleaning and maintenance of medical equipment and the environment.

Real-Time Tracking
One such product is a real-time tracking system for medical equipment. Real-time tracking systems can alert staff when they are using equipment that has not been cleaned prior to another use. It will give the department responsible for cleaning this equipment information related to where dirty equipment is located, giving them the ability to retrieve the dirty equipment and clean it. Technology leverages the ability to track equipment, monitor availability of equipment, hand hygiene adherence, contact tracing, and environmental cleaning techniques. Currently, with the pandemic, the health care industry has had to deal with an exponential demand for resources, overcrowding, and increased

care products because temperature and humidity levels were not maintained during closure, which led to mold growth. Things like proper storage of vaccines and lab specimens need to be continuously recorded and tracked remotely to reduce the likelihood of decreasing patient and employee safety.6 This is an investment health care professionals have talked about for years, but now we see this is necessary for the future of quality health care to survive.

Vital Signs Monitoring
The ViSi mobile system is a newer system that has been available for some time but has received more publicity in light of COVID-19. For years, patient monitoring was done by Episodic Vital Sign Collection, which, unlike Continuous Vital Sign Monitoring (cVSM), cannot provide a continuous comprehensive view of a patient’s physiologic status, which prevents early intervention when a patient is deteriorating. Systems like ViSi Mobil give clinicians a constant stream of data to help identify early signs of deterioration, which could help prevent adverse events. These systems monitor SpO2, respiratory rate, heart rate, skin temperature, and continuous noninvasive blood pressure readings for ambulatory patients. Up to 75% of adverse events and preventable deaths occur outside of the ICU, where cVSM is not currently used.

These systems empower clinicians to detect early signs of deterioration in virtually all care settings, saving lives and decreasing the need for rapid response calls. A study review of 849 patients in a 32-bed orthopedic, orthopedic-spine, and trauma general care unit showed that, by
Vetting new technology and products is a complicated endeavor that takes hours if not weeks before a decision can be made as to whether to bring products into a health care facility. The COVID-19 pandemic did not give health care the luxury of time.

Using the ViSi mobile system, there was a significant reduction in risk of developing complications, fewer transfers to the ICU, and increased adherence using the system by staff. Studies have also shown there has been a reduction in nonactionable alarms decreasing alarm fatigue, but there was a nonsignificant reduction in ICU transfers and unplanned deaths. If these systems were implemented in health care prior to COVID-19, it would have eased the burden of short staffing in non-ICU patient care areas during the pandemic. In non–COVID-19 times, this system may decrease the need for high-cost monitoring systems in the ICU for some patients. The benefit of this kind of technology is staff do not have to enter the patient isolation room to know what the patient’s vital signs are, thereby saving time and resources, which saves money. Health care would benefit from this type of monitoring system should the country see the rise of a COVID-19 variant that is resistant to the current COVID-19 vaccines. These systems could decrease the times health care workers would have to enter a patient isolation room, which would decrease their exposure to the COVID-19 variant but still provide safe patient care when used correctly.

**Ultraviolet Disinfection**

Ultraviolet C (UVC) radiation is a known disinfectant for air, water, and nonporous surfaces. UVC radiation has effectively been used for decades to reduce the spread of bacteria, such as tuberculosis. For this reason, UVC lamps are often called “germicidal” lamps. UVC radiation has been shown to destroy the outer protein coating of SARS-CoV, which is a different virus from the current SARS-CoV-2. The destruction ultimately leads to inactivation of the virus. UVC radiation may also be effective in inactivating SARS-CoV-2. However, there are limited published data about the wavelength, dose, and duration of UVC radiation required to inactivate SARS-CoV-2. In addition to understanding whether UVC radiation is effective at inactivating a particular virus, there are also limitations to how effective UVC radiation can be at inactivating viruses in general.

**Direct exposure:** UVC radiation can only deactivate a virus if the virus is directly exposed to the radiation. Therefore, the deactivation of viruses on surfaces may not be effective because of blocking of the UV radiation by soil, such as dust, or other contaminants, such as bodily fluids.

**Dose and duration:** Many of the UVC lamps sold for home use are of low dose, so it may take longer exposure to a given surface area to potentially provide effective inactivation of a bacteria or virus. UVC radiation is commonly used inside air ducts to disinfect the air. This is the safest way to employ UVC radiation because direct UVC exposure to human skin or eyes may cause injuries, and installation of UVC within an air duct is less likely to cause exposure to skin and eyes.

**Reinventing Scrubs**

Another technology to keep an eye on is antimicrobial scrubs. Currently, there are 2 types on the market. They include antimicrobial fabric and silver-impregnated fabric. Many health care workers are not aware of these new technologies that can provide extra protection.

With the many increases in multidrug-resistant bacteria and viruses, medical personnel can now add an extra protection to their workday. With the addition to the market of Vestex antimicrobial material and X-static silver technology, workers now have options.

Vestex makes antimicrobial scrubs that have been reviewed, assessed, and given a 510K number by the FDA, meaning they are considered a medical device and are safe for use by health care workers. Not only are the scrubs antimicrobial, but they are also fluid resistant and stain resistant, which meets the Occupational Safety and Health Administration regulations for PPE. The FDA is currently reviewing data about whether these scrubs can kill SARS-CoV-2, so health care workers have a decreased chance of taking bacteria and viruses home every day.

These scrubs have proven to reduce 99.99% of methicillin-resistant *Staphylococcus aureus* (MRSA) when compared with nonantimicrobial scrubs. This material is also used for scrub jackets, lab coats, and T-shirts. Gone are the days of taking scrubs off and throwing them in the trash before entering your home.

**Vet New Technology**

Vetting new technology and products is a complicated endeavor that takes hours if not weeks before a decision can be made as to whether to bring products into a health care facility. The COVID-19 pandemic did not give health care the luxury of time. This must be built into any future emergency preparedness programs. Better yet, hospitals and other health care facilities should install robust purchasing and infection prevention departments, so health care professionals will know what they’re using is not only safe, but there are also backups that have been vetted. Staying up-to-date on new technology—whether you invest in it now or not—is important.

**REFERENCES AVAILABLE AT INFECTIONCONTROLTODAY.COM**
Infection preventionists (IPs) are on the move. The COVID-19 pandemic proved their worth and bolstered the argument that IP expertise should spread throughout the health care system. The Centers for Disease Control and Prevention launched Project Frontline this year, which is a $180 million effort to teach everybody in health care the basics of infection prevention. The Biden administration has allocated $2.1 billion for infection prevention and control. Movements underway would put IPs in nursing homes and mandate that anybody with the IP title have CIC (certified in infection prevention and control) after their names.

IPs are also on the move within hospital systems. Last month, the Association for Professionals in Infection Control and Epidemiology (APIC) hosted the Cleaning, Disinfection, and Sterilization Conference last month, hosted by the Association for Professionals in Infection Control and Epidemiology. Her presentation was titled “From Concept to Reality: Development and Implementation of a Disinfection and Sterilization Program.”

How IPs Can Better Monitor Sterilization, Disinfection

Although, to our knowledge, there have been no studies to confirm this, it’s a safe bet that everybody in health care has had to work outside their comfort zones during the COVID-19 pandemic. There’s certainly plenty of anecdotal confirmation of that development. Experts have told Infection Control Today® that IPs have had to quickly acquaint themselves with the infection prevention and control challenges that exist in each hospital department. Now, as the pandemic (hopefully) ebbs, comes a reassessment of the boundaries of an IP’s comfort zone in normal times. Crystal Heishman, MBA, MSN, RN, ONC, CIC, director of infection prevention and control and vascular access at UofL Health - Jewish Hospital, presented at the Cleaning, Disinfection, and Sterilization Conference last month, hosted by the Association for Professionals in Infection Control and Epidemiology. Her presentation was titled “From Concept to Reality: Development and Implementation of a Disinfection and Sterilization Program.”

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“You don’t ever want to go into a sterilization department and say, ‘You’re doing this wrong.’ Because they’re the subject matter experts. You want to learn. You want to learn the process. You want to work together because it makes a stronger partnership.”
ally. Just because we’re using data [and] presenting the plan. Putting together the program is the hard part because you have to figure out: Where are all these processes occurring? What are all the regulations and guidelines behind these processes? And then the larger facilities. The more you expand, the harder that is because you are going to see those deviations clearly between different facilities. I think that’s the hardest part; actually putting the program together.

ICT®: Wherever there are departments, there are inevitably turf battles. Is that something infection preventionists who want to follow your guidance and implement a sterilization and disinfecting program have to look out for?

Heishman: It can be. But if you come in with an open mind and let them know you’re there as a resource to help them make their workflow easier [and] to help be their voice for whatever they need, they’re going to tell you what their barriers are. You don’t see that as much. It’s more like a collaborative environment because you are helping them. You’re being their voice and helping escalate the needs of their departments.

ICT®: Is there something I neglected to ask you about this subject that you want your fellow infection preventionists or other health care professionals to know?

Heishman: When putting together a proposal for a program—whether it be disinfection, sterilization, construction and renovation, anything like that—having that data together and having that initial pulse check [is crucial]. What’s actually going on? What’s that gap look like? What’s the impact? Is it on patient safety [and/or] employee safety? How does it tie into those organizational goals and strategic plans? That’s usually the 1 piece of information I like to provide. Then just believe in yourself and your capabilities. Excitement is contagious. If you are excited and passionate and you can show the value in something, other people are going to see it as well.

This interview has been edited for clarity and length.

REFERENCES AVAILABLE AT INFECTIONCONTROLTODAY.COM

Prepare for the Postpandemic Normal, IPs

Everybody is looking toward a future where COVID-19 doesn’t dominate. Lately, all the metrics look good. Great, even. Vaccinations are up, and infections, hospitalizations and deaths are down. Way down. When that future comes—hopefully soon—what will it look like? At the Cleaning, Disinfection, and Sterilization Conference, hosted by the Association for Professionals in Infection Control and Epidemiology (APIC), Doe Kley, RN, CIC, MPH, T-CHEST, senior infection preventionist with Clorox Professional Products Company, tackles that question head-on. The title of her presentation was “The Next Normal: Cleaning and Disinfecting in a Post-Pandemic World.”

Before working for Clorox, Kley was a practicing IP in hospitals. She knows what IPs are up against. “I don’t know a more complex job than what we do in infection control and the breadth of what we have to know and understand,” Kley tells Infection Control Today®. “Everything from microbiology, surveillance, health care–acquired infections (HAIs), and statistics, to the opposite end, which is construction and facilities management, how HVAC systems work, and water systems.” When the next normal arrives, Kley has this advice for IPs: “Get out there. Get to know people in these departments. Find your champions in these departments. Go with the spirit of curiosity and learn.”

Infection Control Today®: What’s the next normal going to look like when it comes to cleaning and disinfecting?

Doe Kley, RN, CIC, MPH, T-CHEST: I love that question. Because, yes, things are going to change. The first thing is we’ve got to get back to some semblance of normal, whatever that normal is going to be. For cleaning and disinfection, that is going to mean that we need to take a step back. A lot of products were brought in when the supply chain was challenged, and IPs were so busy with the COVID-19 stuff that they [couldn’t] do their usual thoughtful vetting of these products. A lot of these products were probably brought in without even knowing. We’re going to have to go back and take an inventory of what we’ve got in-house because I
suspect we’re going to find some things that shouldn’t even be in a hospital, to be honest. That’s one place they need to start looking; at their products and deciding what’s going to go [and] what can be kept. [Then they need to go] back to their products or their value analysis committees and get those products vetted and [properly] approved.

The other thing is where the IPs’ attention has been so much on the COVID-19 control—the surveillance and screening and all of that—they also need to go back and start collecting their data and doing observations. Watching people do the work. Have environmental services (EVS) teams been diverted from their usual ways? Is everyone cleaning the same way? Are they following our policies and practices? Now that no one is watching, have they been diverted from their usual ways?

ICT®: When should that reset button be hit? And you mentioned a few things they should do. Is there an order in which they should do them? Should they start doing them now?

Kley: That is the question. I personally think [they should start] now. Of course, this virus has fooled us many times. I know when I submitted my abstract for the APIC talk, the pandemic was going down, [and] we were starting to loosen up in the community. I thought “OK, good. The perfect time to talk about the next normal.” And within a few weeks the Delta variant slammed us. This virus is unpredictable. I’m sure that over the next many years, we are going to continue to see waves. We can’t wait that long to start to establish what our next normal is. Now is the proper time. We’ve got almost 2 years under our belt with this virus. We just can’t keep doing what we’ve been doing with our singular focus on 1 pathogen. We know that while we were so busy with COVID-19, other dangerous and emerging pathogens got a foothold. The one that scares me the most is C auris.

Kley: I do know that CMS had waived surveillance—the requirement for HAI surveillance—during the [first 6] months of the pandemic. [But] I also know that a recent study, looking at the [National Healthcare Safety Network] data from 2020, surprisingly [showed that], even though CMS had waived that requirement, 87% of IPs were still doing their surveillance and reporting their HAI. The problem is that, with C auris, you don’t know what you don’t know. Most clinical laboratories at the hospital level—unless you’re a large academic center or research center—their labs don’t have the capacity to identify that pathogen. You may just be seeing Candida. You may even be seeing [Candida] haemulonii on your lab result, and it’s wrong. It could be C auris because it’s commonly misidentified. The trick is knowing when to speculate [and] when to be suspicious. If I see C haemulonii on my microbiology list, the first thing I should be thinking is: “OK, but this can be C auris. Is this patient at risk?” Then you need to know the risk factors, [such as] recent travel [outside of the country] in the past year. Long-term [International Early Lung Cancer Action Program patients] are at super-high risk. You need to know when to be suspicious [and] when to speculate. You also need to know...OK, you’ve got to talk with your laboratory and confirm what test we [are] using. Then you’re [probably] going to need to submit specimens to the public health laboratory to get that confirmation.

I [recently] heard of a hospital that did not identify a C auris case they had in-house until day 30. Of course, you know that patient had been everywhere. I guarantee you—I haven’t heard this yet—but I guarantee you there are other cases now in that hospital, and 1 case of C auris is an outbreak. The hard thing about C auris is it acts like a bacteria. It’s very easily transmitted from person to person, but it also is very difficult to eradicate from the environment once it gets a foothold. So, yes, a very scary pathogen.

ICT®: In your experience, how much authority do infection preventionists have? As far as saying, “OK. Stop every-
thing. We need to close up this room. We need to do this. We need to do that.” Does it depend on the institution? Or on how much authority hospital administrators give them?

Kley: That’s a great question. I think it’s multifactorial. For example, an experienced IP probably carries a little more authority than a newer IP. That just comes with confidence. When I was a practicing IP in the hospital, [I always liked to say], “We have full authority, right?” We’re the ones in charge of making sure all the regulations are being met, the policies are being followed, and our practices are evidence based. Yet I can’t fire somebody for breaching a policy. I can certainly escalate it to their manager, and if it keeps escalating—the same name—then things can happen. But if an IP is competent, stays educated, they will have that respect of their staff and the other health care [personnel] on the team. When they say, “Hey, this is what we need to do for this patient,” people will do it. If not, if an IP is newer—which I know there are a lot of newer IPs out there—then you’ve got to build your team around you. Know who you can go to, to get that help and authority when you need it. Get your leadership involved if you have to until you get to that point where [people] know that when you say something, it’s the right thing.

ICT: Do you think states should mandate that infection preventionists be certified? That anybody who’s called an infection preventionist in any health care facility is certified?

Kley: Yes, I think they should be certified. I’ve done this for 20 years. I’m a registered nurse by practice. I also have a microbiology background. I don’t know a more complex job than what we do in infection control and the breadth of what we [must] know and understand. Everything from microbiology, surveillance, HAIs, and statistics, to the opposite end, which is construction and facilities management, how HVAC systems work, and water systems. There is so much we need to know, and [what we know and do] is so important. Patients’ lives depend on decisions we make. So absolutely, I think certification should be mandated.

ICT: IPs need to be Jacks of all trades?

Kley: There is such a breadth of what we [must] know that truly we can’t be the complete experts in each one. I’m not a sterile processing expert. I know the basics they’re supposed to be doing. I [also] know who to go to, and I befriend those [people]. My sterile processing manager, my OR [operating room] manager. I pick my battles wisely.

I can give you an example. There was a woman I worked with, she was new, and she would go around in the morning on her rounds and throw away everybody’s coffee from the nurse’s station. That’s not a good way to make friends. To me, coffee at the nurse’s station is a low-risk infection control issue. When you need those [people] for something important, are they going to listen to you? You’ve got to choose your battles.

I also always went inquisitively. I’m not there to judge [or] to say what you’re doing is wrong or right. I would always give them a heads-up: “Hey, I want to come spend a couple hours in your department today, in the OR. Can you hook me up? Can I spend some time in the room? I’ll be a fly on the wall.” I’m inquisitive, and I ask questions and take notes, then I have conversations. I find my champions.

I remember I championed an anesthesiologist. [That was the] best thing I ever did because they are notoriously a tough group. But having him on my side and being a confidant I could talk to and learn from—and he could learn from me—that relationship was gold. If I was having a problem in the OR—he was also a medical director—I could call on him. And because he knew me personally, and he knew my motives, he would always help me.

I say get out there. Get to know people in these departments. Find your champions in these departments. Go with the spirit of curiosity and learn. That is the best way to put those inroads into those departments. Trust me, they start picking up the phone and calling, [saying], “I know they’ll help.” They know you’re not that person [who thinks they know] everything [or] that you have an answer to everything. [When you’re inquisitive], they learn real quick that you’re at least going to ask the right questions and find [the] answers. But you will never be the person who knows everything, and they trust you for that.

ICT: Is there something that I neglected to ask you and that you think might be pertinent and that you want your fellow infection preventionists and health care workers to know?

Kley: Yes, there is. I hope we have learned from this pandemic that, just like with hand hygiene, everyone plays a role in cleaning and disinfection. I know it was a battle when I was a practicing IP to get nurses to clean things, like their equipment or the high-touch items in the room. It wasn’t their job. But I do hope now that they realize it’s everybody’s job. □

This interview has been edited for clarity and length.

REFERENCES AVAILABLE AT INFECTIONCONTROLTODAY.COM
What’s the most important thing to know about *Candida auris* today? Mainly that it’s a clear present and future danger. The Centers for Disease Control and Prevention (CDC) classifies *C. auris* as an “urgent threat”—the highest level of concern.1 *C. auris* is 1 of only 5 pathogens to fall into that category, and it is the first fungal pathogen.2

“*C. auris* is a public health concern due to high rates of antifungal resistance and a unique ability to spread easily and cause outbreaks in health care settings, especially long-term care facilities,” said Joe Sexton, acting laboratory team lead at the CDC’s mycotic diseases branch, in an interview with *Infection Control Today®*. “It’s a high priority not only for our group but also at the agency as a whole.”

According to the CDC’s tracking, the cumulative number of *C. auris* cases so far this year is 161. In 2020, the cumulative total was 178, so it’s likely that 2021 will surpass that number.2 The number of clinical cases may seem small, but add to that the nearly 3000 people who have been identified through screening as colonized with the extremely transmissible fungus.3

*C. auris* was first reported in 2009, although retrospective review suggests earlier strains date to 1996. One of the most disturbing features of *C. auris* is that, in its relatively short life, it has rapidly developed resistance to the few available treatment options. Approximately 85% of *C. auris* isolates in the US are resistant to azoles, 33% to amphotericin B, and 1% to echinocandins—making echinocandins critical.1 But since 2019, cases of “pan-resistance” have been appearing; that is, patients for whom echinocandins don’t work. CDC investigators reported on 5 cases (3 in Washington, DC, and 2 in Texas). All 5 were clustered within facilities. Perplexingly, none of the patients had been treated with antifungal drugs prior to the diagnosis, which is a first, according to the investigators.3

Worrisome as it is, *C. auris* incidence has taken a back seat to the COVID-19 pandemic, like many health care concerns. “News about *C. auris* outbreaks has been overshadowed over the past year and a half by coverage of COVID-19,” said Cornelius (Neil) Clancy, MD, an associate professor of medicine and director of the mycology program at the University of Pittsburgh. “However, it hasn’t gone away, and the threat it poses worldwide to health care systems, long-term care facilities, and the public health has not diminished.”

Clancy said it’s hard to know precisely how the pandemic has affected the incidence of *C. auris* infections. “What is clear, however, is that outbreaks of infections, including *C. auris* outbreaks and increased...
incidence of health care-acquired infections, in general, are major features of the pandemic,” he said.

**Combustible**

The pandemic has essentially put a match to a combustible situation. “We tend to see transmission and see cases among patients who are in these high-acuity, long-term care facilities...that have very sick patients, like ones who are on ventilators or have tracheostomy or other invasive medical devices,” said Meghan Lyman, MD, a medical officer in the CDC’s mycotic diseases branch and lead author on the study of pan-resistance, in an interview with STAT. “Getting COVID-19 and having these complications puts them at higher risk for acquiring C. auris.”

The synergy of COVID-19 plus C. auris infections has added pressure to what health care facilities are dealing with. The infection prevention challenges likely stem from pressures the pandemic placed on infection preventionists (IPs) and health care resources and personnel, Clancy said. “Even under the best of circumstances, IP teams typically operate at the extremes of their capacity. When an unprecedented public health challenge like COVID-19 emerges, there is limited overflow capacity, and attention and resources normally given to routine IP practices run the risk of being diverted. Moreover, staff become overwhelmed and fatigued, which makes adherence to strict IP practices more difficult to sustain,” he said.

Not only that, “many COVID-19 patients, particularly those who are hospitalized, are at increased risk for secondary infections due to risk factors like [intravenous] lines, urinary catheters, and mechanical ventilation. With this background, facilities are vulnerable to C. auris and other outbreaks,” Clancy said.

If it does arrive in a facility, it’s toward the top of the danger list, given the bad outcomes among infected patients, Clancy warned. Death is 1 of those possible outcomes. A systematic review of nearly 5000 cases worldwide reported an overall crude mortality rate of 39%. Among the patients with pan-resistance detailed in the CDC report, 30-day mortality in both outbreaks combined was 30%, although the relative contribution of C. auris was unknown.

Combating a C. auris outbreak takes its toll throughout the facility. Eradicating, or simply controlling, outbreaks commands “massive and sustained IP efforts,” Clancy said. “Clearly, devoting these efforts is much more difficult with COVID-19 and the IP challenges imposed by the pandemic.”

“Unfortunately, we have seen increased spread of C. auris during the pandemic. Typically, it’s most problematic in long-term care settings, which have also been heavily burdened by the pandemic. However, during the pandemic, we’ve seen outbreaks in COVID-19 specialty care units, ICUs, and other acute care settings where we typically don’t see spread of C. auris,” Sexton said. He cites a case reported in the CDC’s Morbidity and Mortality Weekly Report: In July 2020, the Florida Department of Health was alerted to 3 C. auris bloodstream infections and 1 urinary tract infection in 4 patients with COVID-19, who received care in the same dedicated COVID-19 unit of an acute care hospital.

“We’ve also seen unusual cases pop up without epidemiologic links to other cases,” Sexton said. “Which tells us there is additional undetected transmission happening. The reasons for increased spread during the pandemic are not fully clear but may be related to changes in routine infection control practices.”

**Donning and Doffing**

In the CDC study of pan-resistance, the investigators observed multiple opportunities for contamination of the base layer of gowns and gloves during doffing and through direct contact with the patient care environment or potentially contaminated surfaces, such as mobile computers.

The CDC is actively pursuing studies that add to the understanding of colonization patterns and the positive relationship between skin colonization burden and environmental contamination.

Mobile computers and medical equipment were not always disinfected between uses, and medical supplies (eg, oxygen tubing and gauze) were stored in open bins in hallways and accessed by health care providers wearing the base personal protective equipment (PPE) layer. The investigators also observed missed opportunities for performing hand hygiene.

Those lapses likely contributed to widespread C. auris transmission, the investigators concluded. After the hospital removed supplies from hallways, enhanced cleaning and disinfection practices, and ceased base PPE layer practices, the investigators detected no further C. auris transmission on subsequent surveys.

Can we get a handle on C. auris? At the moment, the answer is...possibly. “Our ability to respond to C. auris has improved substantially,” Sexton said.
Due to enhanced diagnostic capacity, improved understanding of risk factors, and advancements in disinfectant and infection prevention and control [IPC] guidance. And of course, increased awareness and adherence to essential IPC practices are also critical to improved control.

But the fact that the fungus continues to spread within and between facilities, as demonstrated by an increase in the number and geographic spread of cases in recent years, means “we need to improve our understanding of how colonization relates to environmental contamination, and how to disrupt transmission pathways,” Sexton said. Shedding from colonized patients’ skin into the health care environment (calculated to occur at a rate of a million microbes per hour) creates an environmental reservoir and source of ongoing nosocomial transmission, said the research team (including Sexton), who studied residents of a skilled nursing facility (SNF) with endemic C. auris.

Investigators are coming up with a variety of plans of attack. At the CDC, Sexton’s group is actively engaged in numerous applied scientific studies, including collaborations with external partners and other government agencies, to improve public health guidance for C. auris.

**Twenty-five New Disinfectants**

“In the beginning of 2019, there were still no hospital disinfectants approved for C. auris, leaving a gap in practical guidance for health care facilities. We generated data in our laboratory, which reinforced concerns that many common disinfectants could not kill C. auris. However, we also found several chemistries that worked quite well. We worked with the Environmental Protection Agency [EPA] to improve temporary guidance based on this data, which helped pave the way for the private sector to get engaged,” Sexton said. “Now, just 2 years later, over 25 hospital disinfectants have been approved specifically for C. auris, giving health care facilities a wide selection of products they can be confident are effective.” The EPA has organized these approved products into an easy-to-use reference, “List P,” which is regularly updated.

When people are colonized with C. auris, they can spread the fungus to others while not getting an active infection. However, about 5% to 10% of those carrying C. auris will go on to have invasive infections later, according to the CDC investigators. The CDC is actively pursuing studies that add to the understanding of colonization patterns and the positive relationship between skin colonization burden and environmental contamination. For instance, data from the SNF study suggest “highly personalized patterns” of C. auris skin colonization. The site-to-site variability in colonization limits infection control strategies predicated on targeting only patients known to be colonized, the investigators said. Facility or unit-wide infection control approaches may be more effective.

At the University of Pittsburgh, Clancy said, “We are not researching C. auris per se in the lab, but we do a lot of work on antifungal resistance among Candida species. Of course, antifungal resistance is a hallmark feature of C. auris. Antifungal resistance, poor outcomes among infected patients, capacity for nosocomial spread, and environmental persistence are the constellation of features that make C. auris a major threat. We also do whole genome sequencing of Candida clinical strains from our health care system, so we are confident we will identify any strains, should they arrive, and that we have not missed any strains in the past.”

**Much to Learn**

Both Clancy and Sexton stress we still have a lot to learn about how C. auris spreads and how to stop transmission. “Raising awareness about C. auris is critical because early detection is key to control,” Sexton said. He also noted that the CDC made resources publicly available on its website that provide useful information and guidance for patients, health care providers, public health professionals, laboratorians, and more.

“If C. auris has not arrived, then there is potential for danger if it does arrive. Facilities need to have detailed plans in place to detect and respond promptly, and IP programs, the clinical microbiology lab, and other services need to maintain vigilance,” Clancy said.

“We’re really encouraging health departments and facilities to be more proactive instead of reactive to identifying *Candida auris* in general,” Lyman told STAT. “We’ve found that controlling the situation and containing spread is easiest when it’s identified early before there’s widespread transmission.”

**REFERENCES AVAILABLE AT INFECTIONCONTROLTODAY.COM**

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One of the most disturbing features of *C auris* is that, in its relatively short life, it has rapidly developed resistance to the few available treatment options.
Good Adherence Involves More Than Just a Checklist

BY MARY JEAN RICCI, MSN, RN-BC; AND MARY YOST, PHD, RN

Health care–acquired infections (HAIs) result in increased patient care days, health care costs, and morbidity and mortality rates, and contaminated hands represent the most common mode of HAI transmission. It follows that hand hygiene is the most cost-efficient method to prevent the spread of infection. COVID-19 underscored this problem, according to data collected by the Centers for Disease Control and Prevention’s National Healthcare Safety Network (and as reported by Infection Control Today®).1

During the pandemic, patients were sicker and required more frequent and longer use of invasive equipment, such as catheters and ventilators. The data revealed increases in standardized infection rates, indicating that the increases were not simply a reflection of more devices being used. Increasing staff hand hygiene is important for patient safety and health care reimbursement. Infection preventionists (IPs) have provided hand hygiene education in many methodologies to health care staff and have focused their efforts on staff handwashing practices. Practices in place to monitor hand hygiene among hospital staff include direct observation of staff and sensor badges that record hand hygiene practices, but little focus has been on nursing students’ hand hygiene practices or patient and visitor hand hygiene during hospitalization.

Although hand hygiene seems to be a simple practice, there is still low adherence in many health care institutions.2 Research aimed to increase adherence among health care workers can and should be applied to nursing students. Nursing students are introduced to hand hygiene in their fundamental nursing courses. Many schools utilize the practice of demonstrating hand hygiene, then require students to return the demonstration. If nursing students are expected to master the skill of hand hygiene and maintain adherence throughout practice, is a onetime return demonstration adequate to accomplish this objective?

Students are required to perform many competencies to complete clinical education in some facilities, but are they required to demonstrate a clinical skill, such as hand hygiene, that could save lives and decrease the cost of health care? Is hand hygiene consistently reinforced throughout the curriculum? Demonstrating hand hygiene in a skills lab does not ensure the correct technique will be employed in the clinical setting or will be retained throughout professional practice.

Is it monitored once students are in the clinical setting? Although it is a step in the process for both skills, would hand hygiene be more engrained if students were made to stop and think about the task of hand hygiene prior to performing skills?

Clinical Judgment

For years, we have determined students and health care staff to be competent in hand hygiene if they can provide a onetime return demonstration. A competency is the ability to use the knowledge and skills required to successfully perform critical tasks. Clinical judgment and reasoning involve reflection, which connects one’s own actions with outcomes. Integrating and synthesizing knowledge and skills in clinical settings is a component of nursing competency. Personal reflection on behavior is associated with competency improvement and is needed in professional practice. How do we, as IPs, design methodologies to include reflection into the measurement of competency?

Students should be taught to think past hand hygiene as a simple skill. It must be reinforced as a necessary competency for patient safety. Hand hygiene must also be reinforced throughout the curriculum, not just taught as a skill in the fundamentals course. Could students have a sensor badge during their clinical rotation to measure handwashing practice after initial education and during their clinical rotation to show the students the reality of their practice? Would showing students actual data related to individual handwashing practices increase personal reflection on their practice? Would handwashing practices increase? Would patient safety outcomes improve?

The American Association of Colleges of Nursing (AACN) defines the curriculum content and expected competencies of graduates of accredited nursing programs...
in its Essentials document.4 Now is the opportune time to redesign the measurement of competency, as the AACN Essentials is recommending changes to nursing education. Nurse educators are developing new frameworks for undergraduate nursing education using a competency-based approach. The purpose of this competency-based approach to nursing education is to ensure high-quality nursing education and student outcomes to identify gaps in content identified as essential to safe practice.

Now is the time for nurse educators to focus on essential practices, such as hand hygiene. An increased focus on hand hygiene in nursing programs will serve to benefit the health care work force, the patient, and patient safety outcomes. Hand hygiene should be integrated into lab and simulation experiences as an objective required for successful completion of the activity. It must go beyond a checklist of completed or not completed. Students should be required to explain the rationale for hand hygiene. Just completing the task is not enough if we expect students to employ hand hygiene as part of their practice beyond the classroom and lab. Education must move away from passive clinical experiences if we are going to promote change and mastery in practice.3

Patients’ Hands

Patients have little opportunity to wash their hands unless the patient is ambulatory. While in the hospital, their ability to practice hand hygiene in the room is limited by accessibility to soap and water or to hand sanitizer because of mobility, cognitive issues, or limitations imposed by illness. Patient condition often necessitates reliance on the staff to assist with handwashing opportunities. Are health care workers and nursing students taught to offer patients an opportunity to wash or sanitize their hands throughout the hospitalization? Patients need to be offered the opportunity to sanitize or wash their hands after toileting, before meals, before touching incisions or wounds, as well as hospital equipment, before leaving their room, and upon returning to their room. Are we designing handwashing campaigns to include teaching staff and students to provide education on handwashing as well as opportunities for the patients to wash their hands?

Visitors are another source of HAIs.
Occupational risk of sharps injuries transcends health care from local and community settings to a global stage. Although often preventable, sharps injuries occur in high-income countries at an alarming rate, and low- and middle-income countries (LMICs) with higher endemic rates of blood-borne pathogens and/or limited resources pose a setting of increased risk for this professional hazard. In response to this often unrecognized or underreported issue, the International Sharps Injury Prevention Society (ISIPS) has designated the month of December as International Sharps Injury Prevention Awareness Month. This calendar designation offers recognition of sharps safety as a global health issue.

The World Health Organization (WHO) highlights the importance of this global perspective of occupational risk by offering data sets that disclose 1.5 million new cases of HIV, hepatitis B, and hepatitis C from 2019 to 2020. Coupled with this data, the WHO data sets also identified disruption to health care services for prevention, detection, and treatment of HIV and hepatitis in the setting of the COVID-19 pandemic.1 Although rates of HIV have slowly trended down in the United States over the past decade, rates have increased in LMICs. This offers an acute demonstration of disparities in health care access and resources.

Global politics compound the problem of health care inequities and occupational risk of sharps injury. Mass migration and civil unrest hinders access to health care as well as accurate current communicable disease trends. HIV and hepatitis can easily escape detection in this population, and receiving countries may struggle with availability of sharps safety products for vaccination at border crossings.

The ISIPS website offers an extensive listing of available sharps safety products and manufacturers.2 Unfortunately, health care disparities may prevent the use of the identified safety-engineered products. However, not all products are created equal.

The International Safety Center EPINet data unveils that 30.2% of 975 sharps injuries occurred with use of a sharps safety device. The safety mechanism was properly activated in approximately 10% of 290 cases.3 This same report identifies that needle-stick injuries (NSIs) with use of disposable syringes account for 27% of sharps injuries, and that it is nurses who incur the highest occupational risk in this category. Additional data in this report identifies intramuscular and subcutaneous injections as the primary source of NSIs. The data set predated the COVID-19 pandemic, which potentiated an increased risk of NSIs with mass vaccination in unfamiliar and nontraditional settings, such as tents or large arenas.

Needle-Phobic Clientele

Future considerations in safe injection practices for mass vaccination during a pandemic might include dissolvable microneedle dermal patches. A method of vaccine administration such as this may improve vaccination rates among needle-phobic clientele. In addition, vaccination efforts could be enhanced in LMICs with fewer required resources for large volume transport and storage.4

No health care worker is immune from the dangers of handling sharps.
Physicians hold a rate just under that of nurses, mostly related to use of scalpels, but are less likely to report these injuries. The actual number of all sharps injuries for all health care professionals may easily be double that of which is reported.

**Exposure Control**

In the United States, the Needlestick Safety and Prevention Act was borne from the Safe Needles Save Lives campaign, launched by the American Nurses Association, and was enacted in November 2020. This law mandated that the Occupational Safety and Health Administration (OSHA) revise the OSHA blood-borne pathogens standard to include safety-engineered sharp devices. The revision also included the requirement that hospitals develop a blood-borne pathogen exposure control plan with annual updates and a requirement for a sharps injury log to track and trend occurrences to identify contributing factors. This standard offers a global model of prevention to also include use of personal protective equipment and work practice controls.³

The Centers for Disease Control and Prevention contributes to a global model of sharps injury prevention with a comprehensive workbook to guide design, implementation, and evaluation of a sharps injury prevention program. Federal and state regulatory guidelines are presented as well as the cost of sharps injuries. The workbook user is offered operational guidance to include a multidisciplinary approach to selection of safety-engineered needles and other sharp devices. Embedded tool kits guide the user through the steps of operations, with the goal of establishing a culture of safety. Data analytics for assessing sharp injury prevention interventions are presented methodically, offering uncomplicated learnings to even the novice learner.⁴

Environmental factors, such as lighting and noise, predispose the health care provider to these injuries. Even nondirect patient care employees, such as environmental or food service personnel, may be at risk when a direct care provider does not properly dispose used sharps. It is essential to assess the downstream effect of sharps handling when developing a sharps safety program.

Sharps safety is not limited to just health care settings or health care workers. Persons in the community may require the use of lancets or needles for monitoring and treatment of diabetes or other medical conditions. Municipal workers in waste management and/or recycling may also be at risk for sharps injuries. Children and other community members might incur a sharps injury when devices are not properly disposed.

**External Supports Required**

It is critical that home care patients are educated about proper disposal of lancets and needles in sharps containers that are approved by the Food and Drug Administration and that community regulations are followed for disposal of container at the fill level. Other countries may have similar designated sharps containers as determined by regulatory authorities. In resource-limited countries or communities, external supports are required to safely manage sharps. Nations that align with WHO may serve as external resources.

The designated International Sharps Injury Prevention Awareness Month of December coincides with closure to the calendar year, and for many health care and political organizations, marks the end of a fiscal year. This offers an opportune time to assess local, national, and international resources and engage health care and political stakeholders in sharps injury prevention measures for the coming year. Finally, raising awareness on the importance of global health care equity is of paramount importance in reducing sharps injuries.

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REFERENCES AVAILABLE AT INFECTIONCONTROLTODAY.COM
Battling HAIs: A Primer for Infection Preventionists

BY SHARON WARD-FORE, MS, MT(ASCP), CIC, FAPIC

No one should ever have to fight for their health over an infection they didn’t have when they entered a health care facility. Health care procedures can leave a patient vulnerable to microorganisms, such as bacteria, fungus, or viruses, that can cause health care–acquired infections (HAIs). HAIs are infections people get while receiving health care for another condition. They are defined as “infections not present and without evidence of incubation at the time of admission to a health care setting.”

Infection preventionists (IPs) don’t provide any hands-on patient care, but they should be knowledgeable on current best practices for that care. Detailed knowledge of practices and processes for insertion/maintenance of medical devices, instrument reprocessing, and cleaning and disinfection—to name a few—are critical. This is how IPs know what they are doing when they observe practices so they can assess whether there are any gaps and provide education and training, if needed, to help drive down HAIs. IPs don’t have to do this alone. Infection prevention and control is a team sport. When IPs share what they know with other health care personnel (HCP), they are helping to build their team of knowledgeable participants. HAI reduction needs to be on the minds of everyone who touches a patient. IPs can be the coaches to lead the way. IPs don’t have to start from scratch with resources to share with HCP because the Centers for Disease Control and Prevention (CDC) has done the work for IPs, providing a good starting point that IPs can use as is or tweak to fit their facility and its needs.

What We Know

HAIs can spread in health care settings from patient to patient via the unclean hands of HCP, unclean equipment, improper use or reuse of equipment, or they can be associated with the devices used in medical or surgical procedures. They can be localized or systemic and involve any system of the body. They can happen in any health care facility—hospitals, ambulatory surgical centers, end-stage renal disease facilities, and long-term care facilities—making them a huge concern in health care. They have serious emotional and medical consequences and are a significant cause of illness and death.

The CDC estimates that on any given day, 1 in 31 hospital patients and 1 in 43 nursing home residents have an HAI. According to CDC data from 2020, there are about 1.7 million infections and 99,000 associated deaths each year. If the number of infections or death toll didn’t raise an eyebrow, maybe this will: HAIs cost the US health care system about $96 billion to $147 billion annually. Nevertheless, these infections are considered preventable.

In order of occurrence, the most common types of HAIs are catheter-associated urinary tract infection (CAUTI) at 32%; surgical site infection (SSI) at 22%; ventilator-associated pneumonia at 15%; and central-line associated bloodstream infection (CLABSI) at 14%. (See chart on next page.)

HAIs are commonly caused by antibiotic-resistant bacteria, which can lead to sepsis or death. One in 7 catheter- and surgery-related HAIs in acute care hospitals and 1 in 4 catheter- and surgery-related HAIs in long-term acute care hospitals are caused by any of 6 antibiotic-resistant bacteria (not including Clostridioides difficile). These 6 bacteria are among the deadliest antibiotic-resistant bacteria, identified as urgent or serious threats by the CDC: carbapenem-resistant Enterobacteriaceae (CRE), methicillin-resistant Staphylococcus aureus (MRSA), extended spectrum β-lactamases (ESBL-producing...
Enterobacterales), vancomycin-resistant enterococci, multidrug-resistant Pseudomonas, and multidrug-resistant Acinetobacter. Unfortunately, the number of multidrug-resistant organisms (MDROs) continue to increase, raising worldwide concern.

Prevention Efforts
Hospital-based programs of surveillance, prevention, and control of HAIs have been in place since the 1950s—yes, you read that correctly, over 70 years—and we keep developing new strategies with new names, slowly making progress. The Study on the Efficacy of Nosocomial Infection Control Project from the 1970s showed nosocomial rates could be reduced by 32% if infection surveillance was coupled with appropriate infection control programs. In 2005, the National Healthcare Safety Network was established with the purpose of integrating and succeeding the previous surveillance systems at the CDC: National Nosocomial Infections Surveillance System, Dialysis Surveillance Network, and National Surveillance System for Healthcare Workers. In 2008, the US Department of Health and Human Services (HHS) identified the reduction of HAIs as an “agency priority goal.” HHS committed to reducing the national rate of HAIs, creating the 2009 National Action Plan to Prevent Health Care–Associated Infections: Road Map to Elimination, released in April 2013. This HAI Action Plan provided a road map for preventing HAIs in acute care hospitals, ambulatory surgical centers, end-stage renal disease facilities, and long-term care facilities, and for implementing antibiotic stewardship efforts as a method of HAI prevention. The HAI Action Plan also included a chapter on increasing influenza coverage of HCP, which was long overdue.

This HAI Action Plan was updated again in 2016, with new targets for the national acute care hospital metrics data from 2015 as a baseline, which were in effect 2015 to 2020. These new targets replaced the previous targets that expired in December 2013. The new target 2016 HAI Action Plan goals, which HHS states are “ambitious, but achievable” for reduction of HAIs include the following:
- reduce CLABSI in intensive care units and ward-located patients
- reduce CAUTI in intensive care units and ward-located patients
- reduce the incidence of invasive MRSA HAIs
- reduce hospital-onset MRSA bloodstream infections
- reduce hospital-onset C. difficile infections
- reduce the rate of C. difficile hospitalizations
- reduce SSIs

Resources
The CDC website has a section called “Infection Control Assessment Tools” under its HAI section that constitute the basic elements of an infection prevention program designed to prevent the spread of infection in different health care settings. These assessment tools are broken down by type of health care setting—acute care (including long-term acute care), long-term care, outpatient, hemodialysis, and oncology. Each assessment tool for the different health care settings is a bit different because different health care settings have different populations, practices, and procedures. When these basic elements are part of an infection prevention and control program and are practiced consistently—with consistency being key—the risk of infection among patients and HCP is reduced.

The assessment tools break down infection prevention practices into domains of practice, such as hand hygiene (HH), PPE, instrument reprocessing, and SSI prevention, where a templated set of questions can be used to perform a gap analysis to determine training, competencies, policies, and procedures. IPs should be familiar with these and use them, as they are readily available so they don’t have to reinvent them. In addition to these assessment tools, there are others under the CDC’s “Preventing Healthcare-Associated Infections” section that IPs should at least review or know if they cover any of these specific settings:

Urine culture stewardship is a method to ensure urine cultures are performed only when appropriate indications are present to determine whether treatment with antibiotics is indicated—think catheter-associated asymptomatic bacteriuria vs CAUTI. This section includes diagnosis and treatment guidelines from the Infectious Diseases Society of America. Institutions that have implemented urine culture stewardship programs have reported a decreased number of total urine cultures ordered, inappropriately treated ASB cases, costs related to overtreatment of ASB, and CAUTIs. Because CAUTIs are the No. 1 HAI (32%), IPs should provide education on the importance of this program because it works.

The targeted assessment for prevention strategy uses voluntarily submitted data from facilities or targeted units that may...
be struggling with HAIs. It includes an assessment of gaps in HAI prevention and can recommend opportunities for improvement from the experts at the CDC. Single-person IP departments struggling to get ahead of HAIs might wish to consider contacting the CDC for help.

Prevention tool kits have resources to assist clinicians, administrators, and health department personnel with preventing infections in nursing homes, assisted living facilities, and other long-term care facilities. There are tool kits for dialysis, acute care MDRO control, environmental infection prevention for surfaces and water, CRE, norovirus, vancomycin-resistant *S. aureus*, and CLABSI. An example of one resource in this tool kit is a very detailed inter-facility transfer form with patient-specific details, such as MDRO history, devices present, transmission-based precautions status, antibiotic usage, vaccination status, and sending/receiving facility contact information. All valuable information for the IP and receiving unit.

**Basic infection control and prevention plan for outpatient oncology settings** is an amazing section that should be titled “Everything an IP Needs to Know for an Oncology Setting.” It covers the basics from HH and PPE to access and maintenance of long-term central venous catheters, and safe injection practices, with recommendations adapted directly from the Access Device Standards of Practice for Oncology Nursing and the Infusion Therapy Standard of Practice. These are must-reads for IPs in this area.

**Guide to infection prevention for outpatient settings: Minimum expectations for safe care** is a summary guide of infection prevention recommendations for outpatient (ambulatory care) settings based on existing evidence-based guidelines from the CDC and the Healthcare Infection Control Practices Advisory Committee. It emphasizes the importance of standard precautions as the foundation for preventing transmission of infectious agents during patient care in all health care settings. It also speaks to HH, PPE, environmental cleaning, disease surveillance, respiratory etiquette, and injection safety, and it has a nice checklist to help with auditing an outpatient facility. It also has links to full guidelines and source documents for more details—1-stop shopping for IPs who cover this setting.

**Tools for protecting HCP** promotes patient safety through improved use of PPE by HCP. It has PowerPoint slides and posters on how to select PPE to limit the spread of contamination. It is a ready-made training document that can be shared with all HCP.

**Educate and Encourage** IPs should work to create a team of highly engaged HCPs. They should educate and encourage the use of guidelines and tools that increase widespread adoption of best practices to prevent infections, such as the CDC resources and tools outlined above. IP-led infection control and prevention education and training to HCP should focus on proven methods to prevent HAIs:

- **HH**
- **appropriate and safe PPE use**
- **appropriate and timely transmission-based precautions**
- **surveillance**
- **cleaning and disinfection of environment/medical equipment and devices**
- **decolonization and antibiotic stewardship programs**

Remember, teams are usually built 1 member at a time, and not all members have the same strengths or beliefs. If available, recognize staff members or units that have worked hard to prevent central line infections and try to recruit them first. They have experience with success and would probably like to be on an IP’s team to share what they know. Or an IP can start with the basics so they can build a strong foundation for team member buy-in:

- Make sure HCP understand the importance of HH, transmission-based precautions and environmental/device cleaning and disinfection practices.
- Educate on the CDC guidelines for preventing infections using those prevention bundles.
- Promote data use to target prevention and improvements.
- Follow recommendations for preventing *C. difficile* and infections that can occur after surgery or that are related to single-use catheters.
- Educate on why IPs isolate patients and when it’s appropriate to discontinue.
- Educate on antibiotics, including the importance of antibiotic-resistance patterns in a facility/area to improve antibiotic use: why prescribing antibiotics correctly is important; the role culturing plays in starting antibiotics promptly, reassessing 24 to 48 hours later, and when to stop antibiotic treatment.

IPs should not forget to include patients and their families as part of the team. Empower them by educating them on questions to ask regarding their care:*

- If they have a catheter, ask daily whether it’s necessary.
- If they are having surgery, ask their doctor how they prevent infections.
- Insist that everyone clean their hands before touching them and to clean their own hands often.
- Insist that everyone who enters their room wear PPE if it’s required.
- Ask what their antibiotic is for and whether it is necessary.

The knowledge, tools, and resources are now available for organizations to make major progress in reducing rates of HAIs in their facilities. IPs should start building their teams to win the battle against HAIs.

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How Infection Preventionists Can Battle Misinformation

By Rebecca Leach, MPH, BSN, RN, CIC

“Infodemic” combines the words “information” and “epidemic,” typically referring to rapid, far-reaching spread of both accurate and inaccurate information about a topic such as disease or treatment. The word first appeared in 2003 but has seen increased use during the COVID-19 pandemic. The volume of information disseminated since the beginning of the pandemic has been tremendous. In addition to scientific articles and journals based on research about the novel virus and its impact, there have been government statements, health agency advisories, news articles, opinion pieces, and a tidal wave of social media postings and commentary. Under the infodemic umbrella we have 3 categories: information, misinformation, and disinformation. Information is considered accurate at the time based on current knowledge. Because of the ever-changing nature of the pandemic, information was updated regularly; many members of the public and some within the health care industry began to have doubts about how much of it was accurate. This provides an excellent illustration of how science works. New ideas are tested and more data are gathered to continually improve upon prior hypotheses. Such rapid information updates in a situation involving a novel pathogen are expected, with new knowledge shared as it is uncovered. This does not necessarily mean earlier information was bad. Instead, the best information is shared in real time based on evolving knowledge.

False, False, False
Misinformation is false information without intent of causing harm or challenges to care. It often comes from individuals trying to understand something but not having all the data or not being able to interpret that data correctly. Disinformation is false information created to cause harm or delay care, for various reasons. It is strategic and intentional and can have severe repercussions. During this pandemic, we have seen many examples of misinformation and disinformation. The deluge of information makes risk communication and public health messaging more challenging. The social media aspect of this pandemic is unlike anything health responders have experienced previously. The level of expertise for social media postings is not regulated and public figures can exacerbate confusion by promoting misinformation and disinformation.

Early in the COVID-19 response, infection preventionists (IPs) scrambled to get as much credible information as they could to share with hospital leadership, staff, and patients. The days were filled with updates from the CDC, White House staffers, international health organizations, and the news media. Topics covered by IP education included isolation guidance, personal protective equipment information, modes of transmission, viral transmissibility and virulence, risk factors, and risk reduction strategies. Sifting through the data was a full-time job. Then came the need to organize the information and package it in a shareable manner that could address all concerns and questions. Much time was spent talking through fears, unknowns, what was known, or even best guesses.

A challenge was the frequency with which information was updated. One of the best ways to address that is to let individuals know from the beginning that in pandemic response, we learn as we go and we make decisions based on the best evidence known at the time. We must be open to changing course and being flexible as new data become available.

Infodemiology is an emerging field in public health and has some basic tenets that can be used by IPs in navigating the pandemic. One author has described 4 pillars of infodemic management: (1) facilitating accurate knowledge translation, (2) refining, filtering, and fact-checking, (3) building online health literacy, and (4) monitoring and analyzing data. All 4 pillars were utilized by IPs during the initial COVID-19 response and continuously since.

An example of the ripple effects of misinformation involves the antiparasitic drug ivermectin. A preprint journal article indicated a huge reduction in risk of death for patients with COVID-19 who were receiving ivermectin. As other academicians and researchers began reviewing the data behind the conclusions, concerns were raised. The content was pulled from the server based on those concerns, but not before it made an impact. It had been viewed more than 150,000 times and cited more than 30, including meta-analyses that concluded ivermectin was effective in treating COVID-19.

Ivermectin was being prescribed as treatment and, for many, as prophylaxis for COVID-19. This example highlights how quickly information spreads digitally, and the desperation for providers to find something that could help patients before vaccines were available. Even now, as the controversy continues, studies have been inconclusive as to the true efficacy.
of ivermectin, yet there are calls from the public for prescribing it.

**Educate**

At the time of this writing, our department was called by a concerned patient with COVID-19 who wanted a friend to bring ivermectin to the hospital to help treat her. This situation is a great opportunity for providing education and resources, but it also goes against medical advice of providers across the country who are using more proven methods to treat COVID-19.

The World Health Organization has published steps for navigating the infodemic to help the public in using self-assessment tools; however, these can be applied to IPs as they help staff utilize resources.

The final 2 steps are of particular interest for IPs. We all have unrecognized biases that we need to acknowledge, especially when it comes to infectious disease prevention, because this is an area of expertise. It can be easy to forget that the public and even health care workers are not as familiar with terminology associated with infectious disease and disease transmission. IPs can approach staff with a certain empathy as they try to better understand risks based on all the information.

Fact-checking is a role that IPs have embraced as part of the research-based and data-based foundations of the field. Evidence-based care is the goal, and the same goes for COVID-19 response. IPs know the reliable sources and are familiar with reading scientific studies and being able to translate those findings to staff in an understandable way.

**Know the Audience**

IPs must also craft their messages to ensure the audience is appropriate. Typically, those with set beliefs about vaccination or the existence of COVID-19 are not easily swayed. Instead, the focus should be on those displaying hesitancy; those questioning but who have not fully committed one way or another. This group will be more open to credible information from a trusted source. Utilization of social media and other digital methods to convey infection prevention messages is an opportunity for health care organizations.

Finally, a core competency for IPs is the need to emphasize pandemic response skills, risk mitigation strategies, infodemics, and risk communication. These skills are difficult to master but should be a part of every IP's toolkit. As in any crisis, communication is a key to achieving the best outcome. IPs serve as a beacon for keeping science and evidence at the front of minds as information is shared.

**REFERENCES AVAILABLE AT INFECTIONCONTROLTODAY.COM**

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IPs know the reliable sources and are familiar with reading scientific studies and being able to translate those findings to staff in an understandable way.
Infection Prevention Program is Touted

The business of infection prevention and control isn’t solely about what products health care professionals might use. They’re also about approaches to the effort, argues the company EvaClean. In a press release, the company touts its PurExcellence “progressive program” that is “built on six key pillars—assessment, standardization, education, safety, sustainability and guaranteed cost savings—which establish a roadmap to true infection prevention partnerships with health care and higher education.”

The first step in launching the PurExcellence program entails doing an assessment of what’s currently being done along these lines in a health care or educational setting.

“The data is used to develop a comprehensive chemical analysis, then compared against a more standardized approach using safer chemistries, which invariably yields cost savings of at least 30%,” Kurt Wong, the chief experience officer at EarthSafe, EvaClean’s parent company, says in the press release.

The kinds of challenges presented to infection prevention and control departments can change and the company says that a crucial part of its PurExcellence program involves education.

Rich Prinz, EvaClean’s senior vice president of sales, says in the press release that “one of the most critical components of PurExcellence is customized training for the life of the partnership. Perennial education helps ensure higher levels of safety, compliance and productivity to achieve better outcomes.”

EvaClean’s PurOne and PurTabs are part of the process, the company says, pointing out that they “dilute to different strengths for multi-purpose solutions and are highly effective at lower parts per million (ppm), it takes less chemical to accomplish more. The tablet format also requires less packaging, translating to less shipping, emissions and environmental impact. When strategies include electrostatic disinfection of all touch-points, chemical consumption is even further reduced.”

https://evaclean.com

Lab Tests Show Device is Effective Against SARS-CoV-2

In the face of growing concern about COVID-19 variants, one company hopes that it may have invented a device that would kill SARS-CoV-2. The Particle Bulb has been proven to be 99.9% effective against the Washington strain of the coronavirus, according to a press release by the device’s maker, Know Labs. The bulb is produced by Particle, a wholly owned subsidiary of Know Labs.

The effectiveness of the Particle Bulb was measured by the Texas Biomedical Research Institute (Texas Biomed). “Multiple tests performed by Texas Biomed demonstrated a 95% reduction in the SARS-CoV-2 virus after 5 hours of exposure to the Particle bulb; a 99% reduction in 6 hours; and a 99.9% reduction in 8 hours,” the company states in a press release.

In addition to the test results from Texas Biomed, Particle has also gotten product and packaging samples from a contracted manufacturer in Asia, which the company says should be the final step before it can begin commercial manufacturing of the Particle Bulb.

Phil Bosua, Know Labs’ CEO and the inventor of Particle Bulb, underscores Texas Biomed’s reputation as a world-renowned laboratory that specializes in infection prevention and control. Bosua says that “Particle has the potential to help the world address this pandemic as well as assist with the control of other pathogens and viruses. We are very proud of what the Particle team has accomplished.”

https://www.knowlabs.com

Cabinet is Said to Monitor Endoscope Usage

Keeping endoscopes free of pathogens that can cause infection counts as one of the more important goals among sterile processing professionals. A company called InnerSpace thinks that it has created a device that would make that job easier. InnerSpace, a subsidiary of Solaire Medical Company, recently unveiled the Ventaire Scope Drying and Tracking Cabinet. In a press release, the company says that the device provides real-time tracking of the devices. In addition, the cabinet includes an automated system that continuously pumps high efficiency particulate air (HEPA) into endoscope channels that can lessen the need for reprocessing the endoscopes.

Ben Barber, the president of InnerSpace, said in a press release that “effectively drying and storing endoscopes is critical for ensuring hygiene, prohibiting bacterial growth and potentially lowering infection rates.” The cabinet tracks how long an endoscope has been in storage as well as expiration times.

https://innerspacehealthcare.com
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![Image of medical professionals]

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1Continuously Active Disinfection against the following organisms: Acinetobacter baumannii MDR (Multi-drug resistant), Enterobacter aerogenes, Enterobacter aerogenes MDR (Multi-drug Resistant), Enterococcus faecalis VRE (Vancomycin resistant enterococcus), Enterococcus faecium MDR (Multi-drug Resistant), New Delhi metallo-beta-lactamase-1 (NDM-1) producing Klebsiella pneumoniae (CRE – Carbapenem resistant Enterobacteriaceae), Pseudomonas aeruginosa, Staphylococcus aureus, Staphylococcus aureus (Methicillin Resistant) (MRSA)

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