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INSIDE

RELIAS MEDIA

APIC Issues Call to Action Against Antivaccine Movement

Campaign urges IPs to fight state laws in name of science

By Gary Evans, Medical Writer

Traveling to New York to speak with state legislators about an infection preventionist (IP) recertification issue, government affairs staff of the Association for Professionals in Infection Control and Epidemiology (APIC) noticed something unusual.

"We were going to different offices meeting with legislators about our recertification campaign, and the phones were ringing from the beginning of the day to the end," says **Richard Capperell**, APIC associate director of public affairs. "It turns out there was a bill that repealed vaccine exemptions on the floor at the time, and all the phone calls were coming in from the antivaccine community."

This was firsthand evidence that the antivaccine movement in the United States is becoming more resourceful, media savvy, and somewhat relentless. While speaking at a recent APIC webinar, Capperell described various proposed state laws that would undermine or delay vaccine requirements. "Fortunately, New York continued to go with the scientific community on this, but it is important for us to know that the antivaccine community is very active and organized," he said. "So when we are dealing with these issues, we have to be able to present our evidence and get our folks on the phone as well."

Antivaccine sentiments are largely responsible for the 2019 U.S. total of 1,250 measles cases as of Oct. 3.[1] That is the greatest number since 1992 and comes two decades after measles was declared eradicated in the United States due to routine administration of the highly effective measles, mumps, rubella (MMR) vaccine. Vaccine avoidance based on misinformation — including the thoroughly rebuked falsehood linking autism to the MMR shot[2] — threatens herd immunity and vulnerable populations that cannot be immunized effectively.

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MEDICAL WRITER: Gary Evans
EDITOR: Jason Schneider
EDITOR: Journey Roberts
EDITORIAL GROUP MANAGER: Leslie Coplin
ACCREDITATIONS MANAGER: Amy M. Johnson, MSN, RN, CPN

This effort is not limited to the MMR vaccine, as the antivaccine movement is lobbying state legislatures to widen exemptions against childhood school immunizations and other mandates. As IPs, APIC has taken on this fight as defenders of science, rallying their members to speak up against state laws that would undermine immunization.

The first antivaccine movements began with Edward Jenner's invention of the first vaccine for smallpox in the late 18th century. Although subsequent iterations of that vaccine would rid the world of the scourge of smallpox eventually, Jenner was burned in effigy nearly a century later at an 1885 rally of antivaccine groups in England. Today, the problem is global, as the World Health Organization (WHO) lists "vaccine hesitancy" as one of the top 10 threats to public health in 2019.

"[T]he reluctance or refusal to vaccinate despite the availability of vaccines — threatens to reverse progress," the WHO stated in its "Ten threats to global health in 2019."[3] "Vaccination is one of the most cost-effective ways of avoiding disease — it currently prevents 2-3 million deaths a year."

Almost Half of Public Doubts Vaccine Safety

In the United States, a recent poll[4] found that 45% of respondents have doubts about the safety of vaccines, says **Lisa Tomlinson**, MA, CEA, vice president of government affairs and practice guidance at APIC.

"Fear-based beliefs are hard to change, especially when those beliefs relate to children," she said at the webinar. The primary reasons for these doubts included "past secrets/wrongdoing" by the pharmaceutical industry and the government. Also cited were social media interactions and content, information from medical "experts," and advice from family and friends. Somewhat surprisingly, given that the majority of states have exemptions for some version of religious or philosophical beliefs, only 4% of those doubting vaccine safety cited religious beliefs as the reason.

"There are about 45 states that have some kind of religious or personal belief exemption in addition to a medical exemption," Capperell says. "Overall, we saw about 200 [state] bills dealing with vaccines this [legislative] cycle, and we expect to see just as many next year."

That is due in part to antivaccine activists lobbying state legislators, some of whom sympathize with the cause and/or see an opportunity for political gain. The ongoing vaccine fight at the state level includes proposed laws to provide broader exemptions for school immunizations, and legislation and delay tactics to spread out or undermine the childhood immunization schedule, he says.

In response, APIC has issued a call to action document[5] and is offering to help state and local APIC chapters fight antivaccine laws. IPs have an "ethical responsibility" to promote evidence-based vaccine policies, APIC notes. "We are concerned [that] the increase in the rapid spread of misinformation related to vaccination, especially via social media, has led to unwarranted concerns about childhood vaccination, parental refusal to vaccinate children," APIC states.

APIC's comprehensive review of state legislation over the last year shows that "contrary to current scientific evidence, policies that delay vaccination, or spread unwarranted fears about vaccination have increased

in state legislatures." The document states that "innumerable studies have shown that vaccines are one of the safest and most cost-effective ways to prevent infection and prevent the spread of disease."

APIC is concerned with efforts that try to place the burden on schools and healthcare facilities to justify vaccination or spurious "informed consent" bills that would require providers to overstate the risk of vaccine contraindications.

"As such, we will speak out against these policies and call on our members to contact their legislators to oppose such legislation," the association said in a statement.[5]

The U.S. measles outbreaks have led to some pushback from vaccine advocates, as there now are five states that allow only medical exemptions to childhood vaccinations: California, Maine, Mississippi, New York, and West Virginia. "New York and Maine are the newest additions to this list this year," Capperell says. "Every year in West Virginia and Mississippi, we are seeing legislation to put the exemptions back on the books. The antivaccine movement is quite vocal in their opposition to vaccine requirements and unfortunately, they are very effective at getting their folks active when the time comes."

In addition, Washington state has repealed personal or religious exemptions, but only for the MMR vaccine. "Most of the legislation we are looking at is regarding requirements for school and childcare facilities," he says. "These do not include just MMR, but an entire spectrum of vaccines, including meningitis and HPV."

Bill Breakdowns

State legislation in 2019 has taken a variety of forms, and Capperell broke down the primary laws and proposed bills in a series of multicolored U.S. maps that underscored the flurry of activity around vaccine issues.

For example, some states are trying to expand or restrict employer-mandated vaccinations, which have been most controversial in policies requiring annual flu shots for healthcare workers.

"This has long been a top priority for APIC," Capperell says. "We have talked a lot about this regarding healthcare facilities. Most bills opposing employer mandates target influenza vaccines."

In a related development, eight states have introduced some type of legislation that would prohibit employers from requiring employees receive certain vaccines: Oregon, Montana, Oklahoma, Minnesota, Iowa, Mississippi, Ohio, and Maine.

"One concern is that some of the Midwestern states were actually targeting all vaccines — not just influenza," he says. "[These proposed bills say] for any vaccine, an employer would not be allowed to require vaccination of the employee. That is a little bit of a scary trend we saw."

On the plus side, Texas, Colorado, Arkansas, New York, and New Jersey were considering legislation that would expand healthcare worker vaccine requirements. Some states want to join the five that have removed all but medical exemptions to for childhood vaccinations.

"But we also saw some states introducing laws either strengthening current exemptions or trying to find new avenues to exemptions a little more lenient," he says. With most states already allowing some sort of nonmedical exemption, there are efforts to make applying for an exemption easier.

"There is another trend we are seeing as well, making the ability to apply for an exemption easier," Capperell says. "A [proposed Texas] bill made it so all you had to do is go to an online portal and request an exemption. It kinds of depends on the state. Some states require a notary public or a school nurse to get a health exemption; some kind of additional barrier — not an online portal. So, this was an alarming thing in both New York and Texas, where we not only see additional exemptions being added, but the ease of getting exemptions being included [in bills] as well."

Uninformed Consent?

Several states are working on variations of bills that would require healthcare providers or school officials to provide information on vaccines. The legislation has many different variations, and targets both healthcare facilities and schools. These bills may require a school system to send literature to students reminding of exemptions.

"Parents may receive a letter saying you can [decline vaccination] of your child for religious purposes," Capperell says. "The purpose of this legislation is essentially to give parents an 'out' to vaccine requirements."

Other versions of "informed consent" bills for healthcare facilities require that they highlight the rare but real risk of having an allergic reaction to a vaccine. Some of this proposed legislation requires an explanation of the National Vaccine Injury Compensation Program. This federal program was set up in 1988, after lawsuits against vaccine manufacturers and healthcare providers threatened to cause shortages and undermine national immunization rates.

Such bills essentially emphasize risk over benefit of an established public health measure. For example, informed consent bills may include highlighting vaccine ingredients, emphasizing

potential harm rather than the protective aspects of immunization.

"Generally speaking, these bills really kind of exploit the risk of vaccines vs. the actual benefits of being cost-effective, extremely efficacious, and saving hundreds of thousands of lives every year," Capperell says. "The burden is actually put on some healthcare providers because this information can be required to be given days, maybe a week, before a vaccination."

APIC is not opposed to providing all relevant information to patients, but the proposed laws on informed consent are skewed to build a negative narrative, he says.

"You have an information overload of four or five pieces of information given to you, in addition to being explicitly told about the vaccine injury fund," he says.

At least 12 states have discussed or are considering some version of these informed consent bills.

Another concern are bills questioning the scientific integrity of vaccine development, with some legislatures introducing bills that would all but ban vaccines unless they were subject to placebo-controlled trials to prove their safety. Some of these bills focus only on vaccine ingredients, primarily the preservative thimerosal, while others target vaccines in general. Proposed bills in Maine, Washington, and Texas would require vaccines to be studied vs. a placebo group to prove that the ingredients do not cause autism, cancer, and infertility.

"It would effectively ban any vaccine at this moment," Capperell says. "This was quite alarming for us. We haven't seen this bill in too many places yet. Our concern is that it might appear other places."

That concern stems in part from having Washington and Texas — two states at the opposite ends of the political spectrum on most issues — taking such a radical stand against vaccines. "It is not very often you see Texas and Washington have the same exact bill introduced, but they did in this case," he says.

In times of high political polarization, one overall observation about the state vaccine bills and issues is that many are nonpartisan. "The support for vaccines can be a very nonpartisan issue," he says. "On the other side of that, the antivaccine movement can be very nonpartisan."

Timing of Childhood Vaccinations

In a legislative strategy that APIC sees primarily as a vaccine delay tactic, some states are pushing bills that would allow blood titer tests to check for existing immunity in lieu of vaccination.

"Our questions are not about the effectiveness of titer tests – they work, and they have their place," Capperell says. "When we looked at this titer stuff, we were really concerned that it was kind of a delay tactic and less [of] an actual attempt to look at natural immunity."

Such legislation is being pushed by parents and antivaccine groups who claim the recommended childhood immunization schedule of shots causes harm by requiring too many shots over a condensed period of time.

"This legislation uses these [titer tests] as a delay tactic to receiving a vaccine on the recommended schedule," Capperell says. "[The APIC] Public Policy Committee expressed concerns that if the titer test shows no evidence of immunity, how do you get the patients back for vaccination?"

The inaccurate attacks on the childhood vaccination schedule have been subjected to considerable pushback, including a 2017 letter[6] to President Trump signed by a host of prominent medical groups and associations that thoroughly rejected the claim.

"Claims that vaccines are unsafe when administered according to expert recommendations have been disproven by a robust body of medical literature, including a thorough review by the National Academy of Medicine," the letter states. "Delaying vaccines only leaves our nation's citizens at risk of disease, particularly children. As a nation, we should redouble our efforts to make needed investments in patient and family education about the importance of vaccines in order to increase the rate of vaccination among all populations."

In other bills, a highly publicized case last year of a child seeking vaccinations after being denied shots by parents received some legislative attention. However, bills empowering vaccination of minors against parental wishes gained little traction.

Finally, so-called vaccine "anti-discrimination" bills have come up in some states. These laws would require healthcare clinicians to provide care regardless of the patients' vaccination status. None of these have passed, but they may stem from reported cases in pediatric offices that may decline or limit ongoing routine care to families who refuse to have their children vaccinated. ■

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Antibiotic Stewardship: Glass Half Full or Nearly Empty?

'We should be treating antibiotics like narcotics'

Though there has been tremendous progress in antibiotic stewardship efforts over the last decade, a broad and demanding array of research and action is needed if the rise of drug-resistant bacterial infections is to be stemmed, the Society for Healthcare Epidemiology of America (SHEA) reports in a new white paper.[1]

Lead author **Andrew Morris**, MD, chair of the SHEA Antimicrobial Stewardship Committee, dispenses with the platitudes on progress and sees the threat for what it is, an advancing siege on the miracle of antibiotics.

"We should be treating antibiotics like narcotics," he tells *Hospital Infection Control & Prevention*. "For every single antibiotic, [report] who is getting it, and when and how are they getting it."

Morris continues, in what sounds like a strategic goal for the distant future. "Ideally, this would be paired with microbiology," he says. "It would set up an accountability framework, but more importantly, it would establish systems that would facilitate both epidemiological studies as well as intervention and implementation studies."

Of course, such stringent controls are largely absent in a U.S. healthcare system that has erred historically on the side of dispensing antibiotics whether they are needed or not. That is changing, but Morris, a self-described "antibiotic steward," underscores the magnitude of the current problem.

"We know that there aren't enough antibiotic stewards in the U.S. probably to [address] the state of California," he says. "Even if we wanted to take everybody from across the country and steward [antibiotics] in the state of California — [think of] all the locations where antibiotics are prescribed, long-term care, ambulatory care. There's not a chance. We have to figure that out — and we won't in the near future."

Currently, physicians and pharmacists primarily lead antibiotic stewardship programs, which attempt in part to temper and calibrate antibiotic use so that the drugs simply do not kill off the susceptible bacteria and select our drug-resistant pathogens. The end result of that process can be pan-resistant pathogens. For example, a hospitalized patient in Reno, NV, died in 2016 of a carbapenem-resistant Enterobacteriaceae (CRE) strain that was impervious to 26 antibiotics.[2]

"Antibiotic-resistant bacteria infect 2 million Americans annually, resulting in up to 100,000 deaths and excess healthcare costs exceeding $20 billion," the SHEA paper states. "Antibiotic use is a major contributor to antibiotic resistance, infections, and antibiotic-associated adverse events. Antibiotics are frequently used across all healthcare settings in the United States, although much of this use is unnecessary."

The Emerging IP Role

The paper sets out a daunting array of research needs, but, as a practical matter, calls for heightened awareness of stewardship and knowledge that is wired in all the way from physicians down to bedside care. "I think there is a huge role for IPs to be involved in antibiotic stewardship efforts," Morris says, "even though some of the things we traditionally consider stewardship are going to be outside their scope of practice. That doesn't mean they can't be involved in stewardship of antibiotics."

Indeed, many IPs have been involved in successful efforts to reduce *Clostridioides difficile* infections, a common patient outcome of antibiotic disruption of commensal bacteria in the gut. One such effort focused on hand hygiene, environmental cleaning, and reducing the overuse of broad-spectrum drugs and

inappropriate stool testing that may trigger unneeded prescriptions. *(See* Hospital Infection Control & Prevention*, December 2017.)* Similarly, IPs have been involved in sparing patients with asymptomatic bacteriuria from unnecessary treatment more appropriate for a urinary tract infection (UTI).

"A lot of antibiotic decisions are actually not made by the prescriber," Morris says. There are opportunities to communicate and break "cycles of behavior" where the default position is antimicrobial treatment. "You don't need to be a physician or a pharmacist to help change that behavior," he says.

To research the paper, Morris and colleagues convened a diverse, multidisciplinary group of stewardship clinicians and researchers to identify research gaps from a U.S. human health perspective. They condensed this to four research priorities:

- development of evidence supporting best clinical practices in a variety of settings and patient populations (i.e., what to do);
- assessment of optimal approaches to implement stewardship practices in diverse settings, with a focus on behavioral change, sustainability, and personnel (i.e., how best to do it);
- development of standardized, valid, and reliable process and outcome metrics to support stewardship efforts, supported by information technology infrastructure and analytics (i.e., how to measure what you are doing);
- development of approaches to advanced study design with appropriate analytic methods (i.e., how to determine effective methods to continually improve stewardship practices).

Q & A

HIC talked to Morris, medical director of antibiotic stewardship for the Sinai Health System Toronto, on other aspects of the paper in the following interview, which has been edited for length and clarity. Morris also chairs the Antimicrobial Stewardship Working Group for Accreditation Canada.

HIC: Can you comment on the success (or lack thereof) of stewardship efforts over the last few years?

Morris: I think we are much better than we were 10 years ago because actions are being taken, policies are being developed, research is being done. We are starting to understand the problem better. The pace of improvement in all of those areas has actually been fairly rapid. However, because we did not delve into the issue in full earnest until maybe 10 to 15 years ago, we are really behind the eight-ball. There is a lot we don't know. There are so many areas we don't have full knowledge of what the best thing to do is. Or where we are even at. We don't have very good data systems to help us. Eighty to 90% of antibiotics used in the U.S. are out in the community. We don't have a great understanding of the overall burden of antibiotic resistance and antibiotic use.

HIC: There are some data suggesting reduced use fluoroquinolones, a known trigger for *C. diff* infections.

Morris: There is no question that fluoroquinolone use has decreased dramatically. There has been a major drop. But it is like the metaphor of squeezing the balloon. Fluoroquinolone use dropped, but all the other classes went up. The problem we have is that we are addicted to antibiotics. It's actually very easy to get prescribers to stop prescribing a drug or a group of drugs. But what we can't get them to reduce is the overall use antibiotics. There hasn't been much of an overall change of antibiotic use across the country.

HIC: Many hospitals have established stewardship programs, but you mention the staggering level of antibiotic use in outpatients.

Morris: There are substantial gaps outside of hospitals — all kinds of ambulatory care and that includes emergency departments and long-term care facilities. There is a huge opportunity to improve antibiotic prescribing in those areas. There is a lot of prescribing in those areas and very little [stewardship] work has been done. We don't have the researchers and data systems and networks there. They are among the areas that we think you are going to get the biggest bang for the buck. Another one of them is going to be improving how we study antibiotic use, so improving the design and method [of research].

HIC: Why is it so important to do this new research and why is it so challenging?

Morris: Many people may not realize it, but infectious disease studies, particularly as they relate to resistance and antibiotics, are entirely different than any other disease. Aspirin for heart attacks worked in the 1950s the same way it works in 2019. Penicillin for UTIs in 1950 is entirely different than penicillin for UTIs in 2019. These things are dynamic, and not only in terms of efficacy and the way it affects the population. Giving one patient an aspirin makes no difference to the person next to them. If you give a patient an antibiotic it absolutely can make a difference for other patients. These things are key in differentiating this kind of research from anything else. There are time and population-based factors that are not seen anywhere else. Measuring all those things is also very difficult. We sort of know how to measure antibiotics, but not really. It actually makes a difference whether you talk about the day of treatment vs. how many milligrams

or how many doses. It also makes a difference because of the population and the time factors. It doesn't make much of a difference if a patient gets aspirin for five days or two weeks. But it absolutely makes a difference if we are talking about somebody getting two weeks of amoxicillin. Those things make a huge difference.

HIC: There are certainly unknowns and research needs, but you note that we have failed to address even known factors in some sense.

Morris: Yes, once we know what the best thing to do is — how do we actually make that happen? For example, there is not a doctor in the country who doesn't recognize that we shouldn't be treating viral infections with antibiotics. Similarly, there isn't a doctor in the country who doesn't recognize that most colds are viral. Despite that, many, many patients have colds and are being treated with an antibiotic. How do we change that? It's not a matter of getting the best evidence for treatment. It's a behavioral change implementation science issue, whether it is a way of locking down [the formulary] so they can't prescribe in those situations or focusing on [expectations of] patients and their families, or whether we need to do this with better diagnostics.

HIC: You cite emotional factors driving some antibiotic misuse, such as the clinicians' fear of the "worst-case scenario" and their desire to avoid conflict with a demanding patient. What about cases where the physicians must balance the needs of the individual patient vs. the larger harm of antibiotic resistance to society?

Morris: That paradox is often referred to as the "tragedy of the commons" in ethical principles. The truth is [with antibiotics] it is primarily a false narrative. It is extremely rare that it is what is best for the patient vs. what is best for society. That's rare. The problem is that people don't have the necessary information in terms of risks. When a patient actually understands the full potential risks of antibiotic treatment for a viral infection, they would actually say, "I don't want it." Most people, if you offer them two burgers — one where the cow has not been fed antibiotics and one where the cow has been stuffed with antibiotics — they are going to choose the one without antibiotics. People know. It's not really an issue of people thinking it's good to take antibiotics. It is all how it is framed. The question is almost always what is best for the patient, but do [they understand by taking an antibiotic] they are taking the chance of getting *C. difficile*, a yeast infection, a drug-resistant organism, an adverse drug reaction, diarrhea, rash, and anaphylaxis? Most people — if they know that information — will change their choice. ■

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IPs Have Critical Role in Healthcare Worker Infection Guidelines

CDC finalizes first section, more to follow

New guidelines by the Centers for Disease Control and Prevention (CDC) to protect healthcare workers (HCWs) from infections call for infection preventionists (IPs) to be key collaborators with occupational health departments.

The recently published CDC guidelines[1] state, "Explicit communication and collaboration between occupational health service (OHS) and other … departments, particularly infection prevention and control (IPC) services, can improve healthcare personnel safety and the delivery of occupational IPC services."

Some examples of collaboration cited in the guidelines include assessing and selecting devices designed to prevent sharps injuries and needlesticks. IPs can also assist their employee health partners in documenting HCW vaccine immunization declination policies.

The CDC cites other areas of potential IP collaboration to protect workers that include:

- respiratory protection programs;
- occupational infection prevention education and training;
- medical evaluations;
- infectious disease screening and surveillance;

• management and reporting of exposures and illness;

• work restrictions and clearance for returning to work; and

• infectious disease emergency planning/management (e.g., pandemic planning).

To achieve this level of cooperation that the CDC calls for, provide resources to protect employee health. "An occupational health service can't do that effectively without backup from the top of the organization. They need that support; otherwise it is not going to work," says **David Kuhar**, MD, who spearheaded the guideline development as the CDC's liaison with its Healthcare Infection Control Practices Advisory Committee (HICPAC).

The guidelines, which are the first by the CDC on this issue in 21 years, include a section on facility leadership. "That is something that is new with this update, as opposed to the 1998 recommendations," he says. "There are recommendations aimed at healthcare administration. They are focused on ensuring that these programs have resources and leadership commitment so they can succeed."

The administrative leadership recommendations by the CDC include the following:

• Invest in an organizational culture that prioritizes safety and occupational infection prevention and control.

• Regularly review organizational information about occupational infectious risks, exposures, and illnesses with occupational health services.

• Dedicate one or more persons with appropriate authority and training to lead occupational infection prevention and control services.

• Provide sufficient resources (e.g., expertise, funding, staff, supplies, information technology) to implement elements of occupational infection prevention and control.

• Oversee, and include occupational health services leaders in, performance measurement and continuous quality improvement activities for occupational infection prevention.

Other Sections to Follow

The published guidelines will be followed by other sections, with this first document outlining the infrastructure and routine practices for occupational health services to protect workers from infections.

"The second part of the guideline is going to come out in several sections that are going to address the epidemiology and control of selected infections that can be transmitted among healthcare personnel and patients," Kuhar says. "It will address the infection prevention issues that are relevant to healthcare personnel and will often focus on postexposure prophylaxis and work restrictions."

> "IT WILL ADDRESS THE INFECTION PREVENTION ISSUES THAT ARE RELEVANT TO HEALTHCARE PERSONNEL ... "

A member of the CDC's HICPAC shared some this draft guidance on measles exposures at the IDWeek 2019 conference held Oct. 2-6 in Washington, DC.

In addition to being a HICPAC member, **Hillary Babcock**, MD, MPH, is medical director of occupational health at Barnes-Jewish and St. Louis Children's Hospitals.

As outlined by Babcock, the HICPAC draft definition of exposure to measles for HCWs is "spending any time while unprotected — not wearing respiratory protection — in a shared airspace with an infectious measles patient; or sharing an air space vacated by an infectious measles patient within the prior two hours — regardless of immune status."

She conceded that "'any time' is a pretty high bar. I think it is not really practicable in a real-life setting, and there is a lot of discussion around that."

There are also a lot of variables at play, like the air exchange of a given area, and how effective it is to mask a measles patient and for how long.

"There is very little data about the role of source control and the impact of masking," she said. "We recommend it for patients, but we don't really know how well that works. There is also no great data on duration."

Clearly, there is higher risk in providing face-to-face care with neither the measles patient nor clinician masked. "[The CDC] can't give a cut time, but obviously longer is worse," Babcock said.

Similarly, quantifying the vagaries of "shared air space" is difficult. Ambulances, exam rooms, and small enclosed waiting areas can be seen as a risk, but it is considerably harder to determine the likelihood of exposure in large open waiting areas with shared air handling systems across different patient rooms, she said. If such a situation arises with measles, it may be best to consult with air handling and engineering at your facility, Babcock added.

In another item from the upcoming HICPAC draft guidelines, postexposure prophylaxis (PEP) and work restrictions are not necessary for healthcare personnel with presumptive evidence of immunity to measles

who have had an exposure. However, implement daily monitoring for signs and symptoms of measles infection for 21 days after their last exposure, she said.

"Symptom monitoring is still recommended, as we do know that there are [measles] cases in people with evidence of immunity after an exposure," she said. "In some places, depending on your comfort level with risk, there may be different decisions made on how to manage this."

For healthcare personnel without presumptive evidence of immunity to measles who have an exposure, the HICPAC draft recommends the following:

- Administer post-exposure prophylaxis in accordance with recommendations by the CDC and the Advisory Committee on Immunization Practices.
- Exclude from work for the fifth day after the first exposure through the 21st day after their last exposure, regardless of receipt of PEP.

HCWs who have received only the first dose of the measles, mumps, and rubella (MMR) vaccine prior to exposure may remain at work, but they should receive the second dose of MMR vaccine within at least 28 days after the first dose. Implement daily monitoring for signs and symptoms of measles infection for 21 days after the last exposure.

For healthcare personnel with known or suspected measles, exclude from work for four days after the rash appears. For immunosuppressed healthcare personnel who acquire measles, consider extending exclusion from work for the duration of their illness.

Dispel MMR Concerns

"Because it is a live virus vaccine that we can't give to immunocompromised patients, many of our employees were worried that if they got this vaccine they would put highly immunized patients at risk," Babcock said. They were concerned about "transmitting to a patient or a family member that might be immunocompromised."

On the contrary, by getting vaccinated, the HCWs were protecting patients and immunized family members who rely on the herd immunity of others to protect them from measles, Babcock emphasized.

"There have been no cases of transmission of vaccinated healthcare workers transmitting [measles] to patients," she added. "The CDC recommends no work restrictions for people who have been vaccinated. This is true even if someone has been vaccinated — which can happen in a small percentage of people — and develop some symptoms like a rash or a low-grade fever. They are still not infectious. That is an immune response to the vaccine."

> "EXPOSURE AVOIDANCE IS THE MAIN GOAL THROUGH SCREENING, MASKING AND PATIENT ISOLATION."

Approximately 5-15% of susceptible persons who receive the MMR vaccine will develop a low-grade fever and/or mild rash 7-12 days after vaccination. Again, they are not infectious, and this does not require exclusion from work.

Of course, exposure avoidance is the main goal through screening, masking, and patient isolation. However, questions also come up about special situations like transporting patients within or between facilities.

"For most of us who are working with people who may be transferred between facilities, that staff in the ambulance or transport service needed to be immune and wear PPE," she said. "If the patient can be masked, they should be."

The ambulance should be taken out of service for two hours to allow the virus to dissipate and for the vehicle to be cleaned before use on another patient, she added.

"For transport within the facility, we usually try to mask the patient and not the transporters for most diseases," she said. "For measles, try to do both — mask the staff and the patient."

Even if the patient is masked, Babcock recommended clearing the hallways during transport and airing out any elevators that were used. ■

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FDA Calls for Redesigned Scopes to Protect Patients

Call for disposable components for hard-to-clean duodenoscopes

Conceding that conventional duodenoscopes cannot be reliably reprocessed between patients, the Food and Drug Administration (FDA) is recommending that manufacturers and providers move to disposable components for the intricate devices.

"The FDA is recommending a gradual transition to duodenoscopes with disposable components because full market withdrawal of conventional, fixed endcap duodenoscopes is not feasible at this time," the agency stated.[1] "Removing these devices from the market too quickly could create a shortage of duodenoscopes and prevent patients from accessing this beneficial and often life-saving procedure. The FDA believes, at this time, the continued availability of these devices is in the best interest of the public health."

The action comes after a meeting earlier this year at the Centers for Disease Control and Prevention (CDC), where FDA officials told CDC infection advisors that some 3-5% of reprocessed duodenoscopes remain contaminated with potentially infectious organisms. (*See* Hospital Infection Control & Prevention*, July 2019*.)

Expressing alarm at this clear threat to patient safety, the CDC's Hospital Infection Control Practices Advisory Committee (HICPAC) urged the FDA to take action. In a remark that now seems prescient, **Lisa Maragakis**, MD, MPH, co-chair of HICPAC, said, "It really does call for a disposable product or a complete paradigm shift and redesign."

That appears to be what the FDA is attempting, but duodenoscopes will remain a concern during a transition period that could take years.

"Because of challenges with cleaning these devices for reuse (reprocessing) and persistent high levels of contamination, the agency is recommending moving away from using duodenoscopes with fixed endcaps to those with disposable components that include disposable endcaps — or to fully disposable duodenoscopes when they become available," the FDA said in a statement. "Disposable designs simplify or eliminate the need for reprocessing, which may reduce between-patient duodenoscope contamination as compared to reusable, or fixed, endcaps.

Duodenoscopes became a national concern in 2014, when the CDC reported[2] a 2013 outbreak of carbapenem-resistant Enterobacteriaceae linked to the devices. The intricate scopes are used to assess the pancreas and other organs in endoscopic retrograde cholangiopancreatography (ERCP).

Some 500,000 ERCP procedures using duodenoscopes are performed annually in the United States. Research has revealed that the standard protocol at many hospitals of reprocessing these scopes with high-level disinfection — even if it is performed twice consecutively[3] — still leaves patients at some risk.

"The FDA is reminding patients that the risk of infection from inadequate reprocessing is relatively low and patients should not cancel or delay any planned procedure without first discussing the benefits and risks with a healthcare professional," the agency stated.

In addition to transitioning to safer devices, the FDA is calling on device manufacturers to develop new duodenoscope reprocessing procedures that will reduce the risk and infection. Discussions at the CDC meeting indicated that some reprocessing instructions have as many as 40 steps, increasing the likelihood of a breach in aseptic technique at some point in the process. The FDA hopes the transition to more scopes with disposable endcaps will reduce and simplify duodenoscope reprocessing, lowering the risk of infection as the devices are reused on patients.

"We are also encouraging the manufacturers of these duodenoscope models to assist healthcare facilities with their transition plans," **Jeff Shuren**, MD, JD, director of the FDA's Center for Devices and Radiological Health, said in a statement. "This is why we're communicating with healthcare facilities now — so they can begin developing a transition plan to replace conventional duodenoscopes — and those facilities that are purchasing duodenoscopes with fixed endcaps can invest in the newer, innovative models."

Additional FDA actions include ordering new post-market surveillance studies on duodenoscopes with disposable endcaps, and requesting the inclusion of "real-world contamination rates" in scope labeling. ■

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Kill the Bug, Hurt the Worker

Exposures to disinfectants can cause COPD

Powerful cleaning and disinfectant products are being deployed in hospitals to eradicate dangerous pathogens on environmental surfaces.

Both spore-forming *Clostridioides difficile* and an emerging fungal strain of *Candida auris* require strong sporicidals to be eradicated from the hospital environment. Yet the price of protecting the patient is being exacted on healthcare workers who may have serious complications after repeated exposure to these chemicals in disinfectants.

Exposure to disinfectants and cleaning products in the hospitals over time puts nurses at increased risk of developing chronic obstructive pulmonary disease (COPD), investigators reported.[1]

"In a cohort study of 73,262 U.S. female nurses participating in the Nurses' Health Study II who were followed up from 2009 to 2015, occupational exposure to cleaning products and disinfectants was significantly associated with a 25% to 38% increased risk of developing chronic obstructive pulmonary disease independent of asthma and smoking," the authors noted.

Previously, exposure to disinfectants in healthcare workers has been associated with respiratory health outcomes, including asthma. Moreover, pathogens like spore-forming *C. diff* and emerging *C. auris* require strong disinfectants to be removed from surfaces.

Given the implications of the COPD findings, *Hospital Infection Control & Prevention* reached out to lead author **Orianne Dumas**, PhD, a respiratory disease researcher at the Université de Versailles in Bretonneux, France.

HIC: You found that use of several specific disinfectants was associated with higher risk of COPD development, with many used concurrently. Did you find evidence of a dose-response effect; that is, the greater the frequency and/or duration of exposure, the higher the risk of COPD?

Dumas: We found a dose-response effect according to the frequency of cleaning/disinfection tasks. We did not examine dose-response effect according to duration of exposure. Indeed, in our study we could only investigate the impact of recent exposure (the follow-up duration was about six years), as we did not have detailed information on the duration of exposure over the lifetime.

HIC: This study included nurses, but is it reasonable to extrapolate that housekeeping and environmental service workers also would be at higher risk of COPD?

Dumas: Other epidemiological studies have reported increased risk of COPD in other professions regularly exposed to disinfectants and cleaning products, such as cleaning workers. In addition, some of these disinfectants, such as bleach and quat, are frequently used in ordinary households. The potential impact of domestic use of disinfectants on COPD development should be investigated.

HIC: You found that "the highest risks of COPD incidence among nurses exposed to hypochlorite bleach or hydrogen peroxide and in those combining these exposures with exposure to aldehydes." How commonly are these used in healthcare?

Dumas: Glutaraldehyde and hydrogen peroxide are high-level disinfectants mainly used for medical

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instruments. Bleach has a of variety of uses in healthcare settings, including disinfection of surfaces such as floors and furniture.

HIC: What are some possible interventions and alternatives to reduce the risk of these chemicals? Would wearing a mask and/or respirator be partially protective?

Dumas: Prevention issues are particularly sensitive in healthcare settings. Indeed, adequate levels of disinfection must be maintained to protect patients and workers from healthcare-associated infections. Further studies are needed to determine adequate prevention strategies to protect the workers' respiratory health. Potential safer alternatives include emerging nonchemical technologies for disinfection (for example, steam, UV light) or green cleaning. Whether the methods of product application (wiping vs. spraying), the environment characteristics (ventilation, room size), or use of masks may modulate respiratory risk also should be investigated. ■

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CME/CE OBJECTIVES

Upon completion of this educational activity, participants should be able to:

1. Identify the clinical, legal, or educational issues encountered by infection preventionists and epidemiologists;
2. Describe the effect of infection control and prevention issues on nurses, hospitals, or the healthcare industry in general;
3. Cite solutions to the problems encountered by infection preventionists based on guidelines from the relevant regulatory authorities, and/or independent recommendations from clinicians at individual institutions.

CME/CE QUESTIONS

1. **Five states only allow medical exemptions to childhood vaccinations. Which of the following is not one of those states?**

   a. West Virginia
   b. California
   c. Maine
   d. Oklahoma

2. **Who invented the first vaccine for smallpox?**

   a. Alexander Fleming
   b. Edward Jenner
   c. Louis Pasteur
   d. Jonas Salk

3. **The use of which class of antibiotics, often associated with triggering *Clostridioides difficile* infections, has been greatly reduced in recent years?**

   a. Penicillins
   b. Cephalosporins
   c. Fluoroquinolones
   d. Aminoglycosides

4. **The FDA is recommending a gradual transition to duodenoscopes that:**

   a. have disposable components.
   b. have fixed endcaps.
   c. can be safely reused with antibiotic prophylaxis of patients.
   d. have reusable endcaps.