



HOSPITAL INFECTION CONTROL & PREVENTION

THE TRUSTED SOURCE FOR THE INFECTION PREVENTIONIST FOR MORE THAN FOUR DECADES

JULY 2017

Vol. 44, No. 7; p. 73-84

➔ INSIDE

Heart of Darkness:
Vaccine is ready 76

IP in the mirror:
Program review 76

Outside of the Box:
A new infectious threat to hemodialysis patients may be common in many facilities 78

TJC Citing:
Hospitals are continuing to run afoul 80

SSIs seasonal?
Researchers are unraveling some telling indications that surgical site infections are much more likely to occur in the hottest months of the year 80

HCV:
Which is better: to test and treat, or to pursue PEP? 82

Feds Issue Call to Action on Legionella Outbreaks

CMS inspectors will cite if no water management in place

By Gary Evans, Medical Writer

Federal health officials report a striking surge in healthcare-associated Legionnaires' disease (LD), with the Centers for Medicare & Medicaid Services (CMS) underscoring the threat by ordering assessments of hospital water systems where the pathogen thrives.

"In a recent review of LD outbreaks in the United States occurring in 2000–2014, 19% of outbreaks were associated with long-term care facilities and 15% with hospitals," CMS said in a June 2, 2017, memo to inspectors.¹ "The rate of reported cases of legionellosis, which comprises both LD and Pontiac fever (a milder, self-limited, influenza-like illness) has increased 286% in the U.S. during 2000–2014, with approximately 5,000 cases reported to the Centers for Disease Control and

Prevention (CDC) in 2014. The CMS expects Medicare-certified healthcare facilities to have water management policies and procedures to reduce the

risk of growth and spread of *Legionella* and other opportunistic pathogens building water systems."

The regulatory move was supported by the CDC at a press conference, where the general consensus was that the threat of healthcare-associated

LD warrants action beyond voluntary efforts like those recommended in a CDC toolkit² on the issue.

"This [CMS memo] is essentially a warning to healthcare facilities that if you don't have a good water management plan, this is the time to study up and develop one," **Anne Schuchat**, MD, acting director of the CDC, noted at a June 6 press conference.

"THIS IS A BIG CULTURE CHANGE FOR INFECTION CONTROL AND HOSPITAL FACILITIES."

AHC Media
A RELIAS LEARNING COMPANY

NOW AVAILABLE ONLINE! VISIT AHCMedia.com or **CALL** (800) 688-2421

Financial Disclosure: Senior Writer Gary Evans, Editor Dana Spector, Editor Jill Drachenberg, Reviewer Patti Grant, RN, BSN, MS, CIC, Reviewer Patrick Joseph, MD, and AHC Editorial Group Manager Terrey L. Hatcher report no consultant, stockholder, speaker's bureau, research, or other financial relationships with companies having ties to this field of study.

Hospital Infection Control & Prevention®, ISSN 0098-180X, is published monthly by AHC Media, a Relias Learning company
111 Coming Road, Suite 250
Cary, North Carolina 27518.

Periodicals Postage Paid at Atlanta, GA 30304 and at additional mailing offices.

POSTMASTER: Send address changes to:
Hospital Infection Control & Prevention
P.O. Box 550669
Atlanta, GA 30355.

SUBSCRIBER INFORMATION:
Customer Service: (800) 688-2421
Customer.Service@AHCMedia.com
AHCMedia.com
Hours of operation: 8:30-6, Monday-Thursday,
8:30-4:30 Friday EST

EDITOR: Dana Spector,
(404) 262-5470 dspector@reliaslearning.com

SUBSCRIPTION PRICES:
U.S., Print: 1 year with free *AMA PRA Category 1 Credits™* or Nursing Contact Hours (12 issues), \$499. Add \$19.99 for shipping & handling. Online only, single user: 1 year with free *AMA PRA Category 1 Credits™* or Nursing Contact Hours, \$449. Outside U.S., add \$30 per year, total prepaid in U.S. funds.

Discounts are available for group subscriptions, multiple copies, site-licenses, or electronic distribution. For pricing information, please contact our Group Account Managers at Groups@AHCMedia.com or (866) 213-0844.

ACCREDITATION:
Relias Learning LLC is accredited as a provider of continuing nursing education by the American Nurses Credentialing Center's Commission on Accreditation. Contact hours [1.5] will be awarded to participants who meet the criteria for successful completion. California Board of Registered Nursing, Provider CEP#13791.

Successful completion of this CME activity, which includes participation in the evaluation component, enables the participant to earn up to 1.5 MOC points in the American Board of Internal Medicine's (ABIM) Maintenance of Certification (MOC) program. Participants will earn MOC points equivalent to the amount of CME credits claimed for the activity. It is the CME activity provider's responsibility to submit participant completion information to ACCME for the purpose of granting ABIM MOC credit.

Relias Learning is accredited by the Accreditation Council for Continuing Medical Education (ACCME) to provide continuing medical education for physicians.

Relias Learning designates this enduring material for a maximum of 1.5 *AMA PRA Category 1 Credits™*. Physicians should only claim credit commensurate with the extent of their participation in the activity.

This activity is effective for 36 months from the date of publication.

Opinions expressed are not necessarily those of this publication. Mention of products or services does not constitute endorsement. Clinical, legal, tax, and other comments are offered for general guidance only; professional counsel should be sought for specific situations.

Copyright© 2017 by AHC Media, LLC, a Relias Learning company. All rights reserved. No part of this newsletter may be reproduced in any form or incorporated into any information-retrieval system without the written permission of the copyright owner.

Asked why the CDC guidelines like the water management toolkit have not effectively reduced the problem, Schuchat gave infection preventionists a somewhat mixed review.

“This is a big culture change for infection control and hospital facilities,” she says. “We have had tremendous uptake on improving use of antibiotics and improvements in healthcare-associated infections through handwashing and other checklist kind of processes. We know we have a lot of opportunity to get the word out, and we know the infection control force in this country is a tremendous set of champions for patient safety. We think the CMS [action] is a very important way that the uptake will happen, because when hospitals are visited this will be one of many things that is checked consistently.”

An Inspector Calls

CMS surveyors were told in the memo to review policies, procedures, and reports documenting water management implementation results to verify that facilities:

- conduct a facility risk assessment to identify where *Legionella* and other opportunistic waterborne pathogens could grow and spread in the facility water system;
- implement a water management program that considers industry standards and the CDC toolkit, and includes measures such as physical controls, temperature management, disinfectant levels, visual inspections, and environmental testing.

“Healthcare facilities are expected to comply with CMS requirements to protect the health and safety of patients,” CMS stated. “Those facilities unable to demonstrate measures to minimize the risk of LD are at risk of

citation for noncompliance with the CMS Conditions of Participation.”

Healthcare Transmission

At the press conference, the CDC released the findings of an analysis of 21 U.S. jurisdictions (20 states and New York City). Healthcare-associated LD was confirmed in 76% of the jurisdictions.

“People are getting LD from healthcare facilities in most parts of the country,” Schuchat says. “Most of these infections can be prevented with better water management programs. [We] have issued tools to help facilities with building water management, but this study suggests that more is needed to protect patients from contracting the deadly pneumonia from the facilities’ showers or other water exposures.”

With the CMS order as impetus, the CDC is hoping that hospital water management programs will be added to the list of bedrock infection control principles like hand hygiene and antibiotic stewardship.

“LD in healthcare facilities is widespread, deadly, and preventable,” Schuchat says. “About 10% of [all] people who get this infection die from it, but in this analysis we found that the death rate is higher in healthcare facilities — 25% of people die if they get sick with Legionnaires’ disease while in the hospital [or] long-term care.”

Numerous LD outbreaks over the years have been traced to the waterborne bug becoming aerosolized and inhaled in shower mist. Spas and baths, cooling towers, decorative fountains, and medical equipment have also been implicated in outbreaks.

To cite but one classic example of a healthcare outbreak, two patients

died and eight others were infected in an outbreak in a cancer ward in an Alabama hospital reported in 2015.³ The hematology-oncology unit at the hospital had undergone recent construction, and infections began to appear right after the unit opened. Investigators discovered that a reservoir of standing water sat in the distal piping for the two months before shower heads and other fixtures were installed and the unit was opened. Environmental sampling revealed *Legionella pneumophila* serogroup 1 in the potable water at 50% (17/34) of hematology-oncology unit sites, including all patient rooms tested. Three clinical isolates were identical to environmental isolates from the unit. The exact exposure sources could not be determined, but all evidence tilted toward the individual shower units in each patient's room.

While that case involved a renovation, old complex hospital plumbing systems in general can create areas conducive to *Legionella* growth and biofilm formation, but strategies that include heating water and using chemicals can effectively reduce the threat. The CDC currently recommends that infection preventionists should begin an outbreak investigation after one confirmed case of healthcare-associated LD or two probable cases.

In the analysis reported at the CDC press conference, a definite case of healthcare-associated LD was defined as a patient who had been in the hospital at least 10 days before the symptoms appeared.

"A possible healthcare-associated case [was defined as] when a patient was in a healthcare setting for some portion of the 10 days before developing LD symptoms," Schuchat says. "Our study found 20 of 21 jurisdictions had possible healthcare-associated LD cases. Sixteen of 21

had definite healthcare-associated LD. In those 16 jurisdictions, cases occurred in 72 different facilities, with the number of cases ranging from one to six per facility."

In percentage breakdowns of the confirmed cases, 80% were in long-term care facilities, 18% in hospitals, and 2% in some combination of both.

"In terms of the possible cases, the 20 jurisdictions had cases in about 415 different healthcare facilities," she says. "Thirteen percent were associated with LTC facilities, 49% with hospitals, and 26% with outpatient facilities. These findings suggest that LD is a problem that can affect any state, and that all healthcare facilities can take action to protect patients."

\$38k a Case

Previous analysis shows insurers pay some \$430 million in hospitalization claims for LD nationally. Total healthcare costs per patient averaged about \$38,000, she says.

The aforementioned CDC water management tool includes a checklist to help identify common problems.

"It gives examples of where *Legionella* could grow and spread in a building, and it gives ways to reduce the risk of *Legionella* in water systems," says **Cynthia G. Whitney**, MD, MPH, chief of the respiratory diseases branch in the CDC Division of Bacterial Diseases. "Because of the vulnerable population they serve, it is important for healthcare facilities to have a water management program and a dedicated team to correctly execute it."

Healthcare providers on the front-line should "think *Legionella*," having a high index of suspicion in patients with healthcare-associated pneumonia, she added at the press conference.

Tests can detect *Legionella* to confirm or rule out suspicion, she says.

All 50 states and two large cities report basic LD data to the CDC, but not all report information on where transmission may have occurred. During 2015, approximately 6,000 cases of Legionnaires' disease were reported to CDC, but only about half included exposure data.

A CDC Vital Signs⁴ report released at the press conference estimates that overall 3% of Legionnaires' disease cases are definitely associated with a healthcare facility. Another 17% of LD cases are possibly associated with health-care facility. There are at least 20 outbreaks reported each year.

"We know that LD is under-reported," Schuchat says. "The numbers we report each year are just the tip of the iceberg." ■

REFERENCES

1. CMS. Center for Clinical Standards and Quality/Survey & Certification Group. Requirement to Reduce Legionella Risk in Healthcare Facility Water Systems to Prevent Cases and Outbreaks of Legionnaires' Disease (LD). Ref: S&C 17-30-ALL. June 02, 2017: <http://go.cms.gov/2r3ue6B>.
2. CDC. Developing a Water Management Program to Reduce Legionella Growth & Spread in Buildings: A Practical Guide to Implementing Industry Standards. Version 1.1 June 5, 2017: <http://bit.ly/2sdSW9a>.
3. Watkins FL, Harris AM, Toews, K, et al. Healthcare-Associated Outbreak of Legionnaires' Disease on an Inpatient Hematology-Oncology Unit — Alabama, 2014. CDC 64th Annual EIS Conference. Atlanta: April 20-23, 2015.
4. CDC. Legionnaires' Disease. Vital Signs 2017: <http://bit.ly/2r5Xg5K>.

Heart of Darkness: Ebola Vaccine in Congo

WHO keeps a wary eye on Ebola's unwelcome return

While the world holds its breath, there are signs an outbreak of Ebola in the Democratic Republic of the Congo may be fading back. However, given the devastation and some 11,000 deaths caused by the 2014 outbreak in West Africa, the last thing the World Health Organization (WHO) is going to do is take this deadly hemorrhagic fever lightly.

“There are currently a total of five confirmed, three probable, and one suspected case,” the WHO reported on June 5, 2017.¹ “Of these, four survived and four died, resulting in a case fatality rate of 50%. The confirmed and probable cases were reported from Nambwa (four confirmed and two probable), Ngayi (one probable) and Mabongo (one confirmed). The outbreak remains confined to the Likati Health Zone. ... The affected area is remote and hard to reach, with limited communication and transport infrastructure.”

WHO modeling suggests the risk of further Ebola cases is “currently low but not negligible. ... As of this reporting date, 76% of simulated scenarios predict no

further cases in the next 30 days.”

As of the June 5 report, one previously suspect case had been confirmed as Ebola infected, the WHO reports. The date of onset of infection was April 29, 2017.

“This case was previously reported as a suspected case and is part of the known transmission chain,” the WHO said. “The contacts for this individual have already been followed up and graduated from the contact follow-up period. The date of the last confirmed case reported remains as 11 May 2017.”

One new suspected case was also reported in the June 5 update, and 15 case contacts are being followed up daily.

Ring of Fire

One grim gift of the last Ebola outbreak was the development of what is thought to be a highly effective vaccine. In a tactic similar to the one used to eradicate smallpox, WHO is considering vaccinating a “ring” of people around the affected area.

“The protocol for a possible ring vaccination has been formally

approved by the national regulatory authority and Ethics Review Board of the Democratic Republic of the Congo,” WHO reports. “The government [of Congo] with support of WHO and other partners are working on detailed planning and readiness to offer access to the rVSV ZEBOV experimental/investigational vaccine, within the expanded access framework, with informed consent and in compliance with good clinical practice. Planning and readiness should be completed urgently to be able to rapidly initiate ring vaccination should an Ebola laboratory-confirmed case be identified outside already defined chains of transmission. The vaccine would be offered to contacts and contacts of contacts of a confirmed Ebola case, including healthcare workers and field laboratory workers.” ■

REFERENCE

1. WHO. Ebola Virus Disease. Democratic Republic of the Congo. External Situation Report 21. 05 June 2017: <http://bit.ly/2s433O8>.

Are You Ready for Next Infectious Disease Event?

‘Plans are useless. It is the planning that is indispensable.’ Dwight Eisenhower

“This one of my all-time favorite quotes because I think it is reassuring in some ways,” says **Stephen Weber**, MD, an epidemiologist and chief medical officer at the University of Chicago. “It is a realization that our best plans foster collaboration,

flexibility and adaptability. Even with new tools, resources, and networks to detect emerging pathogens — early warnings for outbreaks and epidemics — the fact is the next thing that affects the American and international health system from an infectious

standpoint may be something we are not familiar with today. Our planning — which challenges us to be effective decision-makers — is much more valuable than the prescriptive information about any one single pathogen.”

Speaking at a recent emer-

gency preparedness webinar held by the CDC, Weber urged infection preventionists to prioritize risk assessments that are somewhat introspective in that they go beyond next-threat thinking to assess where your skills and program fit into the response plan.

“Risk assessment is the cornerstone,” he says. “It is the foundation, the starting point for our planning. If you think as a team — no matter the resource base, the experience you have — that you don’t have time for risk assessment and planning, I think you’re wrong.”

IPs and hospital epidemiologists who are not well-positioned within their organization and connected to key collaborators during routine operations will be severely challenged when an infectious disease emergency strikes, he warns.

And that is “when,” not “if,” as we have already seen the anthrax attacks, SARS, H1N1 pandemic flu, MERS, and Ebola occur in this young century. Weber spoke of lessons learned dealing with a series of threats over the years at his hospital, which is a cab ride away from one of the world’s busiest airports.

“We [became] very familiar with the schedule of direct flights from West Africa to O’Hare because we felt like we were on the front lines,” he says. “We ultimately took care of a handful of patients with possible or suspect Ebola — all of them ultimately excluded — but any of you who have been in that position know that is small comfort when you are in the moment.”

Thus, before the next infectious disease event, consider your place in the organization, assess your authority to act to protect patients, and honestly evaluate if you need to improve your skills

and knowledge base to be prepared for a major event, he says.

Questions for the IP

Weber posed a series of rhetorical questions to construct a kind of overall risk assessment for infection control effectiveness and resilience under fire. IPs can consider these factors in the calm before the next ID emergency, which may reveal everything from adequate PPE supplies to the grace under pressure of individuals and teams. Consider some of Weber’s points on these key tenets:

Authority: “Not in the setting of an outbreak, not in the moment of a crisis, but do you have the statutory authority, either externally or by internal policy, to say that you and your team will [protect] the safety of patients [with regard to] infection prevention? Put simply, can you be outvoted by another department, or even an executive, in the management of infections?”

Planning: “Are you tied to operational plans and strategic planning? Are you embedded in the work of determining of the priorities of the organization? Are you placed in the right level of the organization? Do you have access up and down the chain of command?”

“All-access” pass: “I like to use this [term] as a bit of shorthand — the idea of an organizational ‘all-access pass.’ Does the infection control and hospital epidemiology program have the access and visibility that they need? Put simply, is your ID or swipe badge a master key? Does it get you into to every room, every place, and every operating theater in the organization? Because I submit to you, if an infection prevention program is blocked access to any of the geographical places in an orga-

nization, then you have got more than just a lockout situation. You may not not be [effectively] placed in terms of the tasks ahead, whether they be emergency or routine.”

Collaboration: This includes partnerships within and without your hospital, from quality improvement, risk management, business continuity, and operating teams. Build relationships in local government, public health, even hospitals normally seen as competitors, Weber advises.

“I don’t have a clear answer for all of this, but these are the folks you need to be collaborating with — in partnership, not in an adversarial or competitive relationship,” he says. “It needs to be sorted out, and I submit to you it needs to be sorted out well in advance of any kind of event. It’s these connections throughout the team — with everyone from food service to physical plant, to laboratory and nursing. These are interpersonal connections. These are relationships that need to be built.”

Even so, IPs need to keep a professional edge, as there will be stressful situations where patient safety trumps collegial bonds. “The friendships can’t come at the expense of what needs to be done for our patients,” Weber says.

A Look in the Mirror

Credibility: “Do I have and demonstrate expertise?” he says. “It’s not enough to sit quietly in the room and know that you’re right. Do I speak up, can I assert myself? And when I do, is my information and knowledge up to date? The time that we spend on continuing education, collaboration, teaching, and education is essential. Because the moment we get scooped in our core content expertise by someone else inside or out of our organization, our credibility falls

a notch. That's a lot of pressure for all of us because it takes time. But the reality is it is time well spent."

Reliability: "Am I present? Am I consistent, in or out of crisis?" he says. "That internal consistency is really a key feature. Is it your management style to drag your organization from one crisis to another? The sky is falling – it's CRE today, its *C. diff* tomorrow, its disinfection the next day. That is going to make it really hard to manage a real-time crisis. Those issues are obviously significant and important for our patients, but can we be consistent and levelheaded in our work?"

Approachability: "A big part of approachability is flexibility," Weber notes. "We want people to understand that we are speaking for the safety of our patients, but we can't be so predictable that folks feel we are going to be [overly rigid]. We need to be ready to listen to new ideas and concerns, and particularly when we get into the kind of events we're talking about because in those cases, there is often not an existing policy or a best practice."

Supplies: For most organizations, it is not prudent or economical to stockpile critical equipment for emergencies when there are existing pressing needs, he notes.

"Look, we've all had or we will have a time when we wish we had stockpiled more equipment," Weber says. "The reality is with capital budgets and resources for storage

at your places — that are probably not much different than mine — it is probably not economical to stockpile large numbers of critical equipment. It's just not going to happen. When we are choosing between life-saving technology that can be applied to the next patient that comes into our ED, the next cancer patient, versus this hypothetical [threat], it's hard to make the case."

One approach to this problem is to be flexible in purchasing to ensure that newly purchased devices are suitable for use routinely and in an emerging-pathogen event, he says.

"Be flexible and judicious with your purchasing folks when you're cycling through new ventilators, new anesthesia machines," Weber says. "Are the devices suitable for managing emerging pathogen events? Can they be safely cleaned and disinfected? Are they durable enough for higher potency disinfection and cleaning? Those are things that can be embedded now."

In the Event: Prepare job action sheets relevant to the anticipated event in accordance with standards and sometimes independent of usual or routine responsibilities, he says. For example, you don't necessarily want the people who know the most about the infectious disease in the room trying to perform the procedures.

"What's the right role for an infection preventionist and for an infectious disease doc?" Weber says. "During the Ebola situation, we said

the last person we want in a space suit in the room is an ID doc. I say this as a board-certified ID doc. I don't need to be in the room. I'm not so great with the procedures, moving around in that kind of suit to put in a line or secure access. We opted for a model where our intensivists really became the folks in the room and those with expertise in disease management stayed out. People can have different plans for that and there is no right answer, but it shouldn't end up being a coincidence of who is at the bedside. It should be thought out in advance."

IPs should serve in some capacity as medical technical specialist with open lines to communication across the response chain, he adds.

"In a primary biological or infectious incident or event, I submit that the infection preventionists or healthcare epidemiologists should serve as 'medical technical specialists,'" he says. "You need to have the ear of that incident commander so that she or he knows that there is no decision that is going to be made without your input."

Likewise, know who is on your B team, as everyday concerns about burnout and fatigue in healthcare workers will multiply exponentially in a crisis. Moreover, key staff may be missing when an event unfolds.

"Because you know what, this might happen in the middle of APIC or IDWeek," he says. "You may not be there. It may be that new person you just hired who might be at the table on that first day." ■

Think Outside of the [Recessed] Box

Hemodialysis patients may be at risk from wall box units

A common feature in hemodialysis units — recessed wall boxes to hook up water and other lines — can become a reservoir for pathogens if not subjected to routine cleaning

and infection control measures, a CDC investigator reports.

Shannon A. Novosad, MD, an officer in the CDC epidemic intelligence service recently reported

the outbreak in Atlanta at the annual EIS meeting.¹

Approximately 29,000 bloodstream infections (BSIs) occur in hemodialysis patients annually,

but gram-negative bacteria are an uncommon cause. In November 2016, Novosad and colleagues investigated an unusually large cluster of gram-negative BSIs at three outpatient hemodialysis facilities (A, B, and C) owned by the same company.

They conducted a case-control investigation, infection control review, and collected environmental samples. A total of 58 cases occurred, with 33 infections in facility A, 19 in B, and 6 in facility C. One patient died during the 30-day follow-up period.

“They had a median length of stay of almost eight days, so they did require significant medical care,” Novosad tells *Hospital Infection Control & Prevention*.

The predominant organisms included two opportunist water bugs, *Serratia marcescens* (21 cases) and *Pseudomonas aeruginosa* (12 cases). Cases were more likely than controls to use a central venous catheter (CVC) for dialysis (85% vs. 13%).

“Many, if not all, of them required the catheters to be removed or replaced and they were on antibiotics,” Novosad says.

IC Breakdowns

Facility staff reported pooling of water in recessed wall boxes that house connections between dialysis machines and facility water. Environmental samples revealed *S. marcescens* and *P. aeruginosa* in dialysis treatment areas, including the wall boxes. *S. marcescens* from a wall box at Facility C was indistinguishable by molecular epidemiology from a case-patient isolate. The CDC investigators identified multiple opportunities

for healthcare workers’ hands to contaminate CVCs with water from the wall box connections. Wall boxes were identified as a unique source of water contamination in this multi-facility BSI outbreak that particularly affected patients with CVCs. The company is working with public health officials to remediate wall boxes and improve infection control practices.

“[Wall boxes] are actually very common,” she says. “Basically, every dialysis station in these clinics and dialysis units — the ones we were in had 30 to 40 stations — had one of these individual wall boxes. For each dialysis session, the machine has to be hooked up to this wall box. Different things come from the wall box into the dialysis machine — the water that has been purified as well as the bicarbonate and acid that is required for the dialysis. And in addition, there is a drain line that leaves the machine and goes back to the wall box and that’s for the waste.”

The latter was the likely culprit, as some of the waste water bubbled up in the basin instead of being completely drained off.

“We think it is not the water itself that goes into the machine, but the water that comes out of the waste line,” she says. “[There may have been] biofilms forming on drain lines that were kind of bubbling back up or clogging.”

That created enough of a reservoir for healthcare workers to contaminate hands and dialysis machine surfaces and equipment.

“We did a lot of interviews with staff at these facilities because these infections were going on over an extended time period,” she says. “We were really able to talk to them about how practices had changed and what they noticed about the wall

boxes over time. Their practices at the time — they weren’t necessarily performing hand hygiene whenever they touched the wall boxes. The [boxes] were not necessarily perceived as a contaminated or dirty area. A lot of times they would touch the wall box and then either go directly back to the patient, or manipulate their dialysis machine, adjust settings or touch the buttons. We think this back and forth — getting [the contaminated water] on your hands and either directly transferring it to the patient at that time or coming in into contact with the dialysis station — were the primary means by which this was happening.”

The outbreak subsided with education and observation, including auditing to make sure that the techs and nurses who touched the wall boxes were practicing hand hygiene. Daily cleaning and disinfection of the wall boxes became routine.

“We helped them formalize this process during the field investigation,” she says. “Then, we went back with another CDC team and visited more facilities in the area and looked at how wall boxes were being cleaned. We are working with facilities, administrators, and the company as a whole right now, looking at a protocol or process to use for disinfection — not just of the wall boxes, but of the dialysis stations in general.”

Anomaly or Common Threat?

The CDC still is trying to determine if the outbreak represents some kind of anomaly or whether water boxes could be a source of dialysis infections that are probably underreported. For now, err on the side of suspicion that wall boxes

could be involved if you start seeing dialysis infections.

“We are in the process of working with the dialysis company in this situation to really try to get this message out because every outpatient dialysis facility has these wall boxes,” she says. “While the configuration can vary, we think this could definitely be a problem in more places. It’s definitely something we are looking into.”

As with other outbreaks, the sheer number of cases may have revealed a problem that also is occurring in intermittent, ongoing infections.

“We think in this case we were able to make this association, and it may not have been noticed [except] for the large number of infections,” Novosad says. “It could be something that is occurring in much smaller numbers in other places, and

it is still under the radar for a lot of people.” ■

REFERENCE

1. Novosad SA, Lake J, Soda E, et al. Unusual Source of Gram-Negative Bloodstream Infections in Hemodialysis Patients — *Illinois and Missouri*, 2015-2016. CDC EIS Conference. Atlanta, April 24-27, 2017.

The Joint Commission Citing for Sterilization

Hospitals are continuing to run afoul of The Joint Commission (TJC) accreditation inspectors for equipment that has been improperly sterilized or subjected to insufficient high-level disinfection (HLD).

“From 2013 through 2016, Joint Commission immediate threat to life (ITL) declarations directly related to improperly sterilized or HLD equipment increased significantly,” TJC recently reported.¹ “In 2016, 74% of all ITLs were related to improperly sterilized or HLD equipment.”

The most frequently cited TJC standard in these inspections is Infection Control (IC) 02.02.01, which calls for facilities to protect patients from infections caused by inadequately processed equipment.

“[T]he most vulnerable locations for lapses in sterilization or HLD of equipment are

ambulatory care sites, including office-based surgery facilities, and decentralized locations in hospitals, even though the data shows higher noncompliance rates for critical access hospitals and hospitals,” TJC states.

Common lapses in TJC surveys include:

- insufficient training in sterilization and HLD equipment;
- lack of leadership oversight;
- recommended protocols are undermined by “shortcuts;”
- no designated staff member assigned to sterilization and HLD;
- facility design or space issues prevent proper sterilization or HLD of equipment.

Questions you may be asked during a survey include:

- How often do you assess for staff competency? How are managers/supervisors deemed

competent? Where are documented competences kept?

- Show me the instructions for use of the sterilizer, the endoscope, or HLD.
- Show me the evidence-based guidelines for HLD and/or sterilization.
- Show me the documentation logs for HLD and/or sterilization. Are they complete? Are there gaps?
- Is there enough storage provided to store endoscopes? Are there enough surgical instruments to minimize the use of immediate-use steam sterilization (aka “flash” sterilization)? ■

REFERENCE

1. The Joint Commission. Improperly sterilized or HLD equipment — a growing problem. *Quick Safety* 2017;33: <http://bit.ly/2qUn8q1>.

For Everything There Is a Season – Including SSIs?

Skin bacteria may thrive in warm weather

While it is way too early to advise patients to have elective surgery in the dead of winter, researchers are unraveling some telling indications that

surgical site infections (SSIs) are much more likely to occur in the hottest months of the year.

If confirmed, that means one of the most prevalent healthcare-

associated infections is seasonal, and the difference is quite dramatic. In a national study, researchers found that 26.5% more SSIs occurred in August than in January.¹

Put another way, temperatures above 90°F were linked to a 29% increased risk for an SSI compared to temperatures less than 40°F.

“I think this work has implications for surveillance because if these surgical site infections are seasonal, that would be something infection preventionists should know about,” says **Philip M. Polgreen**, MD, senior author of the study and associate professor of internal medicine and epidemiology at the University of Iowa. “If one was trying to do an intervention and rates went up or down, that might not be due to the intervention but due to the seasonal incidence. So, one can imagine starting an intervention in the fall and if rates [decline], that may not be due to the intervention but to the underlying seasonal pattern.”

That said, caveats and questions abound, and Polgreen and colleagues already are conducting a second study to try to bring the connection into sharper focus.

“I think it’s too early to make any specific recommendations,” he tells *Hospital Infection Control & Prevention*. “We still have work underway now that will hopefully allow us to not only describe the seasonal risk of individual surgeries, but also the [patient] populations that may be at more risk. For example, there may be an interaction between specific risk factors that we know exist, and seasonal effects. One could imagine that in particular subsets of patients it might be advised to delay surgery. That’s speculating, but the goal of our work is to define how risky is it and whether it’s more risky for certain patients than others. In some patients it may not matter at all.”

To determine whether the seasonality of SSIs can be explained by

changes in temperature, the authors conducted a retrospective cohort analysis. All hospital discharges with a primary diagnosis of SSI from 1998 to 2011 were considered cases. Discharges with a primary or secondary diagnosis of specific surgeries commonly associated with SSIs from the previous and current month served as an “at risk” cohort. They modeled the national monthly count of SSI cases both nationally and stratified by region, sex, age, and type of institution. They used data from the National Climatic Data Center to estimate the monthly average temperatures for all hospital locations. All discharge data were extracted from the Nationwide Inpatient Sample (NIS), the largest all-payer database of hospital discharges in the United States. They identified every adult hospitalization with a primary diagnosis of SSI from January 1998 to November 2011.

Using each hospital’s longitude and latitude, they identified all weather stations within 100 kilometers of the hospital, then extracted the average temperature and other meteorological data. The results show “that SSIs are seasonal for men, women, all age groups, and all geographic regions,” the researchers concluded. “... By incorporating weather into our analysis, we have demonstrated that the average temperature in the month of a hospitalization is an important risk factor for SSIs and that higher temperatures are associated with higher odds of SSI.”

Season’s Greetings

Of course, many infections, particularly of the viral variety, are expressed in the ebb and flow

of seasons. This pattern has been less clear for HAIs, though the authors cite studies that suggest *Clostridium difficile* infections peak during winter and spring. Similarly, some research has suggested the incidence of catheter-related bloodstream infections peak during the summer months. The link between SSIs and warmer weather has been made previously in smaller studies, though it is sometimes explained by non-weather factors.

“So, one could make the argument that maybe this is just because hardly any surgeries happen in December and in January,” Polgreen says. “That did not explain our findings.”

Another common argument that there is a “learner effect,” as more surgeries are performed by medical students in, for example, July.

“We accounted for that in our data set — there is a code for teaching and non-teaching hospitals — and again, that did not seem to be the case,” he says. “We need more granular data. Work is underway so we will have the exact data, the exact weather conditions, and the exact follow-up of patients and see if there is increased risk for not only specific surgeries but also specific weather conditions.”

In the interim, the reason that SSIs peak in the summer is unclear, but it coincides with other observations of a spike in skin and soft-tissue infections in the warmer months.

“Skin infections in general are seasonal,” he says. “We found a striking seasonal pattern with cellulitis and so it helps us sort of think of this in a scientific sense. SSIs are different than cellulitis, however they involve the skin. We actually started working on cellulitis first and found that pattern

and then went to the SSI patients.”

Elevated levels of bacteria may be found in certain anatomic locations with higher temperatures. Could the explanation be that certain bacteria thrive in hot weather and retreat during colder months?

“Not too much is known about

the seasonality of colonization, but we do know that the majority of SSIs are caused by bacteria that is often on patient skin,” Polgreen says. “[Thus], one approach to reducing surgical site infection is to decolonize patients prior to [elective] surgery.” ■

REFERENCE

1. Anthony CA, Peterson RA, Polgreen LA, et al. The Seasonal Variability in Surgical Site Infections and the Association With Warmer Weather: A Population-Based Investigation. *Infection Control & Hospital Epidemiology*, 2017;1-8. doi:10.1017/ice.2017.84

HCV: Is It Better to Test and Treat Than Try PEP?

Emerging consensus suggests that is the way to go

Despite — or perhaps because of — the incredible cure rates being achieved by new drugs for hepatitis C virus, experts say post-exposure prophylaxis for exposed healthcare workers is not the path to pursue. Given a host of undermining variables, it is better to repeatedly test a worker who suffers a needlestick, ready to treat as soon as a seroconversion occurs, experts concur.

As IPs are well aware, there is no vaccine for HCV. However, the drugs now available to treat HCV are highly effective, raising the question whether they could be used in a PEP protocol after healthcare worker exposures.

There certainly is a large contingent of patients who may be carrying the virus. Over the last five years, the number of new HCV infections has nearly tripled, reaching a 15-year high, according to the CDC. While the majority of those cases are in people age 55 and older — “baby boomers” — HCV infections are increasing most rapidly among in those in the 20 to 29 year age range.

“This is primarily a result of increasing injection drug use associated with America’s grow-

ing opioid epidemic,” the CDC reported.¹ “Still, three-quarters of the 3.5 million Americans already living with hepatitis C are baby boomers. [They] are six times more likely to be infected with hepatitis C than those in other age groups and are at much greater risk of death from the virus.”

Testing has never been more important, because there are now highly effective hepatitis C treatments called direct-acting antiretroviral (DAA) drugs.

“For a person who doesn’t have [co-infection] with HIV, the cure rates are around 97%-98%,” says **Gina M. Simoncini**, MD, MPH, assistant professor of clinical medicine at the Lewis Katz School of Medicine at Temple University in Philadelphia. “For patients who have HCV and HIV [the HCV cure rate is] around 95%, depending on the drugs and whether they already have cirrhosis of the liver.”

A question that is being explored by Simoncini and other researchers is whether the DAA drugs could be used as an HCV PEP regimen by healthcare workers following a needlestick exposure.²

The CDC estimates that the incidence of HCV transmission

after a needlestick is 1.8%. The CDC does not currently recommend using DAA drugs for HCV PEP, and Simoncini and colleagues hypothesized that this is due to the the lack of data, the low incidence of HCV seroconversion among healthcare workers, and the potential cost of the DAA drugs when used as PEP. They reviewed blood-borne pathogen policies at three hospitals (one institution declined to share its policy), and interviewed occupational health directors and infection preventionists at all four hospitals. For the three hospitals that reported seroconversion data over the last 10 years, there was only one case of HCV infection following a needlestick. However, it is likely that that HCV cases are being missed because sharps injuries go unreported and the virus may remain dormant for years.

“Underreporting is a major issue,” Simoncini says. “You can imagine you have trainees, medical students, who get a needlestick. They are embarrassed and they don’t want to go and seek care because it makes them look like they are not a good student or resident. It makes them feel like they have messed up. For nurses,

they are sometimes so committed to patient care they don't have an opportunity or the [staff] coverage to run downstairs to occupational health and get this taken care of."

With the DAA drugs making HCV essentially a treatable disease, perhaps it is time to refocus research on treatment of HCV seroconversion instead of HCV PEP, she says.

"About 20% of people who pick up hepatitis C clear themselves naturally with their immune systems [within about six months]," she says. "So, this has come up in this discussion — why not wait the six months to see if people [test positive]? You may have the relatively rare seroconversion that actually amounts to chronic infection, but why not just wait that six months and see if it clears and if they are one of those 20%? Then if not, do the [DAA treatment] and that should be covered by the occupational health workers' compensation."

Confounding Variables

Given the low seroconversion rate and other factors, it would be extremely challenging to assess DAA drugs for PEP and establish a concise protocol for the timing and duration of the intervention. Other researchers recently came to the same conclusion, citing similar arguments of low

COMING IN FUTURE MONTHS

- Breaking news from APIC in Portland
- Update on CMS infection control inspections
- Mycobacteria infections among breast plastic surgery patients
- Outbreak of *Pseudomonas* infections among NICU babies

risk, cost-effectiveness, and lack of guidance to support HCV PEP.³

"Any studies of or recommendations for PEP would have to acknowledge that this intervention is not cost-effective," they concluded. "In addition, the clinical application of these results would need to consider differences in efficacy across genotypes and use a pan-genotypic regimen when feasible. The lack of understanding of the appropriate length of therapy for PEP and the lack of feasibility of conducting an adequately powered clinical trial to assess efficacy further solidify this argument. Instead, appropriate follow-up and post-exposure testing, reassurance, and early treatment of acquired HCV infection with potent DAA combination therapies should be recommended."

In an accompanying editorial, researchers expanded the authors' decision analysis to factor in the anxiety and lost quality of life in the "no PEP" strategy. Under nearly all circumstances, the "no PEP" strategy still was preferable, suggesting that DAA drugs are not an efficient use of resources even when

one does explicitly incorporate anxiety into the analysis.

"Close follow-up, post-exposure testing, continued reassurance, and early treatment with direct-acting antiviral combination therapy in the event that HCV transmission occurs continue to be the paradigm for HCV post-exposure care," they reported.⁴ ■

REFERENCES

1. CDC. New Hepatitis C Infections Nearly Tripled over Five Years. May 11, 2017: <http://bit.ly/2qErNrP>.
2. Simoncini GM, Jessop AB. Hepatitis C Post-Exposure Prophylaxis for Healthcare Personnel: Policy Analysis Among Philadelphia's Large Teaching Institutions. *Infect Control Hosp Epidemiol* 2017;38:246-248.
3. Naggie S, Holland DP, Sukowski MS, et al. Hepatitis C Virus Postexposure Prophylaxis in the Healthcare Worker: Why Direct-Acting Antivirals Don't Change a Thing. *Clin Infect Dis* 2017;64(1): 92-99.
4. Barocas, JA, Linas BP. Decision Science at Work: The Case of Hepatitis C Virus Postexposure Prophylaxis. *Clin Infect Dis* 2017;64(1): 100-101



HOSPITAL INFECTION CONTROL & PREVENTION

EDITORIAL ADVISORY BOARD:

Kay Ball, PhD, RN, CNOR, FAAN
Professor, Nursing
Otterbein University
Westerville, OH

Allison McGeer, MD,
Professor, Dalla Lana School of Public Health,
University of Toronto
Director, Infection Control and Microbiologist,
Mount Sinai Hospital, Toronto

William Schaffner, MD
Chairman
Department of
Preventive Medicine
Vanderbilt University
School of Medicine
Nashville, TN

Connie Steed, MSN, RN, CIC
Director, Infection Prevention
Greenville Health System
Greenville, SC

Katherine West, BSN, MEd, CIC
Infection Control Consultant
Infection Control/
Emerging Concepts
Manassas, VA

REVIEWERS:

Patrick Joseph, MD
Chief of Epidemiology
San Ramon (CA) Regional Medical Center and
President, California Infection Control
Consultants
San Ramon

Patti Grant, RN, BSN, MS, CIC, FAPIC
Director: Infection Prevention/Quality
Methodist Hospital for Surgery
Addison, TX

Interested in reprints or posting an article to your company's site? There are numerous opportunities for you to leverage editorial recognition for the benefit of your brand.

Call: (800) 688-2421
Email: Reprints@AHCMedia.com

To reproduce any part of AHC newsletters for educational purposes, please contact:

The Copyright Clearance Center for permission
Email: Info@Copyright.com
Phone: (978) 750-8400



live & on-demand WEBINARS

- ✓ Instructor-led Webinars
- ✓ Live & On-Demand
- ✓ New Topics Added Weekly

VISIT US TO LEARN MORE!
AHCMedia.com/Webinars
(800) 688-2421

CME/CE INSTRUCTIONS

To earn credit for this activity, please follow these instructions:

1. Read and study the activity, using the provided references for further research.
2. Log on to AHCMedia.com then select "My Account" to take a post-test. *First-time users must register on the site.*
3. Pass the online tests with a score of 100%; you will be allowed to answer the questions as many times as needed to achieve a score of 100%.
4. After completing the test, a credit letter will be emailed to you instantly.
5. Twice yearly after the test, your browser will be directed to an activity evaluation form, which must be completed to receive your credit letter.

CME/CE QUESTIONS

1. In a recent review of Legionnaires' disease outbreaks in the United States occurring in 2000–2014, what percentage occurred in hospitals?

- A. 10%
- B. 19%
- C. 15%
- D. 25%

2. CMS warned that facilities unable to demonstrate measures to minimize the risk of LD are at risk of citation for noncompliance with the CMS Conditions of Participation.

- A. True
- B. False

3. If WHO uses a new Ebola vaccine to stop the outbreak in the Congo, plans call for use of the "ring" approach most known for eradicating:

- A. Polio
- B. Smallpox
- C. Measles
- D. Plague

4. Stephen Weber, MD, said which of the following is the cornerstone of planning?

- A. Risk assessment
- B. Collaboration
- C. Credibility
- D. Reliability

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.