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New data, new problem: Non-ventilator pneumonias account for a surprising 22% of all hospital infections

Infection prevention must move beyond the ICU

By **Gary Evans**, Executive Editor



Pneumonia x-ray

Source: CDC

Amid all the numbers, estimates and extrapolations in recently released new data on health care associated infections, one particular HAI identified in a point prevalence study jumped out at epidemiologists and infection preventionists: non-ventilator-associated pneumonia.

“We were really surprised where pneumonia was — accounting for nearly 22% of all HAIs,” says **Marion Kainer**, MD, co-author of the point prevalence study.¹ “It is very common and a lot of it is not ventilator associated. There is a lot of morbidity and mortality associated with it. We really don’t fully understand the epidemiology of what is causing it [enough to] put in appropriate

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Sometimes you have to be the ‘bad cop’

CDC expert struggles to prompt hand hygiene

Even those deeply aware of the risks of acquiring health care associated infections (HAIs) can find it surprisingly difficult to speak up on behalf of themselves or a hospitalized loved one. Ask **Michael Bell**, MD, the deputy director of the division of healthcare quality promotion at the Centers for Disease Control & Prevention.

“It’s really hard. When my own mother was in the intensive care

Bad cop continued on page 53.

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Marion Kainer, MD

prevention measures to try and reduce it.”

In general the point prevalence survey of 183 hospitals picked up a lot of HAIs that were not device related, underscoring the need to fight more infections beyond the ICU,

said Kainer, director of the Healthcare Associated Infections & Antimicrobial Resistance Program at the Tennessee Department of Health in Nashville.

While there were other findings of significance, the level of pneumonia infections in non-ventilated patients was the subject of much discussion and speculation.

“We need to think about how to capture pneumonia that is not ventilator associated,” she said. “How do you do surveillance for that and what is the true epidemiology? Are these post procedural and people are not getting adequate pain relief? Are they not moving their diaphragms, not being mobilized enough and being sedated too much? We need to [determine] what is causing these.”

Similar questions were raised at a press conference announcing the findings by **Michael Bell**, MD, the deputy director of the Division of Healthcare Quality Promotion at the Centers for Disease Control and Prevention.

“We’re in the process right now of teasing [the pneumonia infections] apart so we can understand what the next level of prevention is,” he said. “In the intensive care unit we know that if you raise the head of the bed, do meticulous oral care so there’s less bacteria building up, and reduce sedation you can get people off ventilators as soon as possible. What is the equivalent bundle of practices for a patient who’s not on a ventilator?”

Raising the possibility of patient sedation as a contributing factor, Bell said, “Maybe the down side of getting a good night’s sleep is that you’re more likely to accidentally inhale saliva or stomach contents and get a pneumonia. We don’t know if that’s the case, but if it is, it leads to some very clear prevention steps that we can implement to prevent those infections. On the other hand, if we see that a lot of these infections are caused by, for example, pneumococcus, there’s a vaccine for that. Maybe we need to be doing a better job of making sure everyone’s immunized against vaccine preventable infections.”

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Executive Editor: **Gary Evans**, (706) 310-1754, (gary.evans@ahcmedia.com).

Production Editor: **Kristen Ramsey**.

Continuing Education and Editorial Director: **Lee Landenberger**.

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Editorial Questions

For questions or comments, call **Gary Evans** at (706) 310-1754.

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Progress with an asterisk

Overall the point prevalence study found evidence of infection reductions, and the CDC lowered its longstanding national estimate of 1.7 million HAIs annually to 722,000 a year. Though the CDC cautioned against trying to directly compare the old HAI data with the new, there was general consensus that real progress has been made. (See story p. 56)

"We have heard over and over again about infections in the ICUs and that's where we [targeted] our efforts," says **Linda Greene, RN, MPS, CIC**, director of infection prevention and control at Rochester (NY) General Health System. "Most [infection preventionists] would agree we



have had some really good successes. In the ICUs you are looking at primarily ventilator associated pneumonia. What was surprising is this large number of pneumonias outside the intensive care setting. Those pneumonias are not ventilator associated — they're in hospital patients that may acquire pneumonia for any one of a number of reasons."

Speaking for the Association for Professionals

APIC tips for patients to prevent pneumonia

The Association for Professionals in Infection Control and Epidemiology (APIC) recommendations to patients to avoid acquiring pneumonia in the hospital include the following key measures:

- Clean your hands — and make sure that your healthcare providers do the same. Keeping your hands clean is the number one way to prevent the spread of infection.
- Healthcare providers should clean their hands before and after contact with a patient who has a breathing tube, and before and after contact with any respiratory device that is used on the patient, whether or not gloves are worn.
- Ask what measures will be put in place to reduce your chances of needing a breathing tube, or to reduce the time you need to have one in place. Insertion of a breathing tube and being placed on a ventilator increase the chance of developing pneumonia. Family members should ask healthcare providers to check on the patient's ability to breathe on their own every day so that the breathing tube can come out as quickly as possible.
- Take a deep breath and get moving. If you have been given a breathing exercise using an "incentive spirometer" do the exercises as often as your healthcare provider asks you to. When healthcare providers urge you to get up and walk around, it's not just your muscles they want to work. Taking deep breaths and moving around as much as you can also help reduce your chances of acquiring pneumonia.

- Raise the head of the bed. Ask healthcare providers whether the head of your hospital bed should be elevated at an angle of 30-45 degrees to reduce the chances you will breathe in secretions.

- Take a "sedation vacation" — Family members should ask the healthcare team if their loved one is able to have their sedation medications stopped to see if they will be alert enough to begin the process of removing the breathing tube.

- Get a shot — If you or your loved one is at high risk for pneumococcal disease, get vaccinated before your hospital stay. The pneumococcal vaccine is recommended for all adults 65 years and older and for anyone who is 2 years and older at high risk for disease, including smokers, those with chronic illnesses or conditions that weaken the immune system, or who live in a nursing home or other long-term care facility.

- Good oral care is important to help prevent pneumonia. Family members or patients should ask the care team how often they will clean the inside of the patient's mouth. The inside of the patient's mouth should be cleaned on a regular basis with a toothbrush or antiseptic rinse.¹

REFERENCE

APIC. Top 9 ways to reduce the risk of pneumonia if you or a loved one is hospitalized: <http://bit.ly/1j8hQdt> ■

in Infection Control and Epidemiology, Greene says APIC has developed pneumonia prevention recommendations that focus on the many factors that could set off the infections. (See story, p. 51)

"For instance if you have surgery and you are sedated and you're not coughing and deep breathing and moving, it is certainly possible one might [develop] pneumonia as a post-surgical complication," she says. "So from a prevention perspective, which is really what we are all about, it's all about the messaging on hand hygiene [and other basic measures]. A lot of those tend to be very small [interventions] but when you take them as a whole they can certainly make a difference."

For example, APIC recommends getting patients up and ambulatory to the degree possible, noting that taking deep breaths and moving

can reduce the risk of acquiring pneumonia.

In a separate report released the same day as the point prevalence study, the CDC noted a 3% increase in catheter-associated urinary tract infections (CAUTIs) in its annual National and State HAI Progress Report.² (See story, p. 56)

"At the national level we have known for some time that we haven't seen the movement with CAUTIs that we have with some of the other things like central line infections," Greene says. "First of all, [CAUTIs] are not appreciated — it is kind of a non-descript infection. And for many years we kind of thought if you're sick enough to be in the hospital you are sick enough to have a catheter because we don't want you to fall getting out of bed to go the bathroom."

That thinking has changed as limited mobility and other negative consequences of being tied to

A four-point strategy to prevent CAUTIs

Joint Commission Resources recently issued tips and strategies to take infection control to the patient bedside, including the following summary of basic measures to prevent catheter associated urinary tract infections (CAUTIs):

1. Avoid unnecessary catheters — use protocol for Foley catheter indications for insertion/removal

2. Use aseptic technique and standardized guidelines for insertion

- Use appropriate hand hygiene practices
- Insert catheters using aseptic technique and sterile equipment
- Don gloves and drape patient for sustainable results, as well as how to reduce readmission cases.
- Use sterile or antiseptic solution for cleaning urethral meatus during insertion
- Use single-use packet of sterile lubricant for insertion
- Use the smallest catheter possible to minimize trauma to the urethra

3. Maintain indwelling catheters based on recommended guidelines

- Assess daily necessity and remove promptly when no longer needed
- Standardize care, treatment, supplies and maintenance
- Perform routine hygiene during bathing or showering

- Maintain a sterile, continuously closed drainage system.

- Collect urine specimens aseptically
- Keep drainage bag below the level of the bladder at all times to prevent backflow and enable unobstructed flow

- Protect the collection bag drain spigot from contamination — empty the collection bag regularly, use a separate collecting container for each patient and avoid allowing the draining spigot to touch the collecting container

- Empty the collection bag regularly using a separate collection container for each patient
- Secure indwelling catheters after insertion to prevent movement and urethral traction

4. Review Urinary Catheter Necessity

- Place insertion date on catheter bag
- Remove catheter as soon as possible and according to hospital protocol and best practice evidence
- Participate in Daily Necessity Rounds
- Automate hard stop for catheter discontinuation orders 48-72 hours after insertion
- Consider implementation of nurse-driven protocols for discontinuation¹

REFERENCE

1. Joint Commission Resources. Beyond the Bundles: Best Practices at the Bedside: <http://bit.ly/PynCLg> ■

a catheter have become apparent, Greene says.

"Think about the link to pneumonia — if you have a catheter you are less likely to be able to ambulate and probably more likely to develop a pressure ulcer," Greene says. "The catheter — as some people have called it — is a 'one-point restraint.' So having a catheter — even [without] the CAUTI issues — could cause patient harm."

Noting the "stubborn" persistence of CAUTIs, Bell cited the longstanding perception that these are minor infections that poses little risk to patients.

"People don't tend to die immediately from a bladder infection like they do from a blood stream infection," he said. "But the problem is, bladder stream infections are a major driver of broad spectrum antibiotic use. When broad spectrum antibiotics are given, it wipes out those normal bacteria in the gut and opens it up for much bigger problems like *Clostridium difficile*. So you think you're having a trivial infection of the bladder, then the next thing you know you're fighting for your life because of deadly diarrhea. So we take catheter-associated urinary tract infections very seriously."

Nurse-driven protocols for catheter removal

Hospitals in Tennessee have really struggled to reduce CAUTIs, but the primary focus remains on getting catheters out as soon as medically indicated and empowering nurses to make the call in the absence of a physician, Kainer says.

"If there is a true nurse-driven protocol in terms of removing catheters it seems to make a difference, but we have discovered that not everybody means the same thing by a nurse-driven protocol," she says. "Does that mean that the doctor still has to give the order, or can the nurse take it out unless there are specific contraindications? Facilities that have instituted true nurse-driven protocols have had the greatest success in removing unnecessary catheters."

There are also catheter care issues, including making sure that the urine bag is lower than the patient so the urine doesn't backflow, she adds. "That becomes really important when you move patients within the facility, when you transport them for an MRI scan where you can't have the urine bag on the floor. It's often not quite as simple as one might think."

In any case, even if a CAUTI is regarded by some as a low-priority infection, it is still an HAI that is causing some degree of patient suffering.

"Numbers are important because we want to know our rates — we want to know how we compare to other places," Greene says. "But we also know at the end of the day, [that infected patient] could be your mother or father, a loved one that is being harmed by an HAI. I think we've learned over the years that this is much more about people than numbers."

Providing a voice for patients and family members felled by HAIs was **Victoria Nahum**, co-founder and executive director of the Safe Care Campaign in Atlanta. Speaking at the CDC press conference, Nahum recounted how she lost her son Joshua to a drug resistant gram negative infection that surrounded his brain and pushed part of it into his spinal column. Two weeks later he was dead of the age of 27.

"These new infection numbers, the data today represents a forward stride in our shared work," Nahum said. "Components including guidelines turned into checklists and data transparency in public reporting, as well as pay for performance initiatives have all helped prevent infection, unnecessary harm, and many tragic deaths. While inwardly I breathe a small sigh of relief that annual infections and mortalities are diminishing, I want to tell you that I remain extremely cautious regarding the growing threat of antibiotic resistance and the dire impact of its potential danger to American healthcare."

REFERENCE

1. Magill SS, Edwards JR, Bamberg W, et al. Multi-state Point-Prevalence Survey of Health Care-Associated Infections. *N Engl J Med* 2014; 370:1198-1208
2. Centers for Disease Control and Prevention. Healthcare-associated Infections (HAI) Progress Report. March 26, 2014: <http://www.cdc.gov/hai/progress-report/> ■

Bad cop

Continued from cover

unit, I found it hard to pipe up," Bell says. "If I find it hard, I can't imagine what it's like for everybody else."

Another time when a mutual friend was hospitalized, Bell and a buddy decided to run the old "good cop/bad cop" routine, taking turns being the bad cop who hectors health care workers trying to slip by with unwashed hands.

"It's easier to do when you decide up front I'm going to be the bad cop today," he says.



Michael Bell, MD

Another technique is to display a kind, but relentless curiosity.

"I'm always asked, 'What can I do to protect myself or a loved one in the hospital?'" Bell says. "The short answer is ask questions. It's hard, but you have to ask questions. And the

questions to ask are things like have you washed your hands? It sounds basic, but it's important. And you can ask it in a nice way. You can say, 'I'm sure you just washed your hands, but it would mean a lot to me and my mother if you would wash them again.'"

Ask how long a catheter must remain in place, knowing that removal when it is no longer necessary may prevent the onset of infection. "Ask every day 'Can the catheter come out?'" he says. "If [they] say in two days, at day two start asking 'Can the catheter come out today?'"

Another important line of questioning deals with testing and antibiotic susceptibility of the infecting agent.

"Ask 'Are you doing tests to make sure I'm on the right antibiotic?'" Bell says. "These questions are very hard to ask if you're the patient receiving care. You [already] have plenty to think about. It's a good idea to bring a friend or family member whose main job it is to be the persistent asker of these questions. Because at the end of the day, the doctors, the nurses, the entire medical team wants you to get better. Even though it might be annoying for a minute, it's a helpful reminder to have hand washing, catheter removal and appropriate antibiotic use be at the top of their minds."

Bell's comments came at a recent CDC press conference announcing new national HAI data. ■

CDC: 1 out of every 9 infected patients dies

Positive trends, formidable challenges

On any given day in the U.S. one of every 25 hospitalized patients is infected by a patho-

gen acquired during hospital care. Every year 722,000 of these health care associated infections (HAIs) strike patients, with roughly 200 of them dying daily, according to the Centers for Disease Control and Prevention.¹

As bad as that sounds, these recently released numbers are actually an improvement over the 1.7 million infections and 99,000 deaths annually that the CDC has estimated since 2007. Likewise, it was then estimated that 1 of every 20 hospitalized patients had an HAI. The figures are not directly comparable however, as they are drawn from different surveillance data and other measures over different time spans. With that considerable caveat included, it is fair to say progress is being made and real HAI reductions are occurring. (*See summary data, p. 55*)

"First and foremost, this is probably the best quality of data we've had in a very long time to look at the burden and type of infections we're seeing in health care," says **Michael Bell**, MD, deputy director of the CDC's Division of Healthcare Quality Promotion. "The previous estimates, I think were useful in a very big picture, non-granular kind of way to say that it used to be bigger, now it seems to be smaller, but they definitely are not the same methodology. I wouldn't compare them directly. But I think there seems to be a trend [of HAI reductions]."

However, the mood at a recent CDC press conference announcing the numbers was more sober than celebratory after publication of the landmark HAI point prevalence study.¹

"Despite the progress we've seen, three quarters of a million patients every year end up with HAIs," Bell adds. "Of those people, as many as 1 out of 9 go on to die. This is not a minor issue."

That said, a separate CDC HAI Progress Report shows that significant reductions are being seen for many infections. (*See story, p. 56.*)

"It's not all bad news," Bell said. "Some of the successes we're seeing are in protecting the most fragile patients, the patients in intensive care units. We've seen good progress preventing blood stream infections related to central lines. We have seen that the number of these infections have gone down by almost half since 2008."

The prevalence study included surveys of 183 hospitals. Of 11,282 patients, 452 had 1 or more health care-associated infections (4%). Of 504 such infections, the most common types were pneumonia (21.8%), surgical-site infections (21.8%), and gastrointestinal infections

C. diff the most common pathogen causing HAIs

Key findings in a Centers for Disease Control and Prevention point prevalence study¹ on health care-associated infections (HAIs) include the following:

On any given day, about 1 in 25 hospital patients has at least one HAI.

There were an estimated 722,000 HAIs in U.S. acute care hospitals in 2011.

About 75,000 hospital patients with HAIs died during their hospitalizations.

These new numbers update and replace the old estimates of 1.7 million HAIs in U.S. hospitals and 99,000 deaths associated with HAIs.

The most common infection types were:

- pneumonia (22%)
- surgical site infections (22%)
- gastrointestinal infections (17%)
- urinary tract infections (13%),
- bloodstream infections unrelated to an infection at another site (10%)

The most common pathogens causing health-care-associated infections were:

- *C. difficile* (12%)
- *Staphylococcus aureus* (11% including MRSA)
- *Klebsiella* (10%)
- *E. coli* (9%)
- Enterococcus (9%)
- Pseudomonas (7%)

[CDC note: *Klebsiella* and *E. coli* are members of the Enterobacteriaceae family. Several of the pathogens in this group are showing strong antibiotic resistance and are known as carbapenem-resistant Enterobacteriaceae (CRE), or “nightmare bacteria.”]

REFERENCE

1. Magill SS, Edwards JR, Bamberg W, et al. Multi-state Point-Prevalence Survey of Health Care-Associated Infections. *N Engl J Med* 2014; 370:1198-120 ■

(17.1%). *Clostridium difficile* was the most commonly reported pathogen, causing 12.1% of HAIs.

C. diff, CRE increases call for stewardship

The continuing ascension of *C. diff* is being driven by the highly virulent NAP1 strain.

“In the past, going back 20 years or so ago, [*C. diff*] was more of a nuisance than anything else,” Bell says. “But today the type of this bacteria spreading in this country has such a strong toxin that it’s a very severe infection — requiring colon removal in some cases. This deadly diarrhea is contributing to an unacceptable number of infections.”

One of the key ways to reduce *C. diff* is through antibiotic stewardship, which reigns in use and overuse of antibiotics that wipe out commensal bacteria in the gut.

“I think we have a lot of opportunities to improve that,” says **Marion Kainer**, MD, co-author of the point prevalence study. “I also believe that with *C. diff* what is happening in the community and in transitions of care are really important. So that as you get a patient — for example if they came from a nursing home — they may come in with *C. diff* because they

were treated with antibiotics for asymptomatic bacteriuria. They may actually be classified as having community-onset *C. diff*, so they don’t appear in these figures. But they are a reservoir and they cause transmission to other patients by the hands of health care workers and through imperfect cleaning of the environment. I think we have opportunities to improve communication between facilities and during transitions of care.”

The increasing calls for hospital antibiotic stewardship programs — possibly mandated and enforced by the CMS — are due in large part to the emergence of carbapenem-resistant Enterobacteriaceae (CRE), which can cause infections that are virtually untreatable.

“This is a family of bacteria that includes *E. coli* and many common organisms that live in the gut and need to be there for us to be healthy,” Bell says. “The challenge that we see is that some of those bacteria, the ‘nightmare bacteria’ are now completely untreatable. That means that as a doctor, I have nothing left I can offer a patient who has an infection like this in the hospital. The challenge of antibiotic resistance really can’t be overstated. We’ve found that over half of hospitalized patients end up getting an antibiotic at some point. This is a

huge amount of antibiotic pressure. We're focusing on improving the prescribing of antibiotics specifically because these nightmare bacteria and deadly diarrhea are such a threat to patient health."

While some great strides have been made in some areas, newly identified challenges and old infections that still resist reduction underscore how much more needs to be done, says **Linda Greene**, RN, MPS, CIC, director of infection prevention and control at Rochester (NY) General Health System.

"There is no doubt that progress has been made, but I think [IPs] would all say that there has not been enough progress yet," she says. "We have focused on ICUs where critically ill patients are and I think that was the right thing to do. But now those same patients are in med-surg wards and they are also in nursing

homes and extended care facilities. The population where care is delivered has moved, and we have to improve and move our efforts."

REFERENCE

1. Magill SS, Edwards JR, Bamberg W, et al. Multistate Point-Prevalence Survey of Health Care-Associated Infections. *N Engl J Med* 2014; 370:1198-120 ■

Oregon? CRE prevention where there is little CRE

Counterintuitive approach to national model

Unlike some major Eastern cities where carbapenem-resistant Enterobacteriaceae (CRE) is an endemic problem, the state of Oregon has

CDC progress report shows HAI reductions

C. diff, CAUTIs the notable exceptions

The latest health care associated infection (HAI) progress report shows that significant reductions were reported in 2012 for nearly all infections, the Centers for Disease Control and Prevention reports.¹

Central line-associated bloodstream infections and surgical site infections continue to approach the 5-year goals set in the HAI Action Plan. However, the report shows only minimal decreases for both hospital-onset *C. difficile* infections and hospital-onset MRSA bloodstream infections. Catheter-associated urinary tract infections (CAUTIs) actually increased.

The HAI Progress Report consists of national and state-by-state summaries of healthcare-associated infections. The report helps measure progress toward the five-year HAI prevention goals outlined in the National Action Plan to Prevent Health Care-Associated Infections: Road Map to Elimination (HAI Action Plan) set in 2009 by the U.S. Department of Health and Human Services (HHS). Progress is measured using the standardized infection ratio (SIR), a summary statistic used to track HAI prevention progress over time. The individual state progress reports include infection-specific SIRs, location-specific SIRs, and efforts states

are taking to prevent HAIs. These customized reports can aid in identifying areas in need of improvement, and focusing prevention efforts nationally and within states, the CDC noted.

On the national level, the report found:

- A 44% decrease in central line-associated bloodstream infections between 2008 and 2012.
- A 20% decrease in surgical site infections (SSIs) related to the 10 surgical procedures tracked in the report between 2008 and 2012.
- SSIs after colon surgery decreased 20% since 2008.
- SSIs after abdominal hysterectomy decreased 11% since 2008.
- A 4% decrease in hospital-onset MRSA bloodstream infections between 2011 and 2012.
- Overall, invasive MRSA infections have decreased 31% since 2008.
- A 2% decrease in hospital-onset *C. difficile* infections between 2011 and 2012.
- A 3% increase in (CAUTIs) between 2009 and 2012.

REFERENCE

1. Centers for Disease Control and Prevention. Health-care-associated Infections (HAI) Progress Report. March 26, 2014: <http://www.cdc.gov/hai/progress-report> ■

seen only a handful of cases. That is why public health officials say it is an ideal place to launch a CRE prevention program that could prove to be a national model.

The biggest concern is that CRE spreads easily across facilities and regions once it enters, says **Christopher Pfeiffer**, MD, MHS, hospital epidemiologist at Portland VA Medical Center in Portland, OR.

"CRE is a slow killer; an outbreak can occur over several months," Pfeiffer notes.

"But once it's in a facility, it's difficult to detect the transmission and the colonization of patients, so it is hard to eradicate; it will pop up every so often," he adds. "This made us highly interested in trying a fairly novel approach at preventing the entry and limiting — early on — the spread of CRE in a region."

CRE has a high mortality rate and can prove difficult to eradicate once established. The 2011 CRE outbreak at the U.S. National Institutes of Health (NIH) Clinical Center in Bethesda, MD, is a good example of that phenomenon, Pfeiffer notes.

Eleven out of 18 infected patients died in the NIH hospital CRE outbreak, which genomic and epidemiological analysis traced to three independent transmissions from a single patient who had been discharged for three weeks before the next case was apparent.¹

The Centers for Disease Control and Prevention (CDC) approved the Oregon Health Authority grant partly because of Oregon's track record of success in completing large-scale projects, Pfeiffer says.

The CDC-Oregon initiative, called the Drug-Resistant Organism Prevention and Coordinated Regional Epidemiology (DROP-CRE) Network, will focus on statewide coordination of prevention and control of multidrug-resistant organisms, starting with CRE.

"We tried to come up with a plan about how to prevent the spread of CRE in Oregon, and we realized one of the best ideas would be to get a sense of the need in Oregon with different groups, including physicians and laboratorians," says **Zintars G. Beldavs**, MS, manager of the healthcare-associated infections program at the Center for Public Health Practice in Portland.

The DROP-CRE Network is working on these efforts:

- Developing a multidrug-resistant organism database statewide
- Promoting CRE education

- Conducting a rapid regional identification of CRE
- Providing epidemiological outbreak assistance to Oregon facilities with CRE cases
- Tracking CRE statewide across the spectrum of care.

Are nursing homes CRE reservoir?

CDC funding also has helped Oregon enhance its emerging infections program and epidemiology laboratory.

The network's educational materials, including its 2013 Oregon Toolkit are available for dissemination nationally.²

Education is a chief focus for the network, including educating infection preventionists through the Association for Professionals in Infection Control and Epidemiology (APIC).

"We worried about the lack of education," Pfeiffer notes. "We've made extra efforts to present information at Oregon APIC meetings."

They've also spread the word about CRE and prevention strategies in hospitals and other health care settings during grand rounds, he adds.

"We also brought in expert speakers, giving talks to infectious diseases physicians and laboratory professionals across the state," Pfeiffer says. "We provide education about CRE for patients and staff at hospitals and created laboratory posters about CRE."

Other outreach includes working with long-term-care facilities and speaking at conferences.

"We're working to enhance our website and provide more resources," he adds. (See <http://1.usa.gov/1hI6Ti>)

CRE incidence rates are now collected by most states, as carbapenem resistance increased from 1% to 4% of Enterobacteriaceae infections in the past decade.³

National Institutes of Health (NIH) data show a high prevalence rate of CRE in long-term care facilities, which appear to be amplifiers of the disease, Pfeiffer says.

In 2012, CRE infection was reported in 4.6% of acute-care hospitals; for long-term acute-care hospitals, that rate was 17.8%.³

"From NIH surveillance data there is good evidence there are pockets of highly-preventable CRE in the Northeast and urban cities," Pfeiffer says. "New York City is the place most commonly cited."

But CRE can be a problem anywhere.

A case study in Denver, Colorado highlights the way CRE can spread once it occurs in a health care setting. In August 2012, the Colorado Department of Public Health learned of two patients at an acute-care hospital in Denver with CRE, specifically *Klebsiella pneumoniae*. In both patients isolates produced New Delhi metallo-beta-lactamase (NDM). Later a third patient with the same colonization was identified, and active surveillance cultures the next month found another five patients with matching strains. The eight patients ranged in age from 23 to 75 years and had been hospitalized on 11 different units.⁴

"Our biggest concern is the future of CRE -- it's rapidly transmittable, potentially untreatable, and has a serious potential for a nightmare scenario," Beldavs says.

REFERENCE

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2. Guidance for control of carbapenem-resistant Enterobacteriaceae (CRE): 2013 Oregon toolkit. Oregon Health Authority. Available online at http://public.health.oregon.gov/DiseasesConditions/DiseasesAZ/CRE/Documents/cre_toolkit.pdf
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4. Pisney L, Barron M, Janelle SJ, et al. Notes from the field: hospital outbreak of carbapenem-resistant *Klebsiella pneumoniae* producing New Delhi Metallo-Beta-Lactamase – Denver, Colorado, 2012. *MMWR* 2013;62(202):108. ■

APIC cites a few caveats, concerns about HAI targets

Comments to HHS on proposed HAI Plan

While expressing overall support with proposed federal reduction targets for health care associated infections, the Association for Professionals in Infection Control and Epidemiology (APIC) raised several concerns in comments to the Department of Health and Human Services (HHS). The HHS has proposed a new set targets for infection reduction in acute

care hospitals for 2020.

"Our comments primarily reflect the views of our members who rely on sound targets and measures as they take steps to prevent HAIs in the populations they serve," APIC stated. "In general we support the proposed acute care targets for 2020; however we bring the following comments and concerns to your attention."

Again, the following HHS targets and HAI reductions are all proposed to be achieved by 2020.

HHS: Reduce central line-associated bloodstream infections (CLABSI) in intensive care units and ward-located patients by 50% from 2015 baseline. Data Source: Centers for Disease Control and Prevention (CDC)/National Healthcare Safety Network (NHSN)

APIC: We support this target; however, we suggest that the target not only reflect aggregate data, but that interim assessments of the rate also be stratified by ICUs and non-ICUs. This methodology will help to better understand the areas needed for improvement and is also currently proposed for the CAUTI metric. We applaud the CDC for their efforts in working with oncologists, infection preventionists, and hospital epidemiologists to develop and evaluate a Mucosal Barrier Injury (MBI) bloodstream infection definition and for excluding MBI from the target. However, because this is a new designation, it is difficult to predict how using the new definition and excluding those cases will impact the 2015 baseline.

HHS: Reduce catheter-associated urinary tract infections (CAUTIs) in intensive care units and ward-located patients by 25% from 2015 baseline. Data Source: CDC/NHSN.

APIC: We support this target, but with reservations. We are concerned about the existing NHSN definition and the influence of the fever criteria. Further, we believe flaws in the definition may impede accurate measurement. We urge the development and testing of an electronic definition incorporating data that most facilities would have electronically available.

HHS: Reduce the incidence of invasive health care-associated methicillin-resistant *Staphylococcus aureus* (MRSA) infections by 75% from 2007-2008 baseline (Healthy People 2020 Goal). Data Source: CDC's Emerging Infections Program Network (EIP) Active Bacterial Core Surveillance (ABCs).

APIC: We generally support this target, and note its inclusion as a Healthy People 2020 goal.

However, we want to point out that it is particularly aggressive given the prevalence of the community-onset MRSA strain in the general population. We believe that, in order to assist with achieving this target HHS should more widely disseminate information such as lessons learned from the CDC's EIP/ABC network.

HHS: Reduce facility-onset methicillin-resistant MRSA in facility-wide health care by 50% reduction from 2015 baseline. Data Source: CDC/NHSN.

APIC: We support this target, but recommend that the title indicate that it only includes bloodstream infection and is a proxy measure for infection, using lab identification.

HHS: Reduce facility-onset *Clostridium difficile* infections in facility-wide health care by 30% from 2015 baseline. Data Source: CDC/NHSN.

APIC: We support this target, but recommend that the title indicate that it is a proxy measure for infection.

HHS: Reduce the rate of *C. diff* hospitalizations by 30% from 2015 baseline. Data Source: Agency for Healthcare Research and Quality (AHRQ) Healthcare Cost and Utilization Project (HCUP).

APIC: We appreciate the value of understanding both hospital-onset and community-onset *C. diff* infection (CDI). However, since community-onset *C. diff* is, by definition, not an HAI, we believe that including both hospital-onset and community-onset *C. diff* as a measure in a plan intended to eliminate healthcare-associated infection is misleading. We also believe that consumers would be better served by the use of more precise data to identify HAIs.

HHS: Reduce Surgical Site Infection (SSI) admission and readmission by 30% from 2015 baseline. Data Source: CDC/NHSN.

APIC: We support this target and encourage CDC to continue with efforts to more adequately adjust for risk in certain specialty populations such as pediatrics where current risk adjustment criteria are primarily adult focused ■

CNE/CME 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. Scan the QR code below or log on to www.cmecity.com to take a post-test; tests can be taken after each issue or collectively at the end of the semester. First-time users will have to register on the site using the 8-digit subscriber number printed on their mailing label, invoice or renewal notice.
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5. Once the completed evaluation is received, a credit letter will be emailed to you instantly. ■



CNE/CME Objectives

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

- Identify the clinical, legal, or educational issues encountered by infection preventionists and epidemiologists;
- Describe the effect of infection control and prevention issues on nurses, hospitals, or the health care industry in general;
- 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. ■

COMING IN FUTURE MONTHS

■ APIC in Anaheim: Look for breaking news alerts from the June 7-9 conference

■ How genomic sequencing is changing infection prevention and outbreak investigations

■ Infection prevention in the emergency department.

■ The unintended consequences of public reporting of HAIs

■ Federal HAI initiatives continue to expand

CNE/CME Questions

- Key findings in a Centers for Disease Control and Prevention's point prevalence study of healthcare associated infections (HAIs) include which of the following:
 - On any given day about 1 in 25 hospital patients has an HAI
 - There were an estimated 722,000 HAIs in U.S. acute care hospitals in 2011
 - Some 75,000 hospital patients with HAIs die annually
 - All of the above
- Though CAUTIs have been dismissed by some as minor infections, **Michael Bell**, MD, pointed out that they can lead to other problems because they:
 - Require placing a lot of patients in isolation
 - Are a major driver of broad spectrum antibiotic use
 - Require care that will not be reimbursed by payers
 - All of the above
- According to **Marion Kainer**, MD, efforts to reduce catheter associated urinary tract infections (CAUTIs) in Tennessee have particularly emphasized:
 - inserting catheters using aseptic technique and sterile equipment
 - collecting urine specimens aseptically
 - standing orders to discontinue catheters 72 hours after insertion
 - use of nurse-driven protocols for catheter discontinuation
- In comments on the national plan to reduce health care associated infections (HAIs), the Association for Professionals in Infection Control and Epidemiology said that community-onset *Clostridium difficile* is, by definition:
 - a virus
 - not a gram negative bacteria
 - not an HAI
 - difficult to culture in the lab

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Hospital Infection Control & Prevention

2014 Reader Survey

In an effort to learn more about the professionals who read *Hospital Infection Control & Prevention*, we are conducting this reader survey. The results will be used to enhance the content and format of *HIC*.

Instructions: Fill in the appropriate answers. Please write in answers to the open-ended questions in the space provided. Either fax the completed questionnaire to 404-492-5933, or return it in the enclosed postage-paid envelope. The deadline is **July 1, 2014**.

In future issues of *HIC*, would you like to see more or less coverage of the following topics?

A. more coverage B. less coverage C. about the same amount

- | | | | |
|--|-------------------------|-------------------------|-------------------------|
| 1. CDC guidelines | <input type="radio"/> A | <input type="radio"/> B | <input type="radio"/> C |
| 2. outbreak investigations | <input type="radio"/> A | <input type="radio"/> B | <input type="radio"/> C |
| 3. OSHA compliance | <input type="radio"/> A | <input type="radio"/> B | <input type="radio"/> C |
| 4. pandemic influenza | <input type="radio"/> A | <input type="radio"/> B | <input type="radio"/> C |
| 5. Joint Commission requirements | <input type="radio"/> A | <input type="radio"/> B | <input type="radio"/> C |
| 6. <i>Clostridium difficile</i> | <input type="radio"/> A | <input type="radio"/> B | <input type="radio"/> C |
| 7. MRSA and community-associated MRSA | <input type="radio"/> A | <input type="radio"/> B | <input type="radio"/> C |
| 8. state and federal infection control legislation | <input type="radio"/> A | <input type="radio"/> B | <input type="radio"/> C |

Please rate your level of satisfaction with the following items.

A. excellent B. good C. fair D. poor

- | | | | | |
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15. On average, how many people read your copy of *HIC*?

- A. 1-3
- B. 4-6
- C. 7-9
- D. 10-15
- E. 16 or more

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- A. yes
- B. no If no, why not? _____

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- A. very satisfied
- B. somewhat satisfied
- C. somewhat dissatisfied
- D. very dissatisfied

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- A. very satisfied
- B. somewhat satisfied
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- D. very dissatisfied

18. What is your title?

- A. infection control coordinator/director
- B. infection control practitioner/professional
- C. employee health/infection control manager
- D. infection preventionist
- E. other _____

19. How large is your hospital?

- A. fewer than 100 beds
- B. 100-200 beds
- C. 201-300 beds
- D. 301-500 beds
- E. more than 500 beds

Please indicate all of the areas for which you are responsible for in your facility or system.

- 21. infection control A. yes B. no
- 22. employee health A. yes B. no
- 23. quality improvement A. yes B. no
- 24. patient safety A. yes B. no
- 25. other (please specify) _____

26. What is the highest degree that you hold?

- A. ADN (2-year)
- B. diploma (3-year)
- C. bachelor's degree
- D. master's degree
- E. other _____

27. To what other publications or information sources about infection control do you subscribe?

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