# Hospital Infection Control & Prevention

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## APIC CONFERENCE

# A path to empowerment has opened: Time to move to the patient bedside

*'We are only going to get this opportunity once.'*

By **Gary Evans**, Executive Editor


Katrina Crist

Having finally wrested a seat at the C-suite table, infection preventionists are now poised to move to the patient bedside. A profession that has labored in relative obscurity for much of its existence is at a critical juncture with a host of influential agents who are suddenly very interested in infection prevention: patients, consumer advocates, state and federal regulators. A path to empowerment has opened.

"I think we are only going to get this opportunity once and we must make it truly effective," said **Katrina Crist**, MBA, the new Chief Executive Officer at the Association for Professionals in Infection Control and Epidemiology (APIC).

Crist had to hit the ground sprinting as she attended her first annual APIC educational conference recently in Baltimore. She sat down for an interview with *Hospital Infection Control & Prevention* shortly after the meeting, reflecting on her career journey and the profession she has taken the challenge to lead. *(See interview, p. 92)*

"I see the value of the infection preventionist—it's enormous," she said. "You can put out the best science—and I have been part of research centers. You can come up with all the concepts and ideas and validate them all you want. But if they are not implemented, frankly they are meaningless."

This challenge of implementation—of translating science into day-to-day prevention with full compliance—falls to the IPs and hospital epidemiologists caught up in the surging national interest in health

## *In This Issue*




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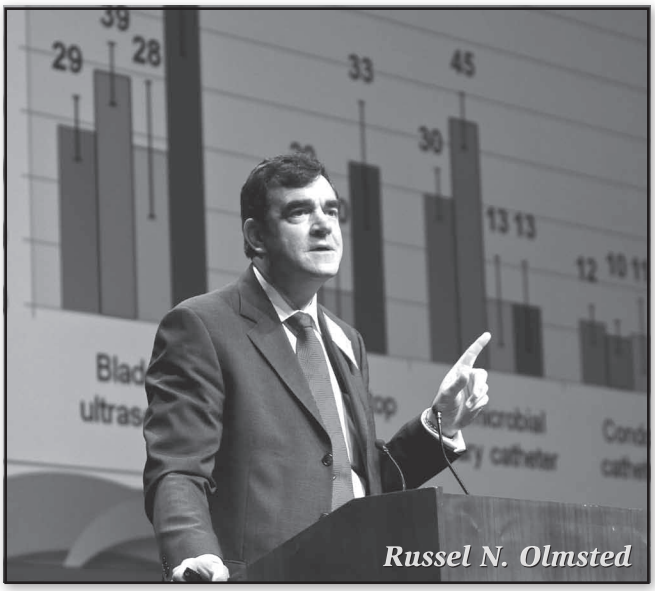


care associated infections (HAIs). Will they rise to the occasion or be buried under the data collection demands that are part of this new normal? (*See box, p. 91*)

"It is all about the evidence—in terms of what you do at the bedside in implementing what you find in the literature to improve patient care," said **Russell N. Olmsted**, MPH, CIC, APIC president told conference attendees in a keynote address.

Adding a quote from Goethe, Olmsted underscored the present sense of urgency. "Knowing is not enough; we must apply," he said. "Willing is not enough; we must do."

There was much similar discussion at the APIC meeting about IPs seizing a singular opportunity, and one of the extraordinary signs of that is the association's new campaign to reach out directly to patients. An unprecedented educational campaign urges patients to arm themselves with information about HAIs and ask about the hospital's infection preventionist on admission. (*See handout, p. 87*) This, in a field that has long suffered under what veteran health care epidemiologist **Vicky Fraser**, MD, once aptly described to *HIC* as "a psychopathology of secrecy." No need to belabor the liability concerns and other issues that led to this early culture, which included arcane—and presumably protective—language like "nosocomial" infections. Suffice it to say that bringing the IP to patient awareness and perhaps literally to the bedside is an idea whose time has come.

"APIC will help the professionals move closer to the bedside," Crist said. "We are educating the public in the community that infection preventionists exist within your hospitals. They have every right—and we encourage them—to ask to see [the IP] and get more information and take a more aggressive approach to their own care. We are also going to try and capitalize on the increased visibility and being out there in the public to get the attention of the hospital

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executives."

## *Powerful partnerships forming*

A major development in this area is the recently formed Partnership for Patients, which has made HAI prevention a major priority in a collaborative that includes hospitals, patient advocates and influential federal agencies like the Centers for Medicare and Medicaid Services (CMS). (*See* HIC *July 2011, p. 77*)

"That's really where the rubber meets the road—we need to connect with our patients," said Olmsted, an epidemiologist in Infection Prevention & Control Services at St. Joseph Mercy Health System in Ann Arbor, MI. And part of that connection is a new transparency, with the traditional barriers between IPs and patients removed, he said, envisioning a scenario that may become common in the future.

"You come in on a Monday morning and get a phone call," Olmsted said. "It is a patient up in 302B who says `I think I may have an infection, can you come up so we can talk about it?' I think that is coming soon, where the infection preventionist is going to be a real-time consultant. We need a presence right at that bedside and should not be afraid to talk to our patients."


*Elaine Larson*

In a similar vein, health care workers who want to "do the right thing" must be supported by a culture change that recognizes infection prevention as a system problem that warrants a system solution, said **Elaine Larson**, PhD, professor of pharmaceutical and therapeutic Research at the Columbia University School of Nursing in New York City.

"We need to move from a perspective where your 'client' is the individual physician or nurse. Your client is the system," Larson said. "We are we now called upon much more to be leaders. We are at the table and we need a skill set [for that mission]. You have to own it."

A leading researcher on hand hygiene—infection prevention's cardinal principle and enduring challenge—Larson shared a personal anecdote at a packed session at the APIC conference.

"I remember when I was a nursing student working night shifts as a nursing assistant," she said. "After my first few weeks, one of the other nursing assistants said to me, "When are you

# APIC's bold move to raise the IP profile

*Educating public, patients about their role*

The Association for Professionals in Infection Control and Epidemiology (APIC) is reaching out to the public and patients through an unprecedented educational campaign to explain the role of the infection preventionist in healthcare settings.

The campaign, "Infection Prevention and You" provides print material to help guide important conversations patients should hold with their healthcare team to prevent infection. (*See handout, p. 89*) It is the first consumer campaign of its kind designed to educate patients about infection preventionists—a growing profession of dedicated experts who partner with the broader healthcare team and implement evidence-based methods to ensure that patients, healthcare personnel, volunteers and visitors avoid healthcare-associated infections.

"Patients often feel intimidated in the healthcare setting and may not know what to say or what do to stay safe," says **Ann Marie Pettis**, RN, BSN, CIC APIC Communications Committee chair, who assisted in developing the campaign content. "Many also don't understand the important role infection preventionists play in patient safety. The information in this campaign helps patients understand that they can play an active role in their healthcare to prevent healthcare-associated infections and medical error. We hope hospitals and healthcare organizations will use these materials to promote quality and safety initiatives within their facilities"

Developed with input from Children's Healthcare Atlanta, the APIC campaign material is available in a variety of print and electronic formats, including posters, brochures, fliers and PowerPoint presentations for closed circuit television. Individual healthcare organizations can also customize the material by adding their logos and the contact information for their infection prevention department.

The APIC campaign material is available for free download at http://www.apic.org/patientsafety. ■

taking your sick day?' I said, 'Well, I'm not sick.' She said you have to take your sick day every month because we all do, and if you don't it's really going to [make us mad]. It was a huge dilemma and I think I only stayed there three months. But if I had stayed on that unit—these were professional nursing assistants that had been there a long time—that's a huge amount of pressure. It's really hard—even if you want to do the right thing. So we have to see the unit as our client, not individuals. It's too hard for people to fight, kick against [the prevailing culture.]"

There is no common understanding of health care delivery as a system of interdependencies, Larson said. "We all are interdependent on each other and there is no agreement on a sole focus for identifying problems and solving them," she said. "The people who provide the care are not necessarily empowered to improve how the system works. That's why I think that your clients are not the individuals who are stuck feeling like they have to take a sick day."

How can health care culture be changed so that individual workers see infection prevention as both a personal and, more importantly, an institutional goal? The answer may be in the highly successful campaigns to drive infection rates to zero, particularly the use of checklists and other measures to prevent central line associated blood stream infections (CLABSIs).

"I was trying to figure out why [these campaigns] worked because it's not really new stuff that we are asking people to do," Larson said.

*Continued on p. 90*

## APIC CONFERENCE

# Health care environment a new research priority

With pathogens like *Clostridium difficile* and multidrug-resistant *Acinebactor*—which can linger on surfaces and fomites for prolonged periods—the health care environment is among the top priority research areas to prevent health care associated infections (HAIs).

"The environment has kind of waxed and waned," said **Russell Olmsted**, MPH, CIC, president of the Association for Professionals in Infection Control and Epidemiology (APIC). "In the early 70s we said the environment wasn't important, now it has resurged with a vengeance."

Olmsted outlined the top priorities for infection prevention—as determined by the APIC Science, Knowledge and Implementation Network (ASK-IN)—recently in Baltimore at the annual APIC educational conference.

"Most importantly we saw a need to improve staffing and infrastructure for infection preventionists," he said.

Multidrug resistant organisms (MDROs) made an expected appearance on the list, with Olmsted encouraging infection preventionists to get more involved in antibiotic stewardship programs.

"Antimicrobial stewardships is what you do—you collect a lot of data," he told APIC attendees. "There is a rich opportunity for us to look at things that we are collecting already and share. We do a lot of MDRO and *C. diff* infection surveillance. We need to share that with colleagues to [guide] antimicrobial stewardship programs."

The ASK-IN top priorities for infection prevention research include:

- Isolation (when it's needed, not and how)
- The environment, cleaning and infection risk from fomites
- Preventing surgical site infections
- Infection Prevention in "other" settings
  - — Pediatrics and neonates
  - — Long Term care
  - — Behavioral Health
- New technology / devices / disinfectants to prevent HAIs
- Staffing the Infection Prevention Department
- Economics and business case development
- Multidrug resistant organisms (including MRSA, *C. diff* and gram negative rods)

Formerly the APIC Research Foundation, ASK-IN was developed by the 2010 Board of Directors to provide a more agile management structure and to expedite review of the increasing number of projects presented to the association. The program is based on the principles of translational research, often called implementation science. This process examines the best methods to move relevant laboratory based research findings into actual patient care. ■

# Infection Prevention and You

*Learn about who's working to keep you safe and how you can take control of your care.*

## Who are "infection preventionists?"

Infection preventionists are among the many experts who help to protect you from healthcare-associated infections. They work in many healthcare settings to keep you, visitors, volunteers, employees, and healthcare providers safe from infection.

## What is a healthcare-associated infection?

Healthcare-associated infections can occur while a patient receives care or treatment. These kinds of infections are often preventable.

## How does an infection preventionist affect the care I receive?

Infection preventionists partner with your healthcare team and use proven methods to ensure that you stay safe from healthcare-associated infections during your stay.

Although you may not see the infection preventionist during your visit, you will notice the presence of infection prevention everywhere throughout the facility:

- Hand sanitizer gels or rubs
- Hand washing stations
- Disinfecting wipes
- "Cover your cough" signs
- Healthcare providers wearing gloves, masks and gowns
- Environmental services cleaning staff

## What do I need to do to stay safe?

***Please speak up!*** **Do not feel shy about asking for more information about your care. Infection prevention is everyone's business! If you have a concern, feel free to ask the following questions:**

- Before receiving an injection, ask if the needle, vial, and syringe have been newly opened for you.
- If you have not seen healthcare staff who care for you either wash their hands or use an alcohol hand rub, ask them to do so. This also applies to visitors.
- If you have a catheter in your bladder or vein, tell your nurse if it becomes loose or painful. Also ask each day when it can be removed.
- If you are having surgery, ask your doctor if you should shower with an antiseptic soap before you are admitted.
- Ask your provider if you need any shots or vaccines.
- If you think that the area around you or the equipment in your room looks dirty, ask to have it cleaned.
- If you have a bandage (also called a "dressing"), let your nurse know if it gets wet, loose, or feels uncomfortable.

## One last important reminder:

**Wash your hands or use alcohol hand rub often. This is one of the most important ways to prevent infection.**

## Who is the infection preventionist at this facility?

## How can I learn more about infection prevention?

Visit the Association for Professionals in Infection Control and Epidemiology (APIC)'s website **www.preventinfection.org** to learn more about how you can protect yourself and your loved ones from infection.

APIC
Spreading knowledge. Preventing infection.®

**SOURCE:** Association for Professionals in Infection Control and Epidemiology, Inc.

*Continued from p. 88*

"This is why I think it worked: First of all, there is explicit overt support from the top down. They buy into it. The hospital 'signs up' and people feel like they are part of a movement: '*I'm part of this. I'm doing this.*' Simple, clear measureable actions. Here is what we do: 1, 2, 3, 4. And clear measurable outcomes."

While working at an organization level, such campaigns give the health care worker fulfillment of such affirmations as, "*I want to be a good health care professional. I want to do a good job and be proud*," Larson said. "Think about the campaigns that you've read about and how they may apply as you are working on an intervention."

Indeed, IPs will need to increasingly apply social sciences and novel approaches to behavioral change if longstanding problems with compliance are to be overcome, Olmsted said. Future training should ideally include such areas as implementation science, leadership and management, communication skills, teamwork, negotiation, human factors engineering, organizational behavior and group psychology.

"That last one is going to be critical if we are going to get hand hygiene up to that 99%-100% level, all the time, all three shifts around the clock," he said. "That is going to be a challenge for us, and we have a lot to learn from the social scientists. We need to be connecting with them as well."

## *Failure is not an option*


Steve Gordon

Historically, it is fair to say that when it came to health care infection prevention, failure was seen as a regrettable option. But no longer are HAIs viewed as an inevitable consequence of care, though some undefined portion of them certainly must be. The default setting has shifted; HAIs are largely preventable not inevitable. The prevailing mindset in this new era of infection prevention was captured succinctly by **Steve Gordon**, MD, president of the Society for Healthcare Epidemiology of America (SHEA).

"Perhaps the most distinguishing feature of a highly reliable organization is their collective preoccupation with the possibility of failure," he told APIC attendees. "At the patient bedside I think what that means is every patient, every time, no exceptions, no excuses. No matter who is treating that patient, no matter who that patient is."

To achieve such a culture change, IPs and health care epidemiologists must lead infection prevention collaboratives.

"Human infallibility is impossible, so we must have collegial interactive teams," he said. "Infection preventionists embody team building as I hope health care epidemiologists do. True teamwork depends on collegiality and mutual respect. Patient safety depends an inordinate amount on our teamwork."

This new challenge calls for people with a passion for prevention, and as a massive shakeout continues in the aging health care work force there is an open question whether the demographics will meet the demand.

"The biggest threat I see is how do we continue to attract the best and the brightest into our fields?" Gordon said. "Is this a job, a career or a calling? We need to make sure that people who enter this field have that passion, whether it is nursing or on the physician side."

One answer was underscored by Gordon's presence at the podium, as observers have long called for a much more vital partnership between SHEA and APIC as part of the changing perception of HAIs. Indeed, the rapid rise of infection prevention collaboratives is among the more promising signs in the field, Olmsted notes. In particular, the aforementioned CLABSI campaigns produced rather stunning results, according to the Centers for Disease Control and Prevention.[1]

"We have had significant progress," Olmsted said, rallying the APIC crowd. "We've saved 27,000 lives in this process and saved probably $1.8 billion dollars in health care costs. Give yourselves a round of applause."

However, he pointed out another number that was not so positive. How many APIC members are certified in infection control and carry the CIC initials in their titles? Nineteen percent, Olmsted reported. While the figure may certainly reflect that many among APIC's thousands of members are not hospital based IPs, the lack of certification in the profession seemed to surprise the APIC audience. With the perception that the field must master new skills to take full advantage of an historic opportunity, the fact that many IPs are not proving that they know the old ones is an obvious concern.

*Continued on p. 92*

# Data demands a veritable sandstorm

"*Sand; tiny, discrete particles with substance but basically without fixed structure, frequently accumulating in forms of great beauty or built into 'castles.' In this elemental form sand, and data, present great danger, able to blind us or even bury us.*" **Walter J Hierholzer**, Jr., MD

The metaphor is apt, as both sand and infection prevention data can be accumulated into elegant structures or piled on the overwhelmed IP with no regard for consequence. On the way to becoming a key new player in the shifting health care system, infection preventionists risk being overwhelmed by the growing demands for data collection.

An increasing number of state and federal regulators want to see infection rate data or have key process measures reported. There is still room for argument about how much these mandates improve quality, but regardless there is the immediate issue of the sheer manpower required to comply.

***Infection preventionists risk being overwhelmed by the growing demands for data collection.***

"We need to really support the infection preventionist, but also make sure consumers [and policy makers] understand this comes with a huge burden," **Russell Olmsted**, MPH, CIC, president of the Association for Professionals in Infection Control and Prevention said recently at the APIC conference in Baltimore. "We need to lessen that burden as part of our mission going forward."

Citing Hierholzer's quote above, Olmsted said, "I'm a little bit concerned that the amount of data is going to bury us, and blind us in terms of what we really have to do."

Indeed, at a time when IPs are poised to engage senior administration and take a more direct role in patient care, data mandates threaten to push them back in the silo, crunching numbers. The next critical requirement comes from none other than the Centers for Medicare and Medicaid Services (CMS), which will begin requiring in January 2012 the reporting of central line associated bloodstream infections in selected intensive care units (adult, pediatric, and neonatal ICUs), Olmsted reminded APIC attendees.

To make the collection of such data truly meaningful for infection prevention, it must be used for action, he said.

"Data for local action is very important, I think this happens at a grassroots level," he said. "We want to collect data and disseminate the results. I think we have seen some demonstration that the power of surveillance is sharing the findings, not the collection."

As this process is attempted, heretofore skeletal networks between many hospitals and public health systems are being fleshed out. In particular, the Centers for Disease Control and Prevention's National Healthcare Safety Network (NHSN), has stepped up to become the gold standard for surveillance data reporting, he noted.

"One thing that is positive about public reporting is that we have seen an explosion in the networking and opportunities for partnering with local, state public health and the CDC," he said. "It's an encouraging trend to see as we look at data management and information from patients. Use that sand appropriately, sift through that data and make it meaningful and practical for patients."

Another favorable trend is the implementation of electronic records and reporting technologies, which Olmsted hopes could eventually lead to labs freeing up IP time by directly reporting positive culture results. "I think we are on the brink of that," he said. "This is a trend I see emerging pretty quickly — much more dependence on surveillance technology and automation as much as possible."

In the interim however, many IPs will have to do as best they can to expand the most demanding part of their jobs, according to Olmsted. "What's the biggest piece of the pie — surveillance, almost 45% of our time," he said. "It's an incredible portion of our time." ■

*Continued from p. 90*

"Certification is a commitment to personal and professional development over and above any other benefits," Olmsted said. "I would encourage you all to pursue certification. The IP is really currently at the table. There is a lot of focus on what we do—we need to deliver on that."

## REFERENCE

1. Centers for Disease Control and Prevention. Vital Signs: Central Line — Associated Blood Stream Infections — United States, 2001, 2008, and 2009. *MMWR* 2011;60(08):243-248 ■

# Sail on sailor: Getting to know CEO Katrina Crist

*'The infinite value is in relationships'*


Katrina Crist

**Katrina Crist**, *MBA, was recently named the new chief executive officer at the Association for Professionals in Infection Control & Epidemiology in Washington, DC. Crist comes to APIC with more than 15 years of experience in health care association management, having most recently served as CEO and executive director for the American Society of Transplant Surgeons (ASTS). While at ASTS, she led the organization to increased visibility and credibility and doubled the size of their membership. Previously, she was Executive Director for the Juvenile Diabetes Research Foundation Center for Islet Transplantation at Harvard Medical School/Brigham & Women's Hospital in Boston. Crist has expertise in all aspects of association management, with a focus on strategic planning, professional education and certification, communications, public policy and branding. She holds an MBA from Boston University and a Bachelor of Arts from Purdue University. She recently sat down for an interview with* Hospital Infection Control & Prevention.

*How did you get interested in health care in general, and in particular, what did you find interesting and challenging about entering the field of infection prevention*?

"My [original] interest was specific to organ transplantation and that's how I entered the health care field. It is a very narrow field but it's also extremely complex, and very team oriented which can be a little bit different than most areas of medicine. That opened my eyes to health care in general. I learned a great deal by way of also moving into running a research center. That involved learning a lot about diabetes, which obviously has a much wider scope, but still within the focus of trying to cure at least Type 1 diabetes through cell transplantation. What I got to see there was really this overarching aspect of clinical care in an acute setting—how hospitals operate. Not only the enormity and complexity of their operations, but the importance of providing good care—how they differentiate themselves from others through elements of marketing and competition. I found that aspect interesting. Then I was asked to come back and head up the American Society of Transplant Surgeons. After about 15 years in the field—during this same time frame—my mother became very ill and had a number of medical conditions. That led to me really learning about health care personally, so I could help her navigate the systems of care.

What really interests me here at APIC is that there are so many practice settings and areas where infection prevention and control really touch us all as human beings. They also touch us financially and economically—how our resources are allocated and what our priorities are. To me, there are so many intersections there. Again, I was personally touched by my mother's experience with having health care associated infections, particularly those related to surgical site infections and catheter associated urinary tract infections. I could see both sides of it, the patient side, the family side and the impact there. But also, I saw what happens in a health care setting and the impact [HAIs have] on costs overall. It is

> ***"By reducing these infections—preventing them—we can not only reduce the suffering as it relates to us all as people, but also significantly reduce the costs of healthcare."***

very complex.

What I believe and see is that [infection prevention] is an area that truly can make a greater impact. By reducing these infections—preventing them—we can not only reduce the suffering as it relates to us all as people, but also significantly reduce the costs of health care. It all kind of leads back to behavioral change once we understand the science. That was attractive to me as well. I see the value of the infection preventionists—it's enormous."

*Is there a personal story you would like to share, perhaps a person who really inspired you?*

A. Well, my mother inspired me on many different levels. She was a very strong person. She suffered for close to 15 years with Parkinson's disease. She was diagnosed in her early 50s. On top of that she had several back surgeries as well as having diabetes. She was able to handle so much pain and suffering. The inspiration comes from somebody who could endure all of that. I am inspired to see how we can make the changes to be better in both long-term care as well as acute care and outpatient clinics. She died about a year ago at the age of 65. Everything leads back to that. Philosophically, this was somebody I obviously loved deeply, but I guess I am also conflicted about how much health care expense should have gone to keep her going when the quality of life had been reduced to being so low. I think these are the kind of the puzzles, the dilemmas that our country is looking at.

*I am inspired to see how we can make the changes to be better in both long-term care as well as acute care and outpatient clinics.*

*An off-the wall question—do you consider yourself lucky?*

"My immediate response is that I don't really consider myself lucky, but I consider myself fortunate. More than that, success in life generally—who you are, your disposition—I think is the result of making good choices at pivotal moments. Maybe luck plays into that a little bit, but I think it is the choices that you make at those times."

*What is your favorite sport?*

"I would say sailing. It is a lifetime sport—something you can do throughout your entire life span. And it really is a team sport. There is such an element of safety involved and a level of trust you must have. You can really be in a very dangerous situation if your team isn't operating well together. I have had the pleasure, once I moved to the Chesapeake Bay region here in 1992 [to participate in sailing competitions and races]. Very cool.

*What book would you recommend reading for the beach?*

"My favorite book, one that I like reading again and again, is *A Confederacy of Dunces*. It is hilarious"

*What book would you recommend for professional growth?*

"About two years ago I went through a very interesting practicum. I think about it every day and really apply it. It has been the most productive professional development course that I have ever undertaken. It's called Six Advisors (www.sixadvisors.com). Basically, it helps you learn about your thinking process. It evaluates you in a way that you learn where you are balanced or unbalanced in how you make decisions and your thought processes. We are all products of our environment and experiences. It's not about changing you; it's about providing awareness on how you make decisions. What barriers might exist if you're unbalanced in a particular area? It's very interesting. The six advisors come in when you look at everything—and I think about things this way now—intrinsically and extrinsically. Because we relate to both those types of things—the internal world, the external world—as we move through our day and life. As you learn, you realize that the infinite value is in relationships. The other tiers are hugely important, but as I said before, in a way ideas and concepts are meaningless unless there is action taken." ■

# Measles outbreaks laborious, costly

*Tucson outbreak cost 2 hospitals $800,000*

When a single imported case of measles led to a small outbreak in Tucson, AZ, in 2008, two hospitals were forced to spend a total of some $800,000 to contain it, much of that related to ensuring the immunity of employees.[1] That incident presents a cautionary tale as the United States struggles with its largest number of measles cases since 1996.

In the first 19 weeks of 2011, 118 measles cases were reported. Most (89%) were related to importation of measles from other countries. Nine outbreaks accounted for almost half (49%) of the cases. And the consequences were serious. Forty percent of the patients with measles required hospitalization.[2]

"Measles is quite severe," says **Jane Seward**, MD, MPH, deputy director of the Division of Viral Diseases at the Centers for Disease Control and Prevention in Atlanta and an author of an analysis of the Tucson outbreak. Hospitals need to consider a diagnosis of measles if a patient presents with a cough, fever and rash, she says. "Unvaccinated travelers coming into the United States continue to pose a risk," she says.

The Tucson case revealed just how costly and difficult measles can be for hospitals. A primary concern: Ensuring that all healthcare workers have immunity. Measles can easily spread to people who are non-immune — and to infants too young to have had their measles-mumps-rubella (MMR) immunization.

"Measles is very highly infectious," says Seward. "It's one of the most infectious diseases that we have."

Hospitals typically require new employees to receive two doses of the MMR vaccine or show proof of immunity. People born before 1957 may be presumed to be immune, according to guidelines from the Centers for Disease Control and Prevention — although in the event of an outbreak, CDC recommends that healthcare workers born before 1957 receive two doses of MMR.

In an outbreak situation, hospitals need to be able to verify immunity of employees quickly, says Seward. "I think hospitals in general do recommend MMR vaccine for healthcare workers. But I think recommending and implementing and evaluating are different things," she says. "A lot of hospitals don't necessarily do the extra work to follow up and see how well those policies are being implemented and if anyone is falling through the cracks."

It can also be a nightmare for public health officials trying to contain an outbreak. "In public health circumstances, we don't accept a report by a healthcare provider that they're immune," says **Stephen Ostroff**, MD, director of the bureau of epidemiology in the Pennsylvania Department of Health in Harrisburg.

"Either you have to be able to produce records that show the date you received the vaccine or you have to have a laboratory test that demonstrates with absolute certainty that you're immune. If you can't produce either one of them, then from our perspective you're not immune," he says.

## *Measles not suspected*

The Tucson case began with a 37-year-old traveler from Switzerland who was unvaccinated. She went to a hospital emergency room in Tucson on Feb. 12, 2008 and again the next day, when she was admitted with a fever and rash. Yet measles wasn't initially suspected and she wasn't isolated until two days later.

Meanwhile, a 50-year-old woman who was exposed to the Swiss traveler in the emergency department waiting room developed a fever and respiratory illness. At first, she was diagnosed with asthma exacerbation, then pneumonia and allergic drug reaction. Finally, on March 2, she was diagnosed with measles.

Measles spread from that second patient to several other people. A healthcare worker, who had just received her MMR vaccine the day she cared for Patient 2, developed fever on March 5 and fever, cough and rash by March 9. An unvaccinated 11-month-old boy who was in an emergency department room across the hall from Patient 2 developed measles, as did two unvaccinated children, ages 3 and 5, who walked past the patient's room while visiting their mother in the hospital.

In all, there were seven cases that were confirmed as healthcare-associated — linked to the index case. Another five developed community-acquired cases and one person who

developed measles was exposed to a patient in his home. Of 11 patients who sought medical care at a hospital or physician's office for fever, cough and rash, only one was masked and isolated.

That delay in suspecting measles is a consequence of the success in controlling measles in this country, says Ostroff. But measles is raging elsewhere in the world. France and India were responsible for the greatest number of imported cases in the United States this year.

"Anytime you even remotely suspect this diagnosis, it should be immediately reported to the health department," says Ostroff. "That allows us to get the appropriate testing done and to start identifying the contacts as soon as possible to avoid an additional round of cases."

### *Furloughs cost $444,000*

The outbreak investigation involved 4,793 hospital or clinic patients and 2,868 healthcare workers. Only 75% of the healthcare workers at the two hospitals that received patients with measles had evidence of immunity. None of the Tucson hospitals had electronic records that enabled them to quickly determine if their employees were vaccinated or otherwise immune.

Of 1,583 healthcare workers who had serologic testing, 11% were found to be seronegative. Meanwhile, healthcare workers without evidence of immunity were vaccinated and furloughed for five to 21 days after their last exposure.

The furloughs alone cost the two hospitals about $444,000, according to the analysis of the outbreak.

"Hospitals can be prepared by just having the evidence [of vaccination or immunity] on file," says Seward. For healthcare workers born before 1957, "they can choose to vaccinate them routinely or they can have it on file that they need to be vaccinated in the event of an outbreak," she says.

Because measles is so transmissible, it's important to have levels of immunity and vaccination of about 90 percent to 95 percent, says Seward.

"Suboptimal immunization is going to have ramifications in terms of the incidence of disease," says Ostroff. "I would hate for healthcare providers to become more familiar with measles because there's more disease [in the United States]."

## 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 healthcare 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.

## 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. 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.*
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 successfully completing the last test of the semester, your browser will be automatically directed to the activity evaluation form, which you will submit online.
5. Once the completed evaluation is received, a credit letter will be e-mailed to you instantly. ■

### *COMING IN FUTURE MONTHS*

- Get ready for new CMS reporting requirements
- Going before the product evaluation committee
- Joint Commission provides some answers on key IP issues
- HH electronic monitoring: Why big mother trumps big brother
- California HAI reporting battle: Does anybody win?

## REFERENCES

1. Chen SY, Anderson S, Kutty PK, et al. Healthcare–associated measles outbreak in the United States after an importation: Challenges and economic impact. *J Infect Dis* 2011; 203: 1517-1525.
2. Centers for Disease Control and Prevention. Measles—United States, January–May 20, 2011. *MMWR* 2011; 60:666-668. ■

## *CNE/CME Questions*

5. Speakers at the annual conference of the Association for Professionals in Infection Control and Epdemiology(APIC) stressed that infection preventionists will need to apply social science skills if longstanding problems with compliance are to be overcome. Which of the following were cited as possible areas of study and application?
   A. human factors engineering
   B. organizational behavior
   C. group psychology
   D. all of the above

6. Which of the following were cited as top research priorities for infection prevention by the APIC Science, Knowledge and Implementation Network (ASK-IN)?
   A. double-gloving for prolonged surgeries
   B. the role of the health care environment
   C. scrubs and gowns interwoven with natural antimicrobial agents
   D. all of the above

7. In January 2012 the Centers for Medicare and Medicaid Services (CMS) will begin requiring reporting of central line associated bloodstream infections in selected intensive care units.
   A. True
   B. False

8. In a measles outbreak in Arizona, health care workers without evidence of immunity were vaccinated and furloughed for five to 21 days after their last exposure. The furloughs alone cost the two hospitals involved:
   A. $63,000
   B. $138,000
   C. $444,000
   D. approximately $800,000