



# HOSPITAL INFECTION CONTROL & PREVENTION

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**AHC Media**

## MERS surge: Virus explodes in Korea, CDC ups U.S. guidelines

*Saudis find asymptomatic cases spreading MERS*

By Gary Evans, Executive Editor

**T**hough Middle East Respiratory Syndrome (MERS) was stopped cold last year in the U.S. when two unrelated cases were admitted to hospitals, infection preventionists should maintain a high level of vigilance given a global situation marked by the continuing emergence of the coronavirus.

While the two cases in Indiana and Florida in May 2014 were healthcare workers who recently worked in Saudi Arabian hospitals, next time MERS may not be so obviously identified. Don't forget that it was a sick family member of a SARS case — who therefore had no history of travel to the Hong Kong epicenter — that started a

devastating outbreak in Toronto in 2003.<sup>1</sup>

“Of course we did a wonderful job in containing the two cases that were imported from the Middle East,” says **Terri Rebmann, PhD, RN, CIC**, associate professor in the Institute for Biosecurity at Saint Louis (MO) University. “We also got lucky because it would be very easy to import additional cases of MERS into the United States unknowingly. People could come in while they were still in the incubation period and we wouldn't catch them on screening. We have been lucky in that regard. The sooner you identify these cases and get them isolated and start following correct infection prevention protocols, the

**“WE ... GOT LUCKY BECAUSE IT WOULD BE VERY EASY TO IMPORT ADDITIONAL CASES OF MERS INTO THE UNITED STATES.”**

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less of an impact there should be in  
terms of morbidity and mortality.”

As of June 16, the MERS outbreak  
in Korea had reached 154 cases  
with 19 deaths, the World Health  
Organization reported. That translates  
to a mortality rate of 12%, considerably  
less than the 50%-60% death rates  
in hospital outbreaks after MERS  
emerged in Saudi Arabia in 2012.  
Saudi officials investigating those  
outbreaks said at the time they were  
probably missing a spectrum of milder  
cases, and that may explain some of  
the difference in the mortality rates.  
Saudi investigators are now starting to  
detect these milder cases, projecting  
that there may be thousands of  
subacute but transmissible infections  
in those with frequent contact with  
camels.<sup>2</sup> (See related story, p. 78.)

“There is actually quite a bit more  
MERS disease — subclinical or very  
mild cases — [in Saudi Arabia] so the  
actual mortality rate isn't as high as we  
previously thought,” Rebmann says.  
“So for hospitalized cases the mortality  
rate is still close to 60% — it's very  
high. But in their general population  
[researchers have found] that the  
mortality rate was closer to 27%-30%.  
That is still a very high mortality rate.”

In Korea, the rapid spread of the  
coronavirus from a single imported  
case — a businessman who had traveled  
to the Middle East — was shocking,  
raising questions of whether the  
virus had mutated and become more  
transmissible. The WHO recently  
issued a preliminary finding based  
on isolates from two Koreans, noting  
that nothing points “conclusively to  
any significant biological change”  
in the MERS coronavirus.

“So far the virus is genetically stable;  
no major mutations,” says **Ghazi  
Kayali**, PhD, MPH, staff scientist in  
the Department of Infectious Diseases  
at St. Jude Children's Research Hospital  
in Memphis, TN “But there is data

showing that ‘super-spreaders’ —  
infected humans shedding a lot of  
virus — exist and may be the cause of  
the hospital-based infections we saw  
in the Gulf and currently in Korea.”

Concurring was **Stanley Perlman**,  
MD, PhD, a microbiology professor  
who studies coronavirus pathogenesis  
at the University of Iowa in Iowa City.

“There has been speculation that the  
index case and possibly others infected  
during the Korean outbreak have been  
so-called super spreaders: People who  
aerosolize the virus and almost have a  
halo of virus around them,” he says.

## Credit Koreans for transparency

That said, Perlman makes an  
interesting observation that as bad as its  
infection control has been, Korea has  
been transparent in reporting cases.

“The reason that this is looking so  
bad is a combination of low vigilance;  
people were not ready,” he says. “Then  
after that the Koreans have actually  
been very transparent about what they  
are doing. They are reporting cases,  
doing all the testing and quarantining.  
This sounds very bad, but I suspect if  
Saudi Arabia had done this [at outbreak  
onset] it might have looked just as  
bad. But the Saudis tended to give  
out information less willingly, so you  
heard just about the severe cases. In  
Korea, everybody is being tested and  
all of the information is available.”

Based on current data there is  
no evidence “to suggest sustained  
human-to-human transmission  
in communities and no evidence  
of airborne transmission,” the  
WHO reports. “However, MERS  
is a relatively new disease and  
information gaps are considerable.”

In that regard, none other than  
**Jun Byung-yool**, the former director  
of the Korea Center for Disease

Control and Prevention, said the rapid spread of MERS in Korea may be explained in part by the lack of antibodies in a population with no history of exposure to camels.

“One of the reasons [for the difference] may be that people in the Middle East have antibodies against the MERS virus from their frequent contact with camels, and South Koreans don’t have them,” Jun said.<sup>3</sup>

A recent seroprevalence study in Saudi Arabia did find a higher level of antibodies in those frequently exposed to camels, but the vast majority of the samples taken showed no MERS antibodies present. Still, Jun’s theory is intriguing, recalling the European importation of smallpox which devastated Native Americans who had never been exposed to the disease.

## Patient zero

Then again, no super spreaders or naïve immunity is really needed to explain the onset of the outbreak, which spread in the brazen absence of case identification and competent infection control measures.

The Korean outbreak was set in motion on May 4, when a 68-year-old businessman returned to Korea after a trip to Bahrain, United Arab Emirates, Saudi Arabia, and Qatar. He became symptomatic for a respiratory infection about a week later. This fits the MERS incubation period: a mean of five days to symptom onset with a range of two to 14 days.

Now suffering fever and cough, the man went to at least three different hospitals from May 8th to 20th, but MERS testing was not done until May 19. The sputum sample tested positive for MERS on May 20, after which the patient “was transferred to the nationally designated treatment facility for isolation,” Korean public health officials reported.

Meanwhile, symptoms began developing in patients, visitors, and healthcare workers at the various facilities where the index case sought care. From these cases the outbreak spread out in waves to at least a dozen healthcare facilities. One of these cases travelled from Korea to China on May 26 while symptomatic, testing positive for MERS in China

on May 29 and making that Asian nation the 25th country to have at least one case of the coronavirus.

The rapidly expanding outbreak exposed the vulnerability and eccentricity of the Korean healthcare system, where it is apparently the norm to go to several different facilities in search of the best doctor and then have family members heavily involved in direct patient care.

“[Under these] circumstances you cannot possibly have rigorous infection control, particularly to the level that you need for a MERS case,” says **William Schaffner**, MD, chairman of preventive medicine at Vanderbilt University Medical Center in Nashville.

MERS is difficult to diagnose, particularly in the early part of an outbreak when awareness is relatively low and the coronavirus presents like many other influenza-like illnesses. The index case also did not report his recent travel history to the Middle East when he first sought treatment, the WHO reported. It is not clear whether healthcare providers asked.

“Conditions and cultural traditions specific to Korea have likely also played a role in the outbreak’s rapid spread,”

## Hospital Infection Control & Prevention receives two SIPAwards

*SIPAWards in DC continue a long tradition of excellence*

**W**e are proud to announce that *Hospital Infection Control & Prevention* recently won first place for Best Analytical Reporting at the annual *Specialized Information Publishers Association (SIPA)* awards (SIPAWards) in Washington, DC.

Written by long-time editor Gary Evans, our special report entitled “Ebola in America” dealt not only with the demanding infection control issues, but showed that the response to the outbreak was characterized more by fear than science. A climate of public distrust, political grandstanding, rumor, and false assumptions almost undermined the medical response to the outbreak.

*Hospital Infection Control & Prevention*, which regularly details case studies of successful infection control interventions, also took second place in the SIPAWards for Best Educational Newsletter.

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the WHO noted.<sup>4</sup> “The accessibility and affordability of healthcare in Korea encourage ‘doctor shopping.’ Patients frequently consult specialists in several facilities before deciding on a first-choice facility. Moreover, it is customary in Korea for many family members and friends to visit loved ones when they are in the emergency room or admitted to hospital. It is also customary for family members to provide almost constant bedside care often staying in the hospital room overnight, increasing the risk of close exposures in the healthcare setting.”

## Perfect storm

A large outbreak of MERS under such conditions seems to fulfill the adage that “every system is perfectly designed to produce the results that it gets.” If changes are not made after the MERS outbreak, the Korean healthcare system could certainly be vulnerable to future emerging infections, possibly even amplifying the etiologic agent.

“When you look at it you think, ‘Wow, that is a good way to spread infections,’” Perlman says.

In that regard, the WHO recommended that Korea should strengthen the medical facilities needed to deal with serious infectious diseases, including increased numbers of negative-pressure isolation rooms. After a thorough review of the situation, the WHO recommended that Korea:

- consider how to reduce the practice of “doctor shopping;”
- train more infection prevention and control specialists, infectious disease experts, laboratory scientists, epidemiologists, and risk communication experts;
- invest in strengthening public health capacities and leadership

## Wearing the mask

Adding to this general state of confusion and misinformation were the widely dispersed images of Koreans wearing surgical masks in public and at social events. This measure would presumably not really be protective unless the person wearing the mask has MERS and is protecting others by containing their own respiratory secretions.

“First of all, that is the wrong kind of mask — those don’t do very much because they’re surgical masks and that’s not protective against respiratory spread,” Perlman says. “My take on it is that people are scared. You would have to be walking down the street and pass someone who had MERS who was really sick — was shedding a lot of virus — and then maybe talk within a foot of them. The odds of getting it are pretty slim. Closing schools also seemed like a bad idea to me.”

The WHO encouraged Korean officials to reopen schools that were closed due to fears around MERS. “Schools have not been linked to transmission of MERS in the Republic of Korea or elsewhere,” the WHO stated. “Reopening, combined with clear messages for the public on why, could start to build confidence and trust with the population in Korea. Regular communications on the evolution of the outbreak will also build confidence both in Korea and internationally.”

Even before the outbreak in Korea, MERS was increasing, with Saudi Arabia reporting twice as many cases (16) in the month of April than had occurred during the two years prior. Amid the ongoing outbreak in Korea and the substantial increase in the number of MERS cases reported worldwide since last spring, the Centers for Disease Control and Prevention recently issued both a health advisory and updated infection control guidelines on the

coronavirus.<sup>5,6</sup> (*See related story, p. 79.*)

“The CDC updated their definition of a “person under investigation (PUI),”” Rebmann says. “They now indicate that recent travel within 14 days to a Korean healthcare facility is part of the definition for determining if someone should be a PUI. Travel to South Korea in and of itself is not a risk factor for exposure to MERS at this time. It’s a [history of] being in the Korean healthcare system that is the potential risk factor for exposure. This has important implications for infection preventionists, infectious disease physicians, hospital epidemiologists, and primary care providers. There needs to be increased awareness about this new potential source of exposure.”

The MERS outbreak should ultimately fade out in Korea as SARS did in Toronto, and perhaps for the same reason: the lack of an animal host (e.g. camel, civet cat) to serve as a reservoir. There are still many vexing questions about the emerging coronavirus, however, including, as noted above, exactly how it is transmitted.

“Even in the Middle East where there was a substantial period of a lot of nosocomial transmission, it never really got out into the community,” Schaffner says. “We have this great propensity for nosocomial spread, but once it gets out of the hospital environment it doesn’t spread very readily — there have been cases, but it doesn’t spread 1-2-3-4-5 in the community. This is kind of a [strange] virus and despite all of the verbiage that’s been written about it, I don’t think we really understand completely how it is transmitted.”

It would seem to require close, prolonged contact to transmit, but there have been case reports in Korea of patients acquiring MERS after being “in the same ward” as an infected patient.

“Even though the patients didn’t have direct contact, they were in the same ward,” Schaffner said. “The mode of transmission in those circumstances — could it have been airborne or was it transmitted via a healthcare worker? I don’t think that has ever been clarified.”

One of the lessons of SARS is that once you’ve lost vigilance — the bug is in the house — you’d better practice diligence with every MERS patient.

“We have great lessons about SARS from Canada,” he says. “We learned that nosocomial transmission occurred readily, had serious implications, and in order to interrupt it you had to identify patients very early and then put them in negative pressure rooms with absolute adherence to full-blown precautions. That’s where we learned that you have to have a monitor at the door to make sure

everybody puts everything on and, very importantly, takes everything off carefully. The donning and doffing is done meticulously because as we have learned again with Ebola, it’s the doffing that could be potentially hazardous. I am skeptical that this level of education, training, and supervision is currently happening in South Korea. I am dubious.”

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# WHO keys to stopping the outbreak in Korea

*Trace contacts, designate hospitals, fully inform public*

In addition to other outbreak control measures, epidemiologists and MERS experts working with the WHO underscored these three key measures<sup>1</sup>:

## Contacts

Early and complete identification and investigation of all contacts; robust quarantine/isolation and monitoring of all contacts and suspected cases; full implementation of infection prevention and control measures; and prevention of travel, especially internationally, of infected persons and contacts.

## Hospitals

Selected hospitals should be designated for safe triage and assessment of suspected MERS cases. This will help protect healthcare workers while also minimizing the potential disruption of regular service delivery due to potential public reticence to seek help in facilities treating MERS patients.

## Transparency

To ensure the public is fully informed of developments in the outbreak, regular information should be provided in both Korean

and English. This should include information on the evolution of the outbreak as well as measures to be taken or avoided. Channels most likely to be seen by the population, such as television and social media, should be used for maximum reach. Local government must be fully engaged and mobilized in the national fight against this large and complex outbreak.

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# MERS may be spreading in Saudi Arabia from thousands of mild, asymptomatic cases

*'A projected 44,951 individuals older than 15 years might be seropositive for MERS'*

In a troubling finding, investigators have discovered that MERS is now one step removed from its reservoir in camels.

There appear to be thousands of asymptomatic or mild MERS cases — primarily young men who have frequent contact with camels — who may be transmitting the virus to those with underlying medical conditions in Saudi Arabia, according to a recently published seroprevalence study.<sup>1</sup>

“Seroprevalence of MERS antibodies was significantly higher in camel-exposed individuals than in the general population,” the authors reported. “By simple multiplication, a projected 44,951 individuals older than 15 years might be seropositive for MERS in Saudi Arabia. These individuals might be the source of infection for patients with confirmed MERS who had no previous exposure to camels.”

The study may actually be an underestimate of the situation, the lead author tells *Hospital Infection Control & Prevention*.

“Our approach was very conservative as we are fully aware of cross-reactive antibodies against other commonly circulating coronaviruses,” says **Marcel Muller**, PhD, a researcher at the Institute of Virology in Bonn, Germany. “However, this means that the actual numbers could be much higher as some people might have been infected but lost their neutralizing antibodies already.”

Previous research suggests that dromedary camels are the intermediary host for the MERS coronavirus, which likely arose in bats. However, the

actual number of infections in people who have had contact with camels is unknown and most index patients cannot recall any such contact.

The authors undertook a nationwide serosurvey in Saudi Arabia to establish the prevalence of MERS antibodies, both in the general population and in populations of individuals who have ongoing exposure to camels.

In the cross-sectional serosurvey, they tested serum samples obtained from healthy individuals older than 15 years who attended primary healthcare centers or participated in a national burden-of-disease study in all 13 provinces of Saudi Arabia. In addition, they tested serum samples from shepherds and slaughterhouse workers with occupational exposure to camels. Camels may be slaughtered to eat or as part of ritual sacrifices.

Samples were screened by recombinant ELISA and MERS seropositivity was confirmed by recombinant immunofluorescence and plaque reduction neutralization tests, the authors report.

Between December 1, 2012, and December 1, 2013, the researchers obtained individual serum samples from 10,009 people. Anti-MERS antibodies were confirmed in 15 people in 6 of the 13 provinces.

The mean age of seropositive individuals was significantly younger than that of patients with reported laboratory-confirmed MERS. Men had a higher antibody prevalence than did women (11 of 4,341 vs. two of 4,378). Compared with the general population, seroprevalence of MERS antibodies was 15 times higher in shepherds

(two of 87) and 23 times higher in slaughterhouse workers (five of 140).

## Small numbers, big implications

While those numbers are small, the implications could be big.

“I believe these data strongly support the hypothesis that young people exposed to camels are getting infected with MERS — whether asymptotically or with mild symptoms — and are transmitting the virus to their contacts in the general population of whom the most susceptible, with underlying conditions, become severely sick and are hence detected by the surveillance system in Saudi Arabia,” says **Ghazi Kayali**, PhD, MPH staff scientist in the department of infectious diseases at St. Jude Children’s Research Hospital in Memphis, TN.

Some have questioned whether the findings suggest that eventually MERS could establish an endemic presence in humans, but Kayali — who co-authored a commentary on the research paper<sup>2</sup> — says that concern is not supported by the current research.

“There is no evidence so far of the virus establishing itself in the human population,” he tells *Hospital Infection Control & Prevention*. “I believe that the index case would always have contact with camels.”

The presence of antibodies should not be confused with having active infection, but if present trends continue, the pattern of asymptomatic or mild infection and subsequent antibody production would be similar.

“Having antibodies means that at one point in time, those people were exposed to the virus,” he explains.

“It does not necessarily mean that all those had an active infection with MERS; exposure to virus could lead to having antibodies without an active infection. However, a good proportion of those would have had a MERS infection and at that time would be capable of infecting others.”

As the threat of camels became clear, the Saudi Agriculture Ministry urged people who come in contact with the animals to exercise caution and “wear protective gloves, especially when dealing with births or sick or dead [camels].”<sup>3</sup> That may be a practical alternative to attempting a camel cull, which would be a non-starter with Saudis deeply attached to the central animal in their culture.

Indeed, attempts to point an epidemiological finger at camels for causing MERS have been met by a strange act of defiant affection by Saudi camel owners: kissing the beasts of burden right on lips.

Chickens don't inspire much sentiment. When H5N1 avian flu emerged as a major public health

threat in 1997, officials in Hong Kong eliminated its suspected animal reservoir by killing more than 1 million chickens.

Similarly, when SARS hit China in 2002-2003, more than 10,000 masked palm civets — cat-like animals sold as a delicacy in public markets — were culled with extreme prejudice. One method was putting four or five civets in a cage and lowering it in water to drown them.

As with many aspects of MERS, there are questions about the camel connection that trouble epidemiologists and researchers.

“We think this comes from camels, but look at the serology: Camels have been positive for MERS since 1990 or so and this disease didn't enter the human population until 2012,” says **Stanley Perlman**, MD, PhD, a microbiology professor who studies coronavirus pathogenesis at the University of Iowa in Iowa City.

Similarly, given their prolonged exposure to camels, one might think that the virus would have taken a greater toll on those who have close contact with the animals. Instead, MERS exploded when it got to hospital patients with underlying

illness that compromises their immune system. Going back out into the community, MERS stalls out again.

“This is a funky virus. We don't know exactly where it came from — we have bats and then all these camels — but it's not as though we had a huge epidemic and all the camel owners, herders and breeders [became infected]. Isn't that weird?” says veteran epidemiologist **William Schaffner**, MD, chairman of preventive medicine at Vanderbilt University Medical Center in Nashville.

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# CDC updated MERS guidelines call for a full-court press

*Emphasizing visitors almost as much as patients*

The CDC has updated its guidance for MERS, but the essential concept remains in place: Throw everything but the kitchen sink at it.

CDC guidance continues to recommend the full gamut of standard, contact, and airborne precautions, with healthcare workers wearing N95 respirators or powered air purifying respirators (PAPRs).<sup>1</sup>

“The guidelines also emphasize

additional elements of infection control and prevention programs that should be in place to prevent transmission of any infection — including respiratory pathogens like MERS — in a healthcare setting,” **David Kumar**, MD, an epidemiologist in the CDC's Division of Healthcare Quality Promotion said at a recent clinical briefing.

The guidelines emphasize

early identification and prompt isolation of patients and extreme diligence when donning and doffing personal protective equipment.

“HCWs should be provided job- and task-specific education and training in preventing transmission of infectious agents,” Kumar said. “They should be medically cleared and tested and trained [to use] respiratory protection devices. They should be

educated, trained, and practiced in the use of PPE prior to caring for a patient, including preventing contamination of clothing, skin, and the environment during the process of removing equipment.”

In addition to case identification and rapid isolation of patients, the CDC is warning of spread from visitors.

“Visitors should be restricted from entering a MERS patient’s room, but exceptions could be considered for those essential to the patient’s emotional well-being,” he said. “Visits should be scheduled and controlled. [Recommendations include] logging all visitors, screening all visitors for acute respiratory illness before entering the hospital, and evaluating the risk for the visitor, providing instructions on hand hygiene, limiting touching of surfaces, use of PPE and limiting their moments in other parts of the facility.”

“As with some other pathogens, there is no definitive point to discontinue isolation of a MERS patient. Duration of precaution will have to be determined on a case-by-case basis,” Kumar says.

The reasons for the full gamut of precautions include the following, the CDC reported:

- Current lack of a safe and effective vaccine and chemoprophylaxis,
- a possible high rate of morbidity and mortality among infected patients, and
- incompletely defined modes of transmission of MERS.

## New PUI definitions

Given the outbreak in Korea, the CDC has revised its definitions of a person under investigation (PUI) for MERS. The revised PUI

criteria include the following:

Fever and pneumonia or acute respiratory distress syndrome (based on clinical or radiologic evidence) and one of the following:

- A history of travel from countries in or near the Arabian Peninsula within 14 days before symptom onset, OR close contact with a symptomatic traveler who developed fever and acute respiratory illness (not necessarily pneumonia) within 14 days after traveling from countries in or near the Arabian Peninsula, OR
- A history of being in a healthcare facility (as a patient, worker, or visitor)

**“PUI MAY EXTEND OUT TO PEOPLE WITH FEVER AND RESPIRATORY SYMPTOMS (E.G., COUGH, SHORTNESS OF BREATH) THAT DO NOT NECESSARILY HAVE PNEUMONIA DEPENDING ON TRAVEL AND CONTACT HISTORY.”**

in the Republic of Korea within 14 days before symptom onset, OR

- A member of a cluster of patients with severe acute respiratory illness (e.g., fever and pneumonia requiring hospitalization) of unknown etiology in which MERS is being evaluated, in consultation with state and local health departments in the US.<sup>2</sup>

PUIs may extend out to people with fever and respiratory symptoms (e.g., cough, shortness of breath) that do not necessarily have pneumonia

depending on travel and contact history. In addition, the CDC recommends the following measures for incoming, symptomatic patients:

- Take steps to ensure all persons with symptoms of a respiratory infection adhere to respiratory hygiene and cough etiquette, hand hygiene, and triage procedures throughout the duration of the visit.
- Consider posting visual alerts (e.g., signs, posters) at the entrance and in strategic places (e.g., waiting areas, elevators, cafeterias) to provide patients and HCP with instructions (in appropriate languages) about hand hygiene, respiratory hygiene, and cough etiquette. Instructions should include how to use face masks or tissues to cover nose and mouth when coughing or sneezing, to dispose of tissues and contaminated items in waste receptacles, and how and when to perform hand hygiene.
- Provide space and encourage persons with symptoms of respiratory infections to sit as far away from others as possible. If available, facilities may wish to place these patients in a separate area while waiting for care.
- Ensure rapid triage and isolation of patients who might have MERS infection.
- Identify patients at risk for having MERS infection before or immediately upon arrival to the hospital.
- Implement triage procedures to detect patients at risk for having MERS infections during or before patient triage or registration (e.g., at the time of patient check-in) and ensure that all patients are asked about the presence of symptoms of a respiratory infection and history of travel to areas experiencing transmission of MERS or contact with possible MERS patients.
- Immediately isolate those identified as at risk for

having MERS infection.

- Implement Respiratory Hygiene and Cough Etiquette (i.e., placing a face mask over the patient's nose and mouth) and isolate those at risk for MERS infection in an Airborne Infection Isolation Room.

- Provide supplies to perform hand hygiene to all patients upon arrival to facility (e.g., at entrances of facility, waiting rooms, at patient check-in) and throughout the entire duration of the visit to the healthcare setting.

## Exposed workers

Monitoring and management of exposed personnel continues to be emphasized. "Personnel who

care for MERS patients should be monitored and immediately report signs or symptoms of acute illness to their supervisor or a person designated by the facility for 14 days from their last known contact with the patient," Kumar says.

Personnel who develop respiratory symptoms after an unprotected exposure, such as not wearing personal protective equipment at the time of contact, should either not report to work or stop working immediately, notify the designated person, seek medical attention, and comply with work restrictions until no longer infectious, he emphasized.

"Asymptomatic healthcare workers who have unprotected exposures to

MERS patients should be excluded from work for 14 days from the last contact and monitored for signs and symptoms," he says.

## REFERENCES

1. CDC Interim Infection Prevention and Control Recommendations for Hospitalized Patients with Middle East Respiratory Syndrome Coronavirus (MERS-CoV) UPDATED June 2015: <http://1.usa.gov/1sAtkDQ>
2. CDC. Updated Information and Guidelines for Evaluation of Patients for Middle East Respiratory Syndrome Coronavirus (MERS-CoV) Infection. June 11, 2015: <http://1.usa.gov/1GROvRI>. ■

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# APIC 2015: Data collection overkill forcing IPs back into silos, undermining patient safety

*'Much of what I do involves sitting at a desk. It's frustrating, because that's not how I can prevent infections'*

Collecting and reporting hospital infection data to federal health agencies takes more than five hours each day, at the expense of time needed to ensure that frontline healthcare personnel are adhering to basic infection prevention practices such as hand hygiene, according to research presented recently in Nashville at the annual conference of the Association for Professionals in Infection Control and Epidemiology (APIC).

Many infection preventionists (IPs), especially those in community hospitals, face the daily burden of state and federal reporting, particularly to comply with the CMS requirements.

**Sharon L. Parrillo**, BSN, RN, CIC, an IP at Robert Wood Johnson University Hospital Somerset in Somerville, NJ, decided to tabulate the time required to review lab data and complete reports for bloodstream infections, urinary tract infections, surgical site infections, MRSA infections, and *Clostridium difficile* infections to the CDC's National Healthcare Safety Network (NHSN). IPs at hospitals across the country are responsible for analyzing lab reports and reporting infection data to the NHSN database, which is used for Medicare payment determination by CMS.

"HAI reporting exposes

problems, drives improvements, and allows for benchmarking against national targets. But without adequate staffing, the burden of reporting takes time away from infection prevention activities that protect patients at the bedside," Parrillo said. "We are fortunate that we have two IPs on staff at our hospital, but many community hospitals have only one staff person dedicated to infection control. This analysis didn't even take into account the time necessary to perform state and local HAI reporting, which many facilities are also required to do."

Parrillo calculated the number of laboratory test reports — urine, blood, wound, and sputum —

received and reviewed in July, August, and December 2013 and January 2014 at her 355-bed acute care community hospital. Using NHSN time estimates for each infection event report, she calculated the total amount of time needed to review the lab reports and complete reporting using the NHSN criteria and definitions. This totaled 118.29 hours each month — or five hours and eight minutes per day, based on a five-day work week. It is also worth noting that during the time period assessed, the hospital was only at 60% capacity.

“I hope this study encourages lawmakers to consider the burden of IP time when new HAI reporting legislation is being considered, and helps IPs at other facilities start a conversation with their leadership about staffing and resources needed

to ensure a safe environment for patients and staff,” she said. “Much of what I do involves sitting at a desk. It’s frustrating, because that’s

“THIS ANALYSIS DIDN’T EVEN TAKE INTO ACCOUNT THE TIME NECESSARY TO PERFORM STATE AND LOCAL HAI REPORTING, WHICH MANY FACILITIES ARE ALSO REQUIRED TO DO.”

not how I can prevent infections. We need to be able to do more rounding, more hand hygiene

observance, more preparedness, and more staff education.”

IP-led intervention teams have been shown to reduce HAIs. In addition to meeting reporting demands, IPs educate healthcare workers and patients about infectious diseases and how to limit their spread. Antibiotic stewardship has become a huge issue, and IPs also conduct rounds with clinical and environmental teams, share data with individual hospital units for improvement efforts, develop and review infection prevention and control policies and procedures, and develop infection control plans during facility renovation and construction. Then, usually beginning on a Friday afternoon, there’s an outbreak. ■

## APIC 2015: Pilot program in pediatric long-term care cuts topical antibiotic use, decreases orders

*Requiring documentation of antibiotic indication improves overall usage*

**A** pilot antibiotic stewardship program at a pediatric long-term care facility led to a 59% decrease in use of a topical antibiotic and an 83% decrease in orders for antibiotics without proper documentation during a six-month period, according to a study presented recently in Nashville at the annual APIC conference.

When the infection prevention team at Elizabeth Seton Pediatric Center in Yonkers, NY, noticed that certain antibiotics were being prescribed for a prolonged period of time and for non-infectious indications, they launched a trial program to make improvements

in antibiotic prescribing and reduce the risk of antibiotic-resistant infections in their vulnerable patient population.

### The results

With support from the medical director and the infectious disease physician of their 137-bed facility, the team conducted monthly audits of all antibiotics ordered from April to September 2014. They met regularly with physicians, pharmacists, nurses, and administrators to review the data and enlist staff support to reduce

inappropriate antibiotic prescribing. The program aimed to cut the number of prescriptions without a documented indication, and to decrease the use of mupirocin, a topical antibiotic ointment, for non-infectious conditions such as skin rashes and abrasions. Both of these goals were achieved.

“Our children suffer from many chronic health conditions, and any way that we can reduce the potential for antibiotic resistance will be beneficial for them in the long run,” said **Olivia Jackson**, RN, infection control coordinator at Elizabeth Seton.

“While this is a pilot program, it

is clear that we can make a sizeable impact by getting our healthcare providers to really think about why they are prescribing antibiotics and whether they are necessary.”

The researchers report that before transitioning to an electronic medical records system, healthcare providers in their facility often failed to document a reason for antibiotic

prescriptions or failed to discontinue treatment when an appropriate duration had been completed document. A reason for antibiotic prescriptions or failed to discontinue treatment when an appropriate duration had been completed. With a new barrier built into the electronic medical records, providers are required to document the specific

condition that dictates the need for the antibiotic they want to order.

Once this was in place, they noted a sharp decline in prescription numbers. Antimicrobial resistance is one of the most pressing issues facing healthcare, as the CDC 2 million people are infected with resistant bugs annually and some 23,000 patients die. ■

## APIC 2015: Daily bathing of pediatric patients with antiseptic reduces BSIs

Daily bathing of pediatric patients with disposable cloths containing 2% chlorhexidine gluconate (CHG) reduced central line-associated bloodstream infections (CLABSIs) by 59% and saved approximately \$300,000 in one hospital over a six-month period, according to a study presented recently in Nashville at the annual APIC conference.

Infection preventionists examined the impact of implementing a daily CHG bathing protocol for all pediatric patients at Riley Hospital for Children at Indiana University Health in Indianapolis. Previously, the hospital used CHG for daily bathing to reduce CLABSIs in the hematology/oncology unit with marked success. This prompted the team to consider implementation of this practice hospital-wide, regardless of whether patients had central line catheters.

The infection prevention team worked with nursing staff, parents, and hospital leadership to develop a comprehensive educational program to adopt daily CHG bathing for all patients, and to strengthen adherence to a bundle

of prevention practices already in place for patients with central lines. In addition to daily bathing

“THE REDUCTION IN INFECTIONS DURING THE IMPLEMENTATION PERIOD REPRESENTS A POTENTIAL COST SAVINGS OF \$297,999.”

with CHG-impregnated wipes, the strategies included daily linen changes, assessment of central line dressings, appropriate technique for giving medications, and regular tubing and cap changes on the lines.

“Our executive suite and unit

managers made sure all staff understood that this was a priority,” said **Adam N. Karcz**, MPH, CPH, CIC, an IP at Riley Hospital. “By educating everyone on the care team — including parents — and standardizing bathing procedures, we were able to dramatically reduce infections and save healthcare dollars in just six months.”

Bathing compliance increased from 45% to 81% during the six-month study period. During the control period — six months prior to implementation — the 269-bed hospital had 22 CLABSIs. During the implementation period the number dropped to nine CLABSIs. The hospital also experienced a 56% percent drop in the number of MRSA infections during this time period. The reduction in healthcare-associated infections during the implementation period represents a potential cost savings of \$297,999, Karcz said. ■

### COMING IN FUTURE MONTHS

- More from APIC 2015 in Nashville
- Controversial study finds respirators no better than masks in clinical practice
- A MRSA carrier in the OR
- CMS infection control inspections
- OSHA moves ahead on ID standard



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## CNE/CME QUESTIONS

1. Which of the following describes the index case who started a large nosocomial outbreak of SARS coronavirus in a Toronto hospital in 2003?
  - a. A traveler from Hong Kong
  - b. A healthcare worker
  - c. The family member of a SARS case
  - d. A lab worker returning from an international conference
2. Stanley Perlman, MD, PhD, said Korea has made the MERS outbreak considerably worse by refusing to divulge information on test results and case counts.
  - a. True
  - b. False
3. Investigators discovered antibodies for MERS in which of the following populations:
  - a. Camel jockeys
  - b. Camel milkmaids
  - c. Slaughterhouse workers
  - d. All of the above
4. According to Sharon L. Parrillo, BSN, RN, CIC, collecting and reporting hospital infection data to federal health agencies takes more than how many hours a day?
  - a. 3
  - b. 4
  - c. 5
  - d. 6

## CNE/CME 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 health care 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.