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*Patient Safety Alert*

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## CDC draft urges universal masking of incoming patients to prevent SARS

*'A good rationale, but totally impractical?'*

**D**raft guidance by public health officials preparing for a seasonal resurgence of severe acute respiratory syndrome (SARS) calls for taking the controversial step of masking all incoming patients with respiratory symptoms, *Hospital Infection Control* has learned.

The draft plan under consideration by the Centers for Disease Control and Prevention (CDC) underscores the need for "enhanced respiratory hygiene in the SARS era." Dormant but dreaded, SARS could make a seasonal resurgence that would be compounded by the presence of other respiratory conditions that can be spread via respiratory droplets (e.g., influenza, respiratory syncytial virus, and *Mycoplasma pneumoniae*).

"To help prevent transmission of respiratory infections in the health care setting, all patients presenting with respiratory symptoms should be given a surgical mask and encouraged to wear it," the CDC SARS draft plan stated.<sup>1</sup> "These patients should also be separated, as possible, from other patients. Patients who cannot wear a surgical mask should be given tissues and instructed to cover their nose and mouth when coughing or sneezing. Patients with respiratory symptoms should then be managed under droplet precautions until it is determined that the cause of the symptoms is not an infectious agent that requires precautions."

The CDC met Sept. 12, 2003, in Atlanta with liaison representatives of numerous medical associations to solicit reaction and input on the proposed plan, *Guidance for SARS Preparedness and Response in Healthcare Facilities*.

"Infection control is critical," said **Dan Jernigan**, MD, a medical epidemiologist in the CDC division of health care quality promotion. "Universal masking and hand hygiene of respiratory patients at first encounter is important."

In most cases, it appears that contact and droplet precautions along with eye protection have been effective in preventing SARS transmission. Contact precautions emphasize hand hygiene, gloves, and gowns. Droplet

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precautions call for wearing a mask within three feet of the patient to prevent large particle droplet spread via coughing, sneezing, or talking. In addition, airborne transmission — though thought to be rare — may occur with SARS. Health care workers have been advised previously to wear N95 tuberculosis respirators when caring for SARS patients, particularly during aerosol-generating procedures such as intubation.

The CDC plan is expected to be finalized in the near future, but the feedback and concern evidenced at the recent meeting suggests further

revisions may be in store.

The universal masking recommendation and questions about N95 respirators dominated many of the infection control conversations at the consultants' meeting. For example, **William Scheckler**, MD, representing the CDC's Healthcare Infection Control Practices Advisory Committee, expressed concern about the universal masking recommendation. "The practicality of that from the point of view of having staff to do it, isn't clear to me," he said. "I would like to know if there are any data on influenza outbreaks or other events in adults where this has been done and proven useful. If there are no data anywhere that it is useful, particularly when you do not have a SARS outbreak or SARS cases in your community, I just wonder if this is a good idea with a good rationale but totally impractical."

The CDC guidelines also recommend that "triage and intake staff should be offered the option of wearing masks during times when respiratory infections are common and instructed to practice frequent hand hygiene. Ideally, triage staff should remain at least 3 feet away from unmasked patients with respiratory symptoms in order to decrease the risk of droplet transmission."

However, **Bill Borwegen**, representing the Service Employees International Union in Washington, DC, questioned why — particularly in light of documented transmission incidents to Canadian workers in Toronto — the CDC document did not place more emphasis on the use of N95 respirators to protect workers.

"If you really want to protect health care workers, you have to give them N95 respirators," he said. "I don't know what the cost is, but we are the richest country in the world. Why is the health care sector different from any other sector of the economy? We would give workers better respiratory protection in any other sector, why not health care?"

The CDC should clarify whether supplies of N95 masks are going to be adequate and urge hospitals to begin acquiring and fit-testing them, he said.

Still, the accumulated evidence suggests the bulk of transmission is large droplet as opposed to airborne, meaning a surgical mask could actually protect the worker in a couple of key ways, said **Michael Tapper**, MD, representing the Society for Healthcare Epidemiology of America.

"The surgical mask probably functions to prevent the health care worker from touching his or her nose or mouth, which is probably very

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### Editorial Questions

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important for preventing transmission [of] large droplets," he said. "I would agree with you [Borwegen], where an organism is spread by airborne droplet nuclei such as tuberculosis or measles that a surgical mask is totally inadequate. For a disease that seems to be largely spread by

droplet or by contact, a surgical mask — by covering the nose and the mouth and preventing the health care worker from inadvertently touching these areas, as well as blocking large droplets — offers significant protection."

The CDC officials expressed little enthusiasm

## Use this CDC guidance when no SARS is in facility

*Most hospitals will be at 'category zero'*

**D**raft guidelines by the Centers for Disease Control and Prevention ratchet up increasing infection control and administrative measures depending on whether severe acute respiratory syndrome (SARS) has appeared globally, within a community, or within a facility.<sup>1</sup> The current draft recommendations for inpatient facilities and emergency departments that have no SARS activity within the facility are as follows:

### 1. Triage Activities/Facility Access Controls

- A. The SARS coordinator should be notified of any transfers from facilities that have SARS cases.
- B. All patients with respiratory symptoms should be instructed to wear a surgical mask (if they can tolerate it) and should be managed with droplet precautions until it is determined that the cause of the symptoms is not an infection that requires droplet precautions. Patients who cannot wear a mask should be instructed to cover their nose and mouth with tissues when coughing or sneezing.
- C. If there are cases of SARS elsewhere in the world, but no known SARS transmission in the area around the facility:
  - i. Place signs at all entry points detailing symptoms of and any current epidemiologic risk factors for SARS. The signs should direct any person meeting these criteria to an appropriate screening area for evaluation.
  - ii. Initiate screening of patients on entry to the emergency department (ED) for symptoms and epidemiologic links suggesting SARS. Patients with febrile illness and epidemiologic risks should be instructed to wear a surgical mask and placed in airborne isolation. Cohorting, with all patients wearing surgical masks, can be considered if airborne isolation is not possible.
  - iii. Intake/triage staff should wear full SARS personal protection equipment.
  - iv. Limit visitors to the hospital (e.g., one per patient per day).
  - v. Screen all visitors for SARS epidemiologic risks and symptoms.

- vi. Maintain a log of all visitors to SARS patients to assist in contact tracing.
- vii. Limit elective admissions/procedures.
- viii. Designate an area as a "SARS assessment clinic." All febrile patients who present to EDs and clinics should be sent to the SARS assessment clinic.

### 2. Patient Placement

- A. If there are cases of SARS elsewhere in the world but no known SARS transmission in the area around the facility, patients presenting with febrile respiratory and epidemiologic SARS risk factors should be instructed to wear a surgical mask and placed in airborne isolation. Cohorting, with all patients wearing surgical masks, can be considered if airborne isolation is not possible.
- B. If there is known SARS transmission in the area around the facility, all febrile patients should be instructed to wear a surgical mask and placed in airborne isolation. Cohorting, with all patients wearing surgical masks, can be considered if airborne isolation is not possible.

### 3. Designated Personnel

- A. Only selected, trained, and fit-tested ED staff should be assigned to evaluate possible SARS cases and should follow full SARS personal protection guidance.

### 4. Surveillance

- A. Depending on directives from local/state health departments, consider reporting of all HCWs hospitalized with unexplained pneumonia.

### 5. HCW Restrictions

- A. Health care workers should notify the facility SARS coordinator, and have daily symptom checks, in these situations:
  - i. They are caring for a SARS patient in another facility.
  - ii. They also are working in another facility that has reported nosocomial SARS transmission.
  - iii. They have close contact with SARS patients outside the hospital.

## Reference

1. Centers for Disease Control and Prevention. Draft document. *Guidance for SARS Preparedness and Response in Healthcare Facilities*. Atlanta; Sept. 9, 2003. ■

for the role of diagnostic testing as an immediate clinical indicator, noting that — just as with tuberculosis — testing in areas of low SARS prevalence primarily would yield false positives. The issue has not been resolved, but the CDC is considering recommending SARS testing after 72 hours if no other diagnosis has been made. In lieu of immediate testing, epidemiological questioning is emphasized in the draft guidance.

“Clinically — just taking the clinical features — there is no way we can tell who has SARS and

who doesn’t,” said **John Jernigan**, MD, medical epidemiologist in the CDC division of health care quality promotion. “The epidemiological link is going to be the most helpful thing. Epidemiology has got to be part of the work-up for pneumonia from now on.”

To do that, even if SARS is not circulating, the draft recommended that patients hospitalized for radiographically confirmed pneumonia be questioned about three situations:

1. travel to or close contact with ill people with a

## **Clinical Diagnostic/Management Algorithm for Symptomatic People Who May Have Been Exposed to SARS**

Source: Centers for Disease Control and Prevention, Atlanta.

- history of travel to previously SARS-affected areas within 10 days of illness onset;
2. employment as a health care worker with direct patient care responsibilities;
  3. any close contacts recently found to have evidence of pneumonia on chest X-ray without an alternative diagnosis.

The CDC estimates that the vast majority of pneumonia patients will answer no to all three questions. But if the patient answers yes to any of the questions, clinicians should contact the health department and initiate a diagnostic algorithm designed by the CDC. (See algorithm, p. 128.)

Why the health care worker question? The emergence of SARS was marked so distinctly by nosocomial and occupational spread that pneumonia in health care workers may be followed in CDC surveillance systems as a sentinel event. Still, the new epidemiology emphasis will not be easy if past experience with TB is any indication, said Allison McGeer, MD, a Toronto-based epidemiologist who represented Canada at the meeting.

"SARS is like TB, only less forgiving," she said. "You have the same problems. You have to look at the clinical features and think epidemiologically, but [nothing] is absolute. If you are willing to isolate eight or 10 patients for every [TB]-infected patient [diagnosed], you do fine. But it has been very hard for us to implement, and SARS is just like that. The difficulty is not ultimately sorting out who has SARS and who doesn't. The course of disease in general will tell you that. It is the fact that the initial assessment is going to be made by people who don't have 'epi' on the brain."

### ***All facilities should be ready***

The CDC prefers that all hospitals prepare for SARS at some basic level — even before any cases return — rather than try to have designated SARS facilities in individual communities. "SARS plans should be part of existing disaster preparedness plans," Dan Jernigan said. "Hospitals spent a lot of time and money getting ready for smallpox and bioterrorism. SARS should be incorporated."

SARS preparedness and response planning can be done by an existing hospital group or committee such as the infection control committee or a bioterrorism task force, the CDC draft stated. "Because SARS control efforts will require a coordinated response from both health care facilities and public health officials, the [hospital response] team should identify a contact in the local health department who will serve as a liaison both for

SARS preparedness planning and response, should cases occur," the guidelines state. "If possible, this person should sit on the hospital planning committee."

Concerning SARS responsibilities within the hospital, James Bentley, of the American Hospital Association, urged the CDC not to assign the plan to a specific individual or group in all hospitals. "Half the hospitals in this country have [fewer than] 100 beds," he said. "We need to get this into the institutions, but it is very hard for us to say [where specifically it should be assigned as an area of responsibility.]"

Scheckler strongly disagreed, saying infection control professionals are working — at least part time — in small rural and community hospitals.

"If this, as an infectious disease, isn't connected in an important way with the infection control team in a hospital — with the support of the administration — then you are missing the one group that knows something and could actually implement it," he said. "I think we make a mistake if we didn't at least make the suggestion that the most logical place in most hospitals would be in infection control."

Bentley conceded that a "suggestion" would be appropriate. McGeer gave real-world weight to the ICP discussion when she underscored the mistakes made during the Toronto outbreak. "From my perspective, we paid very dearly in Toronto for having underfunded and underresourced infection control departments," she said.

The situation got so bad that Toronto hospitals were appealing to American epidemiologists and ICPs to cross the border and help them, she recalled. "What most infection control practitioners and hospital epidemiologists did during SARS was answer one long stream of questions for 23 hours a day," McGeer said. "There wasn't enough of us to do that."

The key is having pre-existing relationships between ICPs, hospitals, and public health officials. "If those are in place ahead of time you can manage things," McGeer said. "When they are not in place is when we get into trouble."

That trouble may be starting again in Singapore, where a lab worker apparently has a mild case of SARS that may have been occupationally or community acquired. If it is the latter, it raises the question of whether "there are other undetected cases out there," said Simon Mardell of the World Health Organization.

Regardless, SARS is a "headline from nature" that foreshadows the inevitable things to come,

McGeer emphasized. "SARS is only the warning shot across the bow," she said. "Pandemic influenza is coming. If we fail to take advantage and learn from this, it is going to be really hard."

## Reference

1. Centers for Disease Control and Prevention. Draft document. *Guidance for SARS Preparedness and Response in Healthcare Facilities*. Atlanta; Sept. 9, 2003. ■

# CDC balks at linking SARS and flu shots

*Public misconceptions may undermine effort*

Diverging from the position taken by the Geneva-based World Health Organization (WHO), the Centers for Disease Control and Prevention (CDC) will not urge influenza vaccination for the 2003-2004 season specifically as a response to the possible return of severe acute respiratory syndrome (SARS), *Hospital Infection Control* has learned.

"We are quite concerned that people will somehow begin linking up SARS and influenza vaccine in their minds, and that will lead to confusion," says Keiji Fukuda, MD, a leading influenza expert at the CDC. "[People may say], 'I heard you need to get vaccinated so you won't get SARS,' or 'I heard that SARS may result from flu vaccine,' and so on. These [misconceptions] have big programmatic implications. The more people get confused about a vaccine, the more it really harms overall vaccination efforts."

Indeed, the annual flu immunization effort probably still feels the lingering effects of the ill-fated swine flu campaign of 1976. In one of the more memorable public health debacles in U.S. history, the government tried to vaccinate every citizen against a novel swine flu strain that appeared bound for widespread emergence. Though some cautioned prudence, fear that the legendary 1918 Spanish flu swine strain had reappeared resulted in a massive vaccine production and immunization effort. The cure proved worse than the disease, as the novel strain never emerged and some vaccinees developed a rare form of disease and paralysis called Guillain-Barre syndrome.

The incident still is studied in public health schools as a cautionary tale of a flu vaccination campaign that took on a disastrous life of its own.<sup>1</sup>

Nevertheless, the WHO made the decision to distinctly link flu vaccine this season with SARS, arguing that increasing the number of vaccinated people will eliminate some febrile illness that may be mistaken for SARS.

"The recent global outbreak of SARS has heightened concern about the occurrence of respiratory diseases having symptoms similar to those seen in SARS," the WHO said in a Sept. 2, 2003, statement.

As the recurrence of SARS during the influenza season cannot be ruled out, some health authorities are concerned that cases of influenza and other respiratory diseases, particularly when they occur as clusters in health care facilities, could raise suspicions of SARS, resulting in disruption of health services as well as costly precautionary measures and investigations, the organization stated.

"WHO continues to recommend that priority for influenza vaccination be given to those groups at highest risk of developing serious complications from influenza and to those health workers caring for them," it noted. Such targeted use of influenza vaccine provides "the most effective strategy" for reducing the health burden of influenza reducing cases of respiratory disease that could be mistaken for SARS, the WHO concluded.

"In the WHO message, it came out that if you do this [flu shots], it will clearly have benefits in terms of workups for SARS," Fukuda says. "I think it is a little bit simplistic in how they presented that. What we will end up emphasizing is that influenza vaccinations are primarily done for influenza — and make that very clear. It's possible that influenza vaccination in some places under some conditions could reduce the number of febrile cases, and that would reduce the number of people being evaluated for SARS. But this is definitely not the main reason to get vaccinated."

## ***What about message to health care workers?***

The WHO also cited the transmission of SARS within health care settings involving a large number of health care workers as "a striking feature of the global outbreak." Symptoms of fever and lower respiratory tract infection (cough, difficulty breathing, shortness of breath) in two or more health care workers in the same health care unit, with onset of illness in the same 10-day period are regarded by the WHO as cause to suspect a possible outbreak of SARS and reason to conduct further radiographic and laboratory investigation. Thus, immunizing health care workers could avert such investigations, but the CDC is

wary of advocating that strategy as well.

"We will really strongly push for [health care workers] to get immunized for the same essential reasons as in the past — they can be an important conduit for getting patients infected," Fukuda says. "So this is really a quite good way to protect patients. In some instances, it could also help to reduce nosocomial outbreaks. But it is not something that we want to push as a major strategy to build a SARS prevention program around. These nuances are a little bit complicated so trying to get this out reasonably simply so people understand on the first take is difficult."

The CDC position is consistent with past influenza campaigns in which the agency resisted linkage with flu shots and, for example, the anthrax attacks that caused initial flulike symptoms in those exposed, says **William Schaffner**, MD, chairman of the department of preventive medicine at Vanderbilt University Medical Center in Nashville, TN.

"They have always been nervous about using that rationale," he says. "They were not keen on it in the post-anthrax period for the same reasons. They think it is kind of a false reason. They are afraid that people who get vaccinated against flu may get the notion that they are protected against SARS because people don't pay that much attention to the message. They think that that kind of external, fear-based logic isn't sustaining. It may get some people vaccinated this year, but it won't help in the long run."

Still, Schaffner says there is logic in strongly urging flu vaccination because of a possible return of SARS.

"Anything that will encourage people to get vaccinated is a good thing," he says. "I think it would be a good idea to have as much protection as possible so that if there is more SARS, we have less influenza to deal with simultaneously. We're left with the educational piece, of course, which is that influenza means influenza. It does not mean any of the other respiratory viruses."

Linking SARS to health care worker vaccinations makes less sense, but the abysmal record on that front is still kind of shocking in an era of patient safety.

"The issue of health care workers and annual influenza vaccination leaves me grumpy," says Schaffner. "I find it personally inconceivable that health care workers would not want to get vaccinated. Health care institutions are doing a reasonable job in providing the vaccine, but such a minority of health care workers avail themselves.

I would think that we ought to be close to 100% [immunized]. We have not sufficiently given them the other half of the message: 'We are asking you to get a flu shot so you don't give flu to your patients.'"

## Reference

1. Brown D. A shot in the dark: Swine flu's vaccine lessons. *The Washington Post*, May 27, 2002: A/9. ■

# Duke ICPs work to remove stigma of patient isolation

*Don't just isolate — educate*

There is an increasing emphasis in infection control on doing active surveillance cultures and detecting and isolating patients colonized with pathogens such as vancomycin-resistant enterococci (VRE).

Such efforts certainly can prevent transmission by detecting and isolating those colonized with VRE. But what about the stigma and educational issues raised by increasing the number of patients under contact isolation?

Infection control professionals at Duke University Medical Center in Durham, NC, are directly addressing that issue by designing education programs for both nursing staff and patients.

"The patients do start to feel a stigma," says **Sharon Evans**, RN, an ICP at Duke. "It's something that I stress to the nurses, 'You are isolating the organism. You are not isolating the patient.'"

Patients are given an educational brochure that answers common questions about the reason for isolation, family issues, and whether they can leave their rooms. (See Q&A, p. 132.)

"We have a protocol so that the patients can get out and they are not stuck in their rooms all of the time," she says. "If they want to get out and walk in the halls, they can do that. There are certain limitations while they are in the hospital, but I talk to the patients and their families about that and also what they can do at home."

The patient education component is part of an active surveillance program at the medical center to detect VRE. The need for active surveillance was underscored when VRE began increasing in a hematology-oncology ward.

"We had a couple of blips on our oncology unit where we would have VRE endemic outbreaks,"

Evans says. "All of a sudden within a short amount of time, we would have a cluster of VRE in urine or the bloodstream, and we couldn't figure out why."

Evans decided to implement an active surveillance program to detect the reservoir of VRE circulating within the facility. Under the protocol, VRE screening was done on patients who had been in the hospital more than 72 hours; patients with prior health care exposure (within the prior 30 days); and patients with a known history of VRE. Patients with cultures positive for VRE remained in or were placed in contact isolation. Isolation was removed for those who had been isolated if they screened VRE negative.

In March 2002, the active surveillance protocol was implemented. Over the next six months, 75 screening rectal cultures were sent, with 16 (21%) screening cultures positive for VRE.

During this period, nosocomial VRE rates decreased to 1.6/1,000 patient days (a 34% decrease).

Active surveillance for VRE for high-risk patients had a significant impact on limiting the spread of VRE by detecting and isolating patients that would have otherwise been missed.

"We would have missed a lot of them," Evans says. "We would have treated them just like regular patients not knowing they were colonized with VRE and spreading it." ■

## Q&A education tool for patients on isolation

The following questions and answers are summarized with permission from an educational brochure developed at Duke University Medical Center in Durham, NC, for patients who are being placed in contact isolation:

**Question:** What is contact isolation?

**Answer:** Certain medical conditions call for the use of special precautions called Contact Isolation, when caring for a patient. We are using these special precautions when caring for you to prevent the possible spread to others.

**Question:** Why is Contact Isolation needed?

**Answer:** Contact isolation is necessary to avoid the spread of some types of germs, especially those causing certain infections, colonization (the presence of a bacteria without causing illness), or those resistant to a lot of antibiotics medicines. Some of these infections include:

- ✓ Vancomycin-Resistant Enterococci (VRE)
- ✓ Methicillin-Resistant *Staphylococcus Aureus* (MRSA)
- ✓ Vancomycin Intermediate Resistant *Staphylococcus Aureus* (VISA)
- ✓ *B. Cepacia*
- ✓ *Clostridium difficile* (*C. Diff*)
- ✓ Respiratory Syncytial Virus (RSV)

**Question:** How do people get such an infection?

**Answer:** There are many risk factors for getting such an infection. These may include:

- ✓ The use of antibiotic medicine in the past.
- ✓ A long hospital stay or having been in another health care facility for an extended amount of time.
- ✓ Having another disorder such as diabetes, cancer, or a weakened immune system.
- ✓ Requiring the use of IVs, urinary catheters, drains,

or a breathing machine over a long period of time.

**Question:** What about family members and visitors?

**Answer:** All visitors should check with the nursing staff before visiting. Healthy people rarely get an infection that requires precautions. Visitors must follow the hospital's contact isolation policy by wearing a gown and gloves while in your room. They must remove the gown and gloves and wash their hands before leaving your room.

**Question:** Can I walk outside of my room?

**Answer:** Yes, be sure you have on a clean hospital gown and wash your hands before leaving your room. If you are coughing, please wear a face mask to protect other patients. You should not go into other patients' rooms, the food galley, or the cafeteria.

**Question:** How long will I be on isolation?

**Answer:** You can be taken off Contact Isolation when certain conditions have been met with negative laboratory cultures.

**Question:** What happens after leaving the hospital?

**Answer:** It is not likely that any special safety measures will be needed when you are no longer in the hospital. It is OK for you to hug and kiss visitors or family members, even children and babies. Linens and bedclothes soiled with body fluids should be washed in hot, soapy water. No special care is needed with eating utensils or dishes. In general, it is a good idea to clean shared toilets with a bleach-and-water solution if the seat becomes soiled. Good hand washing always is important and the key to stopping the spread of germs. Hand washing with warm, soapy water for 15 seconds always is a good idea:

- ✓ before eating;
- ✓ after sneezing;
- ✓ after using the bathroom or helping someone with toileting;
- ✓ handling animals or pets;
- ✓ before or after wound care or IV care. ■

# ASHE interim guidance during fire-alcohol flap

*Do not place dispensers in exit areas*

While the flap continues over fire safety and placing alcohol hand hygiene dispensers in hospitals, the American Society for Healthcare Engineering (ASHE) has developed some interim guidelines to help infection control professionals.

In October 2002, the the Centers for Disease Control and Prevention (CDC) issued revised guidelines for hand hygiene practices in health care settings. The CDC guidelines call for the use of alcohol-based hand-wash solutions as an effective tool in reducing hospital acquired infections. However, due to concerns regarding the flammable nature of the solutions, a controversy erupted regarding how to safely introduce hand-wash products into health care facilities.

The hand-wash solutions (available in gel or foam) typically contain a high volume of alcohol (about 60% by weight) and have a flash point of approximately 75° F. They are classified as a Class I flammable liquid and, therefore, are subject to limitations on placement of dispensers, volume of solution in storage, and disposal of containers. These limitations are based on the Quincy, MA-based National Fire Protection Association (NFPA) 101 *Life Safety Code*, NFPA 30 *Flammable & Combustible Liquids Code*, and applicable building codes. These codes are enforced by national, state, and local authorities, ASHE reports.

However, restrictions on the placement and quantity of the hand-wash solutions available to health care workers may diminish the impact of these solutions on the reduction of hospital-acquired infections. ASHE has commissioned a study, through an independent fire protection consultant, to perform computer-based modeling of heat and hot gas development and associated hazards from alcohol-based hand hygiene solutions. This modeling will include numerous fire scenarios resulting in an analysis of the overall level of hazard created by the hand hygiene solution. Findings will include recommendations for decreasing the level of hazard presented by the liquid. Upon completion of the study, the results will be shared with all interested parties to gain consensus on the level of fire risk presented and the appropriate measures to manage the risk, ASHE reports.

Until the study is completed and a consensus

reached, ASHE offers this interim guidance to minimize the likelihood of fire code violations:

1. Do not place these products in *egress* corridors (exit corridors or areas open to exit corridors).
2. Products may be placed inside patient rooms and in secondary corridors such as inside an intensive care unit suite that has doors leading to an exit corridor. Specific locations should be verified with your state fire marshal if your state has already provided guidance.
3. Storage of product on clinical units should be in clean utility rooms that are rated as one-hour fire-resistant or protected by a sprinkler system. Stock should be kept to small amounts (for routine restocking) not exceeding 10 gallons total.
4. Ensure proper handling and safe storage of large volumes of alcohol-based hand rub supplies as they arrive at your facility in accordance with NFPA codes 30 and 101. Flammable liquid storage cabinets should be used for storage greater than 10 gallons. Consult with your materials management department to discuss the receipt and storage requirements for combustible material.
5. Identify the disposal process for spent containers, especially foam cans containing an aerosol propellant.

*(Editor's note: This interim guidance is to proactively address the fire code issues. Organizations considering introducing these types of products should contact their local and state fire safety groups to identify the specific requirements of their jurisdiction.)* ■

## 43rd ICAAC Conference

# What's the C-difference? Oh, \$15,000 an infection

*Plus HCV transmission risks, bugged phones*

*(Editor's note: As this issue of Hospital Infection Control went to press, these studies were presented in Chicago at the Interscience Conference on Antimicrobial Agents and Chemotherapy. Look for more in-depth coverage of this conference in our next issue.)*

Compared to a noninfected control group, patients with *Clostridium difficile*-associated diarrhea had prolonged hospital stay, higher severity of illness, increased hospital costs, and were more than three times more likely to die. Targeted efforts to reduce this infection would

have major economic benefits and improve patient outcomes, emphasize researchers at Baptist Memorial Health Care Memphis, TN.<sup>1</sup>

Patients with *C. difficile* infection had an average increase in total hospital costs of \$15,180, including an additional \$3,237 in medication costs. *C. difficile*-associated diarrhea is a common cause of hospital-acquired diarrhea in the United States.

Overuse of antibiotics frequently is identified as the primary risk factor for developing *C. difficile* diarrhea, although individual patient factors such as advanced age and severity of illness also are risk factors. Unfortunately, the overall impact on health and economic outcomes has not been well characterized.

The researchers hypothesized that patients who developed *C. difficile*-associated diarrhea were more likely to have worse outcomes, including longer and more costly hospitalizations. The primary objective of the project was to identify the impact on economic and health outcome measures at a large, tertiary-care, community hospital.

Overall, 118 patients who developed *C. difficile*-associated diarrhea during the study period were identified and matched to control patients with identical discharge diagnoses and no evidence of the condition. Medication and total hospital cost data were extracted from hospital financial records. Diagnosis categories were obtained from an aggregated diagnosis-related group (DRG) coding system. Compared to patients without *C. difficile*-associated diarrhea, the infected patients had a longer length of stay (21.8 vs. 7 days), including intensive care unit length of stay (5.7 vs. 1.3 days); increased severity of illness; and higher mortality (13.9% vs. 3.6%).

### **Profile of HCV risk**

A major European study looking at occupational risks of hepatitis C virus has determined the highest risk candidate for seroconversion is a male clinician exposed to high-titer HCV-infected blood via a deep needlestick. The study was performed to identify factors that influence HCV transmission to health care workers after occupational exposure to the virus.<sup>2</sup> It was conducted in five European countries. The study included 60 health care workers who seroconverted after HCV exposure (cases) and 204 HCV-exposed health care workers who did not seroconvert (controls).

The risk of HCV transmission to health care workers after accidental needlestick injuries increased when: the worker who performed the

procedure was male, the worker was exposed to a patient with a high HCV titer, and the injury to the worker was deep and caused by a needle that had been placed in that patient's vein or artery, researchers found.

The risk of transmission increased threefold when the health care worker was male, 88-fold when the injury was deep, and 22-fold when it was caused by a needle that had been placed in a patient's vein or artery. However, transmission only occurred when the patient to whom the health care worker was exposed was viremic.

Health care workers long have been recognized to be at risk of hepatitis virus infection through occupational exposure to blood and blood-contaminated objects. HCV transmission to health care workers carries a high risk of subsequent disease. The risk of chronic hepatitis is more than 70% after acute infection; more than 20% of patients later develop cirrhosis; and 1% to 4% may develop hepatocellular carcinoma, the researchers warned. In addition, HCV transmission may jeopardize a health care worker's medical practice. The identification of transmission risk factors is important for establishing recommendations to manage exposures, the European study concluded.

### **Is your phone bugged?**

Ubiquitous cell phones certainly carry the potential for transmitting resistant bacteria from hospital personnel to patients through hand-phone interaction, warned researchers at Soroka University Medical Center in Beer-Sheva, Israel.<sup>3</sup> Cellular phones are used widely in many Western countries and are a standard means of communication. Consequently, cell phones often are used by hospital staff during work hours, either for personal reasons or as a means of communication instead of classic paging systems.

In the study, epidemiologists cultured the hands and cell phones of 124 staff (71 physicians and 53 nurses). They found *Acinetobacter* on 12% of phones and 24% of hands, and 10% of *Acinetobacter* isolates were multiresistant. Cell phone contamination was most notable among staff of internal medicine wards, while positive hand cultures were most notable in pediatric wards. There was no relation between reported hand-washing practices and risk for positive cultures.

Antibiotic-resistant bacteria are a major threat to patient health while being treated in the hospital. *Acinetobacter baumannii* is a bacterium that has the propensity for developing resistance to almost any

of the available antibiotics and may survive for long time periods on inanimate objects. Resistant bacteria commonly are cross-transmitted between patients during repeated contact between individuals and caring personnel. This phenomenon may be prevented by a variety of means; the most notable is hand washing with antiseptic solutions. Because of the intimate contact between personnel hands and cell phones, it is plausible to assume that phones may be involved in the chain of transmission of resistant bacteria within institutions. But this issue has not been studied previously.

Therefore, cell phone use by personnel should be considered when designing infection prevention strategies. Soon the researchers intend to study the actual rate of staff-patient transmission via cell phones by genetic profiling of bacteria obtained from the phones, personnel hands, and infected patients. Meanwhile, cell phone use during patient care has been prohibited in the institution.

## References

1. Suda K. Health and economic outcomes of hospitalized patients with *clostridium difficile*-associated diarrhea. Abstract K734. Presented at the Interscience Conference on Antimicrobial Agents and Chemotherapy. Chicago; September 2003.
2. Yazdanpanah Y. Factors that influence the risk of hepatitis C infection after occupational exposure to HCV

## CE/CME instructions

Physicians and nurses participate in this CE/CME program by reading the issue, using the provided references for further research, and studying the questions. Participants should select what they believe to be the correct answers, then refer to answer key to test their knowledge. To clarify confusion surrounding any questions answered incorrectly, please consult the source material. After completing this semester's activity in December 2003, you must complete the evaluation form that will be provided and return it in the reply envelope to receive a certificate of completion. When your evaluation is received, a certificate will be mailed to you. ■

## CE/CME questions

13. Draft guidance by public health officials preparing for a seasonal resurgence of severe acute respiratory syndrome (SARS) calls for taking the controversial step of:
  - A. placing N95 respirators on health care workers at all times
  - B. masking all incoming patients with respiratory symptoms
  - C. deferring any suspicious cases to designated SARS hospitals
  - D. all of the above
14. The CDC draft recommends that patients hospitalized for radiographically confirmed pneumonia be questioned about which of the following:
  - A. travel to or close contact with ill people with a history of travel to previously SARS-effected areas within 10 days of illness onset
  - B. employment as a health care worker with direct patient care responsibilities
  - C. any close contacts recently found to have evidence of pneumonia on chest X-ray without an alternative diagnosis
  - D. all of the above
15. In interim guidelines regarding alcohol-rub hand hygiene dispensers, the American Society for Healthcare Engineering said do not place these products in egress corridors? What does that mean?
  - A. near light switches in patient rooms
  - B. exit corridors or areas open to exit corridors
  - C. outside operating room doors
  - D. special hallways built during renovation
16. Compared to a noninfected control group, patients with *Clostridium difficile*-associated diarrhea had:
  - A. prolonged hospital stay
  - B. higher severity of illness
  - C. increased hospital costs
  - D. all of the above

Answer Key: 13. B; 14. D; 15. B; 16. D

## COMING IN FUTURE MONTHS

■ Tips on implementing final CDC SARS plan

■ Pediatric SARS: Can they get it; can they spread it?

■ Failure to change or remove contaminated gloves appears to be a major problem

■ Flu immunizations for household contacts of high-risk patients

■ Sticking point: Acupuncture causes infection

Abstract V772. Presented at the Interscience Conference on Antimicrobial Agents and Chemotherapy. Chicago; September 2003.

3. Borer A. Can cellular phones of hospital personnel be involved in transmission of resistant bacteria to patients? Abstract K-745. Presented at the Interscience Conference on Antimicrobial Agents and Chemotherapy. Chicago; September 2003. ■



## JOURNAL REVIEW

### Improved hand hygiene in NICU with alcohol products

Cohen B, Saiman L, Cimiotti J, et al. **Factors associated with hand hygiene practices in two neonatal intensive care units.** *Pediatr Infect Dis J* 2003; 22(6):494-499.

Use of an alcohol-based product was associated with significantly improved hand hygiene in a study of neonatal intensive care units (NICU), a new study had found.

"We compared a traditional hand-washing time with an alcohol time," says **Elaine Larson**, RN, PhD, professor of pharmaceutical and therapeutic research at Columbia University School of Nursing in New York City. "When people used the alcohol, they were significantly more likely to touch babies with clean hands."

Larson and colleagues undertook the study to determine whether hand hygiene practices differ between levels of contact with neonates; to characterize the hand hygiene practices of different types of personnel; and to compare hand hygiene practices in NICUs using different products.

Research assistants observed staff hand hygiene practices during 38 sessions in two NICUs. Patient touches were categorized as touching within the neonates' environment but only outside the isolette (Level 1); touching within the isolette but not the neonate directly (Level 2); or directly touching the neonate (Level 3). Hand hygiene practices for each touch were categorized into five groups: cleaned hands and new gloves; uncleaned hands and new gloves; used gloves; clean hands and no gloves; uncleaned hands and no gloves.

Overall, the research assistants observed 1,472 touches. On average, each neonate or his or her immediate environment was touched 78 times

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per shift. Nurses attending physicians and physicians in training were more likely to use appropriate practices during Level 3 touches. But only 22.8% of all touches were with cleaned and/or newly gloved hands. The mean number of direct touches by staff with cleaned hands was greater in the NICU using an alcohol-based hand rub than in the NICU using antimicrobial soap. ■

## CE/CME objectives

After reading each issue of *Hospital Infection Control*, the infection control professional will be able to do the following:

- identify the particular clinical, legal, or educational issue related to epidemiology;
- describe how the issue affects nurses, hospitals, or the health care industry in general;
- cite solutions to the problems associated with those issues, based on guidelines from the federal Centers for Disease Control and Prevention or other authorities, and/or based on independent recommendations from clinicians at individual institutions. ■