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Tracking ties to infection

As rates of hospital-acquired infections have risen, adding billions in costs, experts view a wide range of remedies

Special Report by Joseph Mantone

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The spike in hospital-acquired infections over the past 15 years has opened the marketplace to a variety of products designed to detect and stop the spread of harmful germs in healthcare settings.

There are bacteria-killing lab coats and bed sheets, as well as products such as a rapid test to identify patients who are carriers of methicillin-resistant staphylococcus aureus, or MRSA, often called a "superbug" because it can't be killed by commonly used antibiotics. Other options are as low-tech as alcohol-based hand scrubs or a change in attire -- perhaps swapping the hanging necktie that tends to touch everything in favor of the classic bow tie -- or as high-tech as computer software to help hospitals track infections.

However, many hospital infection-control experts have been slow to warm to some of those ideas. They call the lab coat gimmicky, the rapid test too expensive and the switch to a bow tie pointless. Instead, they advocate low-cost solutions such as more handwashing and greater attention to patients on ventilators. And they point to success stories that show the low-cost measures are highly effective.

For example, over a one-year period a small number of hospitals -- about 15 out of the roughly 3,000 -- that took part in the Institute for Healthcare Improvement's 100,000 Lives Campaign, which started in 2004, said they had no outbreaks of ventilator-associated pneumonia, a killer of 26,000 annually, according to the IHI. Steps taken to reduce the fatal infection include actions as simple as raising the head of the bed from an angle of 30 degrees to 45 degrees and making sure to wean patients off ventilators as quickly as possible.

Still, the National Institutes of Health estimates 92,000 deaths per year -- up from 13,300 in 1992 -- are related to hospital-acquired infections. With mounting evidence showing that patients are carriers of MRSA, hospitals are being peppered with questions probing whether they are doing enough to stop the infections.

Infesting the bottom line

MedMined, a company recently acquired by Cardinal Health that offers services to help hospitals reduce infections, performed a study that examined 1.4 million hospital admissions from 55 hospitals. It found that patients with a hospital-acquired infection reduced overall net inpatient operating margins by \$138.9 million, or \$5,351 per infected patient. The study also found that the average additional variable cost for patients with a hospital-acquired infection was \$8,548.

While MedMined doesn't publish infection-rate statistics, estimates have put the number of hospital-acquired infections at 2 million cases per year, which equates to roughly \$16 billion in additional healthcare spending.

Complicating matters for hospitals is a looming CMS plan to eliminate reimbursement payments for infections that the CMS deems preventable. That policy has been proposed and would take effect in October 2008. Also, about a dozen states require the public reporting of hospital-acquired infections, and in March 2006 members of a House subcommittee debated tying Medicare and Medicaid payments to measures of hospital-acquired infection rates.

Betsy McCaughey has been on a personal mission for more than a decade to educate anyone who will listen about the dangers of hospital-acquired infections. The chairwoman of the Committee to Reduce Infection Deaths, a not-for-profit advocacy group, became keenly aware of how much of a patient-safety concern hospital-acquired infections had become when she served as lieutenant governor of New York from 1995 to 1999. "People came to me with all kinds of stories," she says. "One man told me, 'I brought my wife to the hospital for a simple shoulder operation and she never came home.' "

While she says she welcomes efforts by healthcare organizations to step up their fight against infections, McCaughey says hospitals need to do more. Hospitals need to be better-educated about the rapid-results tests now available that identify patients who are carriers of bacteria, such as MRSA, and they need to institute more rigorous handwashing polices, she says.

Caregivers should wash their hands "after pulling back the privacy curtain, opening a draw or touching their tie," McCaughey says.

A 2004 study conducted by a medical resident at New York Hospital Medical Center of Queens showed 20 of 42 doctors' neckties examined contained bacteria such as staph. Although the study was picked up by the national media, hospital infection-control experts aren't crying out for physicians to switch to bow ties. They say there's no conclusive evidence that shows the infections are acquired because of neckties.

"There's been no link" between clothing and infections, says Shannon Oriola, the lead infection-control practitioner at Sharp Metropolitan Medical Campus in San Diego and chairwoman for public policy at the Association for Professionals in Infection Control and Epidemiology. "There's never been a documented outbreak from clothing," she says.

'A conveyor belt for bacteria'

Part of the reason experts aren't ready to outlaw ties is because patients can acquire infections only if the bacteria enters the body typically in one of four ways: urinary tract catheter, intravenous therapy, surgical wound or ventilator. Still, patient advocates such as McCaughey say caregivers should stop wearing or cover up loose-hanging clothing such as ties or accessories such as earrings to reduce the chance that germs could be spread.

"Clothing on caregivers is a conveyor belt for bacteria," she says.

One company's product line includes germ-fighting clothing for caregivers. Medline Industries, a manufacturer and distributor of medical supplies based in Mundelein, Ill., markets lab coats, bed sheets and underpads designed to kill bacteria on contact. Medline claims the cost of the sheets is about an additional 5 cents per day, per bed, according to Ron Barth, president of Medline's textiles division.

The anti-microbial products have a coating that binds chlorine molecules that are part of normal wash cycles. After laundering, the molecules remain on the treated products and tests show that "99.9% of

microbes are killed within minutes" of contact, Barth says. Still, even Barth admits "it's hard to say" how much such products reduce infections. And hospital infection-control experts remain skeptical.

"To me, it sounds like clever marketing, but I don't know for sure," says Michael Lew, chief of infectious disease at Newton (Mass.)-Wellesley Hospital.

Lew's hospital is part of Partners HealthCare System, and every other month about 15 infection-control directors from the system's six major hospitals meet at the Partners headquarters in downtown Boston to discuss infection-control strategies. They've been meeting for about four years to share best practices. The strategies they endorse are typically low-cost, such as handwashing.

"We think hands are the vehicles," Lew says, reminding caregivers to wash hands before and after treating all patients. For nurses, that means washing hands "50 or 60 times" a day, he says.

Along with handwashing, Lew says the hospital has taken a variety of other steps, including clipping patients' body hair instead of shaving before surgery. Shaving can cause small cuts in the skin, increasing the risk of infection.

Another preventive measure many hospitals follow is the testing of high-risk patients to see if they are carriers of bacteria that could lead to infections. Those who are considered to be high-risk are patients who are being readmitted or transferred to the hospital, spent time in long-term-care facilities or have compromised immune systems. Most hospitals already test high-risk patients, and those who test positive as carriers of bacteria are isolated and monitored.

Lew believes his hospital's campaign is working and points to lowered blood-stream infection rates. Over the past three years, the rate of blood-stream infections attributable to intravenous catheters has dropped to 4.1 infections per 1,000 device-days from 18.4 infections per 1,000 device-days in 2000, he says.

It's also well-known that many patients are harboring harmful bacteria before walking through a hospital's doors. The Centers for Disease Control and Prevention reported that 2.3 million people are carriers of staph, according to an article published in the January *Journal of Infectious Diseases*. Such studies raise more questions regarding whether hospitals should increase the surveillance tests that detect which patients are carriers of the most dangerous types of bacteria.

The National Institutes of Health has been conducting a study that tests all patients entering intensive-care units at 20 hospitals. The tests examine if the patients are carriers of two antibiotic-resistant bacteria, MRSA and vancomycin-resistant enterococci. The goal is to determine if increased surveillance leads to reduced infection rates. Hospital infection-control experts are anxiously awaiting the results, expected within the next couple of months.

The tests hospitals most routinely perform are inexpensive, costing about \$2 or \$3 each, but it can take up to 48 hours to obtain results. However, a rapid test is now on the market that can produce results in two hours and, like the traditional test, is administered using a nasal swab.

In February 2006, Becton, Dickinson and Co. completed its \$230 million acquisition of GeneOhm Sciences, a company that received Food and Drug Administration approval to market the rapid MRSA test. Other healthcare supply companies such as 3M are developing similar tests.

To use the BD rapid test, hospitals must make a one-time investment of \$25,000 to \$30,000 to purchase the equipment. Plus, the test kits cost about \$20 each. Still, BD says a hospital that tests about 21,000 patients would spend roughly \$400,000, but could see a net benefit of \$3.1 million in decreased spending on care, according to a BD economic model.

Hospitals may be wise to consider ways to be more involved in stopping infections because of the proposed CMS hospital-acquired infection reimbursement rule. The agency says it's considering ending payments for hospital infections the agency considers preventable because under the Medicare prospective payment system, which is supposed to reward efficiency, hospitals could receive a higher payment when patients acquire an infection during their hospital stay, according to the proposed rule.

In a letter commenting on the proposal, three infection-control groups -- the Association for Professionals in Infection Control and Epidemiology, the Infectious Diseases Society of America and the Society for Healthcare Epidemiology of America -- applaud the CMS' efforts but say hospitals shouldn't be penalized for infections because it's difficult to determine what's truly preventable. Instead of penalties, the groups favored rewards for steps to fight infections.