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## IU researcher leads fight against infections

Study of how to reduce hospital superbugs could help save lives, money nationwide

By Shari Rudavsky

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It may be as simple as screening hospital patients for superbug infections.

That's one prescription Indianapolis hospitals are testing in an effort to decrease the number of deaths and illnesses caused by infections that health-care providers may inadvertently spread to patients.

Working with every hospital system in Indianapolis, Indiana University School of Medicine researcher Dr. Bradley Doebbeling is conducting a study that could help save lives, prevent infections and save hospitals money.

### What are superbugs?

Superbugs are strains of bacteria that are resistant to antibiotics, making them hard to treat. They spread most easily in hospitals. The strain Indianapolis hospitals are trying to shut out -- methicillin-resistant *Staphylococcus aureus*, or MRSA -- is resistant to some antibiotics, including penicillin.

- **What it does:** The bug can cause fever, lethargy, headaches, skin boils or abscesses. In rare cases, it can cause pneumonia, blood infections, toxic shock and death.

- **Where it comes from:** *Staphylococcus aureus* can be found on the skin of about a quarter of people in the United States. Of those people, about 1 percent carry MRSA. Most people do not have symptoms of infection but simply carry staph or MRSA on their skin or in their noses.

Sources: Associated Press, Centers for Disease Control and Prevention

The hope is that hospitals will change policies that could reduce the number of patients in intensive care units who develop infections that are resistant to frontline antibiotics, such as penicillin.

If the methods he's advocating prove successful, health-care providers nationwide could follow the model and reduce infection rates in their hospitals.

"The main thing we want is to make sure we have an impact," said Doebbeling, who is also the Regenstrief Institute's director of health services research and the director of the Indiana University Center for Health Services and Outcomes Research. Doebbeling received a \$400,000 government grant for the 18-month study.

Research started in January. It calls for participating hospitals to develop ways to improve hand hygiene and screen patients for methicillin-resistant *Staphylococcus aureus* -- or MRSA -- one of the most common infections.

Nationally, an estimated 103,000 people die from super infections, such as MRSA, each year. MRSA and infections like it can lead to bloodstream infections or pneumonia, both of which could be fatal.

Hospitals everywhere are striving to decrease the prevalence of superbug infections, which are considered preventable medical errors. Medicare recently announced plans to stop reimbursing hospitals for treating patients with infections that were acquired while in the hospital.

Neither the federal nor the state governments require hospitals to report the number of such infections, though most hospitals maintain their own data.

The study will use an electronic record system that Indianapolis hospitals share to flag patients who have had MRSA infections. When a once-infected patient goes to any hospital area, the electronic record will let staff know the patient is infected, so they can take necessary precautions to prevent the spread of the disease.

All the measures that Doebbeling is testing are critical when it comes to decreasing the number of infections, says Betsy McCaughey, chairwoman of the Committee to Reduce Infection Deaths, a national campaign to halt hospital infections.

"If you ask a health-care institution to clean and screen, screen and clean, those are the most important components of healthcare," McCaughey said.

Few hospitals in the United States follow these routines rigorously, she added.

Studies have shown that health-care providers wash their hands in between treating patients only about half of the time. About three dozen hospitals out of the thousands in the United States screen every patient for MRSA, although hospitals in other countries have done so for years, McCaughey says.

Hospitals can also reduce infections by regularly cleaning equipment like IV poles and blood pressure cuffs and encouraging staff to change their white coats, which can act as carriers for disease, she said.

Patricia Mantel, 56, experienced firsthand what may happen when hospitals don't take such precautions. She developed an MRSA infection two days after an outpatient surgery for a kidney stone.

Although doctors told her she had acquired the infection outside of the hospital, the Northwestside resident believes she got it from the procedure.

The way the hospital treated her when she returned with the raging infection horrified her. First, it took three days to diagnose, during which time she shared a hospital room, potentially exposing her roommate to the infection.

Once tests showed she had an MRSA infection, she was told she could no longer use the bathroom in the room but had to rely on a portable commode. MRSA infections are transmitted multiple ways.

When she was discharged, the hospital forbade her from using the public bathroom on her way out, lest she infect others. "I was really dumped out of the hospital," said Mantel, who said she had to use up her vacation time and take unpaid leave as she recuperated. "I thought it was an outpatient surgery, and I would be going back to work. I got this, and I had never felt so horrible in my life."

Not everyone believes all the changes the study is testing will make a difference.

With the debate still unresolved, the Centers for Disease Control has not recommended active surveillance or screening as a precautionary measure, said John Jernigan, a medical epidemiologist and MRSA expert with the agency.

"I think there's more work to be done to define more precisely the roles in which active surveillance can be helpful," he said. While the study does not yet have numbers to release, participants say that they're already seeing results.

The number of patients infected by MRSA in St. Francis Hospital and Health Centers ICUs has declined since the hospital adopted the measures, said Claire Roembke, manager of infection control.

One reason the study has worked there, she said, is that Doebbeling encouraged staff at each hospital to decide how best to implement the measures.

At St. Francis, for instance, some nightshift staff raised concerns that there might not be enough gowns available in the hours that they work to allow them to change whenever they saw a patient in isolation.

"We've learned a lot of things. Number One, that it's not cookie-cutter," Roembke said. "You have to have the buy-in from the staff. They have to recognize it's not only a risk for their patients, it's a risk for themselves."

The most unique part of the study, she said, is sharing records from hospital to hospital. This helps them identify patients who may pose a risk to others as soon as they enter the hospital.

"Who knows how many infections we're preventing just by knowing that information," she said.

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