

Are You Safe From Superbugs?

A deadly new type of infection that's resistant to drugs is spreading in salons, schools, gyms and hospitals. Here, what you must know to protect your family

It took CJ Jackson nine months of antibiotics to fight off what first looked like just an infected bug bite. At one point he dropped to 110 pounds (inset); now he weighs 160 and is back playing baseball

coccus aureus (CA-MRSA). By this point the infection had invaded his right kneecap, traveled to his toes and “set up camp in his hip,” says Francine.

During his 11-day hospital stay, antibiotics pulsing through his veins, CJ withered from 138 to 110 pounds. He remained on intravenous antibiotics at home for another month and had to take oral antibiotics through January 2006—a grueling nine-month recovery. In looking at CJ two years later, a muscular 160 pounds and 5-foot-10, no one would guess he'd gone through such an ordeal. To this day he has no idea how he caught the infection. Doctors think the bacteria could have entered his body through a wound that looked like a spider bite on his knee and that the “ingrown toenail” may have been another sign of the infection.

Compared with some, CJ was lucky. In August 2005 Susan Silverman, 56, owner of a decorative bead business in

By
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In March 2005 Francine Jackson's 12-year-old son, CJ, developed what they both thought was an infected bug bite on his right knee. The sore got better after a week on antibiotics, as did what looked like an ingrown toenail that developed in April. A month later the Alpharetta, Georgia, boy developed a fever of 103 and his mother rushed him to the hospital, where his fever spiked to 107. A blood test revealed that he was suffering from something neither he nor his mom had ever heard of: a raging bacterial infection called community-associated methicillin-resistant *Staphylo-*

WHEN YOU *MUST* SEE THE DOCTOR

Everyone gets cuts, shaving nicks and bug bites. How you treat them can help minimize the risk of a CA-MRSA infection. “If you have a small bite or scratch that’s getting red, put a topical antibiotic on it and keep it clean and covered with a bandage,” says Sheldon L. Kaplan, M.D., chief of the infectious disease service at Texas Children’s Hospital, in Houston. “If you come down with a fever, have aches and pains or the infection seems to be spreading, that’s when you need to call your doctor.”

If your doctor or the physician treating you in an ER assumes your sore is just a spider bite—a common

misdiagnosis—insist that he or she take a sample from the wound and send the culture to a lab. It’s the only way to make an accurate diagnosis and determine the right medication. Meanwhile, the wound should be drained (ideally by a doctor) of any pus, then covered with antibiotic ointment and a bandage. Be sure to get detailed instructions on how to handle dressings and avoid passing on any infection. Assume you might have MRSA until you know otherwise.

If you have both an infection and fever or flulike symptoms, you may well need antibiotics to stop it from spreading. People with CA-MRSA must definitely avoid methicillin and

similar drugs, including penicillin. There are a variety of treatment options, and patients need to be monitored to make sure the infection isn’t resistant to the first drug they use.

Though antibiotics for skin infections are usually administered for about a week, it’s not unusual to be on them for months, and the side effects can feel as bad as the infection. Nausea, vomiting, dizziness, depression and vaginal itching are not unusual. Some antibiotics may weaken finger- and toenails. It’s important, however, to take all your medications as prescribed. If side effects are severe or intolerable, ask the doctor if you can make a switch.

Takoma Park, Maryland, noticed a scratch on her left leg. It hadn’t fully healed five months later, so in January 2006 she visited a local clinic. Two days later she and her husband, Larry, 62, went on a business trip to New York City, where Susan developed back pain so severe Larry took her to the hospital. The ER doctors couldn’t find anything. “As they were about to let us go,” Larry says, “she developed a fever of 103.5 so they admitted her and did more tests.” Susan, who had diabetes and was especially susceptible to infections, had CA-MRSA.

After a week in the hospital on heavy-duty antibiotics, Susan was discharged, but the pain continued and soon she couldn’t walk. A CT scan revealed that the infection had settled in a disk in her back and was eating away at her spinal cord. A few weeks later she was paralyzed from the waist down. “They were pumping her full of antibiotics and yet the infection was still spreading,” says Larry. Susan died on April 20, 2006, from sepsis caused by the invasive CA-MRSA.

A SILENT EPIDEMIC

MRSA (the acronym is pronounced “murr-suh”) has been a scourge in hospitals for decades. The bacterium is named for its resistance to methicillin, an antibiotic similar to penicillin that was developed to fight the penicillin-resistant staph infections that were essentially limited to hospitals until the late 1990s. It was a serious problem, but one that doctors expected to have to confront. “The MRSA we were accustomed to seeing in hospitals was isolated to people who were very sick or who had had surgery or wounds,” says Victoria Fraser, M.D., president of the Society for Healthcare

Epidemiology of America. “There was a way you could predict who was at risk.”

This new type of infection is a *Staphylococcus aureus* variety that is cropping up in previously low-risk groups outside the hospital setting—hence the label “community associated.” Staph bacteria usually live harmlessly in, on and around us. At any given time, 32 percent of people are silent carriers of ordinary staph, having the bacteria on their skin or inside their noses without knowing it. An additional 2 million are silent carriers of the MRSA variety, and an unknown smaller number carry CA-MRSA.

The immune systems of healthy people—infants, children, teenagers and adults—usually fight off garden-variety staph and other bacteria. But the CA-MRSA strain is more virulent than even the hospital version. Once it penetrates the skin through a minor cut or skin break, the tiniest CA-MRSA infection can become a large pus-filled abscess within a few hours or days. For the most part the infection does not spread beyond the skin and the tissue just beneath it. But research shows that in 6 percent of cases CA-MRSA becomes invasive. It can infiltrate the bloodstream and

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progress to full-blown sepsis in a matter of days or cause other life-threatening infections, such as necrotizing fasciitis, a condition in which the bacterium destroys tissue. Besides skin, it can infect bones, the heart, lungs and other organs and spread deep into muscles.

Both people with active infections and those who are silent carriers (those who don't know they have it) can transmit CA-MRSA to another person who has a cut or rash via skin-to-skin contact or by sharing personal items such as towels, toothbrushes, razors or athletic equipment. Even seasoned infectious disease doctors are mystified by how quickly and widely it has spread. "This is a new and distinctly different phenomenon that we just don't understand," says Vance Fowler, M.D., associate professor of medicine and an expert on infectious diseases at Duke University.

A study of 11 cities by Greg Moran, M.D., professor of medicine at Olive View-UCLA Medical Center, found that in 2004 CA-MRSA accounted for 78 percent of staph infections in ER patients. At Houston's Texas Children's Hospital that number had hit 72 percent as early as 2001.

"Up until very recently we didn't expect MRSA in the community at all," says Rachel J. Gorwitz, M.D., a medical epidemiologist with the Centers for Disease Control and Prevention's Division of Healthcare Quality Promotion, who is studying the pathogen. "Now we're seeing millions of these infections in the United States each year. By definition, this is an epidemic."

WHY EVEN HEALTHY KIDS ARE AT RISK

Most frightening, perhaps, is the rate at which CA-MRSA is infecting healthy children. At the University of Chicago Hospitals, 84 percent of kids coming in with staph infections have community-associated MRSA. Pediatricians across the country are reporting similar experiences.

Children are the proverbial canaries in the mine, perhaps because they're likelier to be in close quarters in classrooms and day-care centers, where there are more opportunities for CA-MRSA to

How to Stay Safe

The best way to avoid infection is to follow the advice we've all heard from our moms: Practice good hygiene, which means washing your hands thoroughly with soap and water or a hand sanitizer. And pay particular attention in places where CA-MRSA can hide, such as these:

AT THE NAIL SALON: All non-disposable metal instruments should be stored in disinfectant, such as Barbicide. Don't trust instruments that are pulled out of a drawer. Safer still, bring your own manicure and pedicure implements, as well as a mat for the tub. Don't shave your legs for 24 hours before and after a pedicure, because bacteria can enter through nicks in your skin. Make sure the cosmetologist washes her hands and has no sores on them. Don't allow her to cut your cuticles or use a razor or grater on your calluses. And if you have acrylic nails, don't permit use of an electric drill, which can penetrate the nail and might have cut into the person before you. Or bring your own drill bits.

AT THE GYM: If you have an open

cut, put a bandage on it. Wipe down equipment with antiseptic wipes or sprays and place a clean towel on the seat. If you use an exercise mat, put a towel on it. Bring your own yoga mat. Shower immediately after your workout, which will wash most bacteria off your skin. Use liquid soap because you can pick up bacteria from a bar.

FOR KIDS PARTICIPATING IN SPORTS: Make sure your child doesn't share towels or equipment such as football pads. If he has to share a helmet, say, have him run an antibacterial wipe over the inside before and after each use.

IF A FAMILY MEMBER IS INFECTED: Don't share towels, washcloths, razors or other personal items.

spread. Close quarters also may explain reports of CA-MRSA in high school, college and professional athletic departments, where team members spend hours in close proximity and often share towels, uniforms and sports equipment.

Indeed, the community strain of this bacterial infection has hit schools and locker rooms from coast to coast. In April 2006 nine athletes and one coach from Mountain Home, Arkansas, contracted CA-MRSA. The same month University of Tulsa football player Devin Adair, 21, died of reported complications from the infection. In 2005 Sammy Sosa, of the Baltimore Orioles, missed 16 games after contracting it through a wound on his left foot, and Pittsburg, California's Los Medanos College temporarily closed its entire athletic department after four students developed the infection.

"You'd be hard-pressed to find any athletic setting—whether high **CONTINUED**

Fighting Back: What You Can Do

In 2006, the most recent year for which figures are available, the CDC funneled only \$3 million into university-sponsored MRSA research. Write to your congressional representatives and senators to make sure future budgets do better. Also get your state legislators involved: Only 21 states collect data on infections that lead to death or serious injury. California requires hospitals to

report anti-infection measures. Fifteen other states have passed bills requiring hospitals to inform patients of infection rates. And 10 more states are considering legislation in 2007, according to the Committee to Reduce Infection Deaths, a New York City-based organization that has posted a model bill on its Web site, which you can send to your legislator. Go to www.hospitalinfection.org

[/modelbill.shtml](#).

The bill would require states to identify and track three types of hospital-acquired infections and report data semiannually to their state health department. The varieties are: central line-associated infections, laboratory-confirmed primary bloodstream infections contracted by intensive care-unit patients, and surgical site infections.

school, intercollegiate or professional—that has not been exposed to MRSA,” says Ron Courson, director of sports medicine at the University of Georgia, who is surveying college athletic trainers to determine the incidence of MRSA on their teams. When he asked attendees at a recent sports medicine conference who had treated a case of MRSA in the last year, “everybody in the room raised his or her hand,” he says. The bug also hides out in private gyms and health clubs and has become a growing scourge at nail salons (see “How to Stay Safe,” page 166).

THE NEW GERM WARFARE

As the rate of CA-MRSA infections grows, so does the bacterium’s resistance to drugs that have been developed to treat it. Doctors battle these problems with a variety of non-methicillin antibiotics, including vancomycin and clindamycin. Minor infections may succumb to pills but serious cases require weeks, even months, of intravenous medication. And they can recur.

Unfortunately, as antibiotics become less effective, there are very few new ones in the pipeline to replace them. Since 1998 the FDA has approved only two antibiotics with a new target of action and no cross-resistance with other antibiotics. And of 506 drugs in development in 2002, only five were new antibiotics, according to the 2004 report “Bad Bugs, No Drugs,” issued by the Infectious Diseases Society of America (IDSA).

Pharmaceutical companies are aware of the nation’s need for new types of drugs to combat MRSA and other resistant organisms. “However, the challenges of bringing a new drug to market have intensified over the years,” notes Alan Goldhammer, Ph.D., deputy vice president for regulatory affairs at the Pharmaceutical Research and Manufacturers Association of America (PhRMA), a Washington, D.C.-based trade organization.

Ultimately, antibiotics aren’t as profitable as drugs that treat

chronic conditions, such as hypertension or high cholesterol, the report says. IDSA would like to see the federal government provide financial incentives to drug companies to develop new antibiotics, but that hasn’t happened yet. A vaccine against *Staphylococcus aureus* would be even better. One has failed in clinical trials but others are in the works, and at least one has shown promise in animal studies.

It’s impossible to predict what MRSA will do next. There’s reason for concern, though, because the more virulent community strain has already surfaced in hospitals. “We don’t really know what the implications of that are,” admits the CDC’s

Dr. Gorwitz. “Once community MRSA enters the health-care setting, it’s likely to acquire more resistance. And if it’s capable of causing disease in otherwise-healthy people, it could result in even more dangerous disease in people whose immune systems are compromised.”

There’s no need to panic, however, she says. The best approach is to be watchful of infections that could be due to MRSA and get prompt treatment, if needed, to catch it early. “People should be aware that this is a problem,” she says, “but also be aware that there are things they can do to protect themselves and their families.”

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CAN A HOSPITAL STAY MAKE YOU SICKER?

Each year 2 million patients get hospital-based infections, and 90,000 die as a result. Seventy percent of bacterial infections are resistant to at least one antimicrobial drug, and the numbers are rising.

Some doctors say infections are inevitable given patients' weakened immune systems. Also, devices such as prosthetic joints are potent germ portals. "The kinds of heroic care

physicians offer today involve invading skin and tissue—proven opportunities for staph bacteria to infect them," says Robert Daum, M.D., professor of pediatrics at the University of Chicago.

Others blame hygiene. "The real issue is the meticulous cleaning of hands and very careful cleaning of equipment between patient use," says Betsy McCaughey, Ph.D., chair

of the Committee to Reduce Infection Deaths (RID), in New York City. The University of Pittsburgh Medical Center cut MRSA in its ICU 90 percent by isolating patients who tested positive for staph infections and having medical personnel use disposable gowns when treating them. Reportedly the costs of doing so came to \$35,000, but the hospital saved \$800,000.

Patients and their families can do their part by following safety guidelines from the Committee to Reduce Infection Deaths and other experts:

- Be especially vigilant about showering in the week leading up to surgery. On the three to four days preceding it, you may want to use a 4 percent chlorhexidine gluconate soap such as Hibiclens, available at drug stores without a prescription, to remove the bacteria on your skin.
- Before examining you, doctors and nurses should wash their hands or use antimicrobial gel.
- If the doctor uses a stethoscope, ask that its flat surface be wiped with alcohol to remove germs.
- Ask the surgical team not to shave you or clip body hairs presurgery unless absolutely necessary. If hair must be removed, it should be done with electric clippers or a depilatory, preferably immediately before the operation, according to the CDC. Removing hair the night before is associated with higher rates of infection.
- Ask for an intravenous antibiotic one hour prior to the first incision.
- Ask if it's possible not to be given a urinary-tract catheter, a frequent cause of infection, and use a bedpan instead.
- If you have an IV, ask your doctor to change the tubing every three to four days.
- Ask visitors to wash their hands and to not sit on your bed. 