

Germms Strike Back

Drug-resistant infections are on the rise.

By **Charlotte Huff**

The infection began in October 2005 as a couple of small reddish bumps that looked like zits or ant bites. Then they grew—fast. Boone Baker, a 16-year-old from Austin, Texas, watched in alarm as the two bumps enlarged rapidly over five days, spreading toward each other. “They tripled in size and were really red—a deep red,” Boone recalls.

What started as two bumps eventually morphed into an epic battle against a raging internal infection. The high school sophomore spent three weeks in the hospital, endured five operations, took a battery of antibiotics, and shed 41 pounds from his 6-foot-2-inch, 176-pound frame.

Boone had developed a very serious antibiotic-resistant infection, one with a mouthful of a name—methicillin-resistant *Staphylococcus aureus*, often dubbed MRSA

for short. It’s relatively uncommon; but when it strikes, MRSA can be life threatening. Boone was unlucky enough to suffer its worst effects.

Powerful Bugs

Generally, bacteria aren’t much of a problem. They’re everywhere, often catching a ride on our skin or living inside us, helping us digest food or zapping bad breath. Although some bacteria are good for people, certain pathogenic (disease-causing) types can invade the body and wreak havoc.

Antibiotics are considered the modern wonder drugs, banishing countless infections since the first antibiotic—penicillin—was used in the 1940s. But as more antibiotics have been developed, they’ve been used too often—or incorrectly—by doctors and



patients alike. Antibiotics work only against bacteria, such as the streptococcus bacteria that cause strep throat.

Still, some patients demand (and some doctors prescribe) antibiotics in cases where they won't help, such as to treat colds or nonbacterial infections. Other patients stop taking properly prescribed antibiotics early, after they feel better. Then the surviving bacteria develop some immunity, or resistance, to the drugs, and are better able to fight the next antibiotic attack. For example, the MRSA bacteria strain used to be resistant to only the penicillin class of drugs, says Dr. Stuart Levy, a Tufts University professor and president of the Alliance for the Prudent Use of Antibiotics. Now the strain is developing immunity to a longer list of antibiotics. Other bugs, such as those that cause tuberculosis, are showing resistance to different drugs too.

A study published early this year found that nearly one-third (31.6 percent) of people carry a form of staph, and nearly 1 percent carry MRSA without any infection. But health officials still don't know why some people are not affected by the bacterium and others, like Boone, become so violently ill, according to Nicole Coffin, spokesperson for the Centers for Disease Control and Prevention (CDC). Once seen only in sick hospital patients, drug-resistant infections like MRSA are now being diagnosed in the community—in healthy children, teens, and adults alike. A study identified 18 to 26 MRSA cases in every 100,000 people in 2001 and 2002, a rate that's likely "much higher" today, says Coffin.

Dr. Jon Divine doesn't recall even seeing an MRSA case outside the hospital until about six years ago, when the infections

You don't have to be an athlete to fall victim to a resistant bug. Even rolling up your sleeve for a tattoo could be risky.

started appearing in his Houston patients. Those first cases were “pretty puzzling, to say the least,” says Divine, now a sports medicine specialist at Cincinnati Children’s Hospital Medical Center. “At first, we thought we were dealing with insect bites that had just gotten contaminated.”

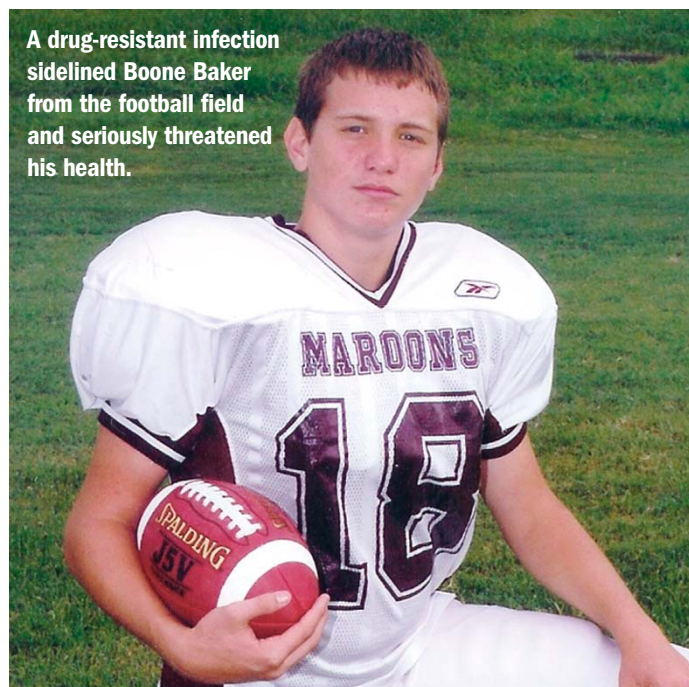
Scrapes and Sweating

How do bacteria infect us? First, they find a cut, a scrape, or another break in the skin’s surface. That’s why athletes—particularly those involved with contact sports—are especially vulnerable. Football players appear most susceptible to staph infections, according to a 2005 survey of high school athletic trainers

conducted by the Texas Department of State Health Services. Two-thirds of the trainers reported at least one staph infection in players on their football teams; 41 percent reported specifically MRSA. Wrestling, volleyball, and cross-country coaches also reported some infections, but in much smaller numbers.

Other factors exist. Divine has diagnosed far fewer MRSA cases in Cincinnati than he did in Houston. Sweating, he believes, helps encourage the infections. When restrictive clothing, such as waistbands or tight socks, rub against sweaty skin, it can create tiny breaks in the skin.

However, you don’t have to be an athlete to fall victim to MRSA or another resistant bug. Even rolling up your sleeve for a tattoo could be risky: In June, federal health officials linked 44 MRSA cases in three states to unlicensed tattooists. Anyone, stresses the CDC’s Coffin, is vulnerable: “You don’t have to play high school sports to be at risk for this.”



A drug-resistant infection sidelined Boone Baker from the football field and seriously threatened his health.

Courtesy of Boone Baker

Bacterial Wipeout

Boone traces his infection back to a wipeout on artificial turf. His mother recalls seeing his shoulder injury after the game. It looked much like a carpet burn, she says, with two ant bites near the center.

Five days later, a surgeon cut out the large infected area, after lab tests identified MRSA. When the infection was removed in October, the wide receiver was also treated with a powerful antibiotic. Two weeks later, Boone was fielding passes again.

Antibiotic Savvy **Should you take antibiotics? That depends on what you have.**

Colds: They’re caused by viruses, and antibiotics have little or no effect.

Ear infections: Some require antibiotics, but not all do.

Sinus infections: Severe cases require antibiotics.

Bronchitis: Only rarely does this condition require antibiotics.

Sore throats: Most are caused by viruses. Only strep throat requires an antibiotic.

Fast-forward to January 2006, when Boone developed a flulike ailment. Given the illness-prone time of year, his parents didn't worry at first. But a week later, while Boone was lying on the sofa one evening, his breathing suddenly became labored. "It felt like I had a stitch in my side—it wouldn't go away," Boone says. And his mild backache had worsened to an excruciating pain. "I couldn't move my legs," Boone remembers. "It hurt so bad to barely move them."

His parents, unable to carry Boone, used a wheelbarrow to get him to the car. Then they rushed to the hospital. Laboratory tests later showed that Boone was battling the same MRSA strain he thought he had already beaten. Doctors speculated that the antibiotics Boone took in October hadn't annihilated the dangerous bacteria, so some survived, fighting back months later.

Guarding Against Germs

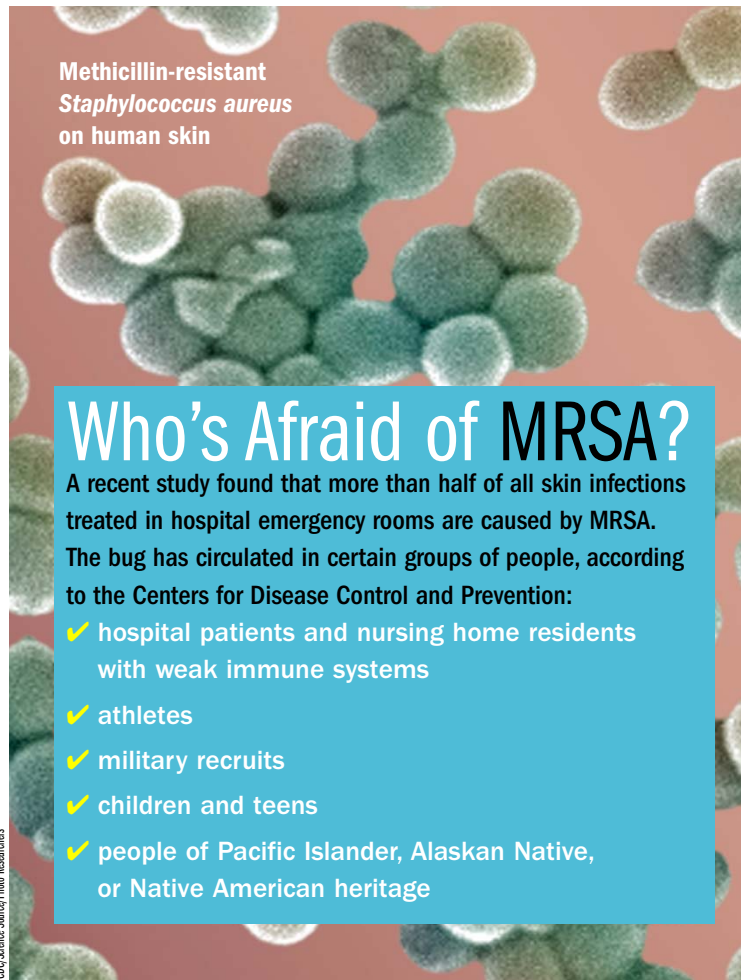
As Boone's case shows, preventing drug-resistant illness is much easier than treating it. To keep MRSA and other staph infections from invading, stay clean. Shower regularly rather than relying on body sprays when you've been sweating. Use soap and water to wash away harmful bacteria, Levy says. And launder your uniform before pulling it on each time.

Here are other measures you can take to guard against infection:

- Don't share anything—towels, clothes, or soap.
- Avoid constrictive clothing and equipment.
- Be careful when shaving; nicks in the skin can increase infection risk.
- Wash any cuts or scrapes well, and apply an antibacterial ointment.

Seek medical help if a bump or a boil grows rapidly and becomes painful. Don't pop it; that spreads the infection.

You can also help keep bacteria from becoming resistant. Don't take antibiotics if you don't need them, and don't take someone else's medication. If you do get a bacterial infection, take drugs exactly as your doctor prescribes them. Ten days of antibiotics may



seem excessive to you, but a complete course is often needed to fully wipe out the infection. Skimping on the drugs can put you—and everyone else—at greater risk of infection over the long haul.

Boone's Fight Back

Once the MRSA set up camp in Boone, all the prevention in the world was useless; he needed treatment. Researchers are working on newer, stronger antibiotics, but in Boone's case time was of the essence. To help him fight back, doctors first had to surgically remove infected tissue near his lungs and spinal cord. Even after Boone left the hospital, it took him months to regain his energy. Swimming a few laps was exhausting.

When *CH2* went to press, Boone was physically and mentally ready to hit the football field again. "My strength is getting back to where it was," he says—and along with it, a heightened respect for how invisible germs can topple any of us.

CH2