A scanning electron micrograph showing several MRSA bacteria. Each bacterium has a prominent, textured red central core surrounded by a thick, greenish-yellow outer layer. The bacteria are irregularly shaped and scattered across a black background. One bacterium in the lower center shows a distinct internal structure with a lighter green area.

Once it gets into the bloodstream, often entering through a cut or scrape, MRSA (shown at 24,000 times magnification) can cause devastating staph infections.

A Menace

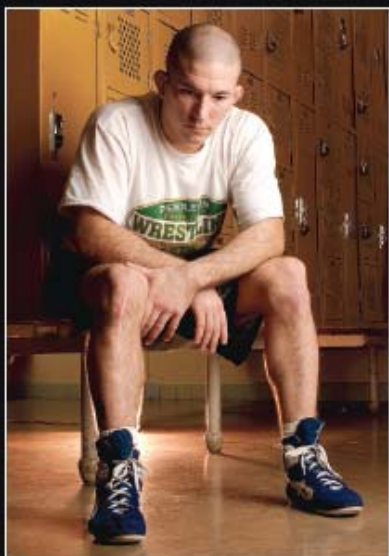
In the Locker Room

MRSA, a strain of antibiotic-resistant staphylococcus once confined to hospitals, is striking athletes at an alarming rate and with dire consequences

BY PHIL TAYLOR

Photograph by K. Lounatmaa/Photo Researchers

IT WAS JUST a tiny red mark on Chris Bettineski's right calf—a bug bite, he thought, when he noticed it in January of last year, or maybe an ingrown hair. He had endured far nastier welts than that during his high school and college wrestling career, and even during his two seasons as an assistant coach at Pendleton (Ore.) High he had often come away with worse scrapes and scratches after getting down on the mat with the kids at practice. A pinprick on his calf? Hardly worth a second thought. ¶ But a couple of days later at a Pendleton meet, he noticed that the mark had grown bigger and a bit painful, and by the time he went to bed that Saturday night, it was about the circumference of a baseball and starting to throb. Still, he waited until Monday morning to see a doctor, who told him he had an infection, prescribed an antibiotic and sent him home. Twelve hours later Bettineski, 29, was in the emergency room at St. Anthony Hospital. The swelling had spread toward his knee, and he was feeling achy, feverish and nauseated, as if he had the flu. Another doctor, a different antibiotic, the same advice: Come back if you're not feeling better in a day or two. ¶ By Friday, Bettineski was back at the doctor's office with a temperature of 103°, a leg about twice its normal size and pain that, he says, was "about seven on a scale of 10. But the scariest thing was that no one knew what was wrong with me or why the drugs weren't working." Within hours he was back at the hospital and being operated on by Dr. Brad Adams, who made a foot-long incision to drain the fluid and then sent a sample to



STITCHED IN TIME Bettineski started out with a small red mark on his calf. A week later surgery staved off amputation of his leg.

the lab for a culture. Three days later more surgery was necessary—this time an additional incision was made along his thigh because the infection had spread from Bettineski's calf to his hip.

By that time Adams had received the results of the lab tests. The bacterium that was ravaging Bettineski's leg was methicillin-resistant staphylococcus aureus—MRSA for short—an insidious, highly contagious bug that, true to its name, is resistant to most commonly used antibiotics. In giving Bettineski's wife, Jodi, the worst-case scenario, Adams candidly stated that what had begun as a seemingly harmless mark was now a fast-moving infection that might necessitate the amputation of all or part of her husband's leg. If it reached his stomach or other internal organs, the infection could kill him.

JUST AS IT spread through Bettineski's leg, MRSA is infecting the world of sports, from high school wrestling mats and neighborhood health clubs to the locker rooms of college and pro teams. MRSA is the reason the NCAA is working with the Centers for Disease Control and Prevention to create educational materials about the hygienic and sanitary measures athletes must take

to avoid infections. It's the reason the NFL has begun sponsoring hygiene workshops for players and is encouraging teams to disinfect their hot tubs, whirlpools and showers regularly and thoroughly.

It's also the reason a team of CDC investigators in lab coats descended on the St. Louis Rams' practice facility during the 2003 season to swab the noses and turf burns of players and coaches, testing for the bug. Their findings were published in a *New England Journal of Medicine* article earlier this month documenting eight cases of MRSA among unnamed Rams linemen that season. Some members of the San Francisco 49ers were found with the germ as well, having picked it up from the St. Louis players when the teams faced each other. Among other NFL players who have been hospitalized with an MRSA infection in the last two years are Miami Dolphins linebacker Junior Seau and Cleveland Browns linebacker Ben Taylor. Dolphins kick returner Charlie Rogers and Tampa Bay Buccaneers defensive lineman Kenyatta Walker reportedly have been infected as well. In college football USC and Georgia are among the schools that have had outbreaks of the infection. All of the players made full recoveries.

"We're seeing it more and more," says Ron Courson, head athletic trainer at Georgia, which has had six cases of MRSA in the past two years. "You would be hard-pressed to find a football team at any level—pro, college or high school—that hasn't had to deal with it one way or another."

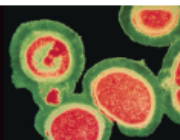
Until the beginning of this decade MRSA was confined almost exclusively to hospitals. But the last few years have seen cases rise among the general public, particularly in segments of society in which large numbers of people are in close proximity, such as prison populations, the military and athletic teams. MRSA can be a threat anytime athletes come in contact with each other and have even tiny scrapes that allow the bacteria to grow and an infection to take hold.

Doctors and medical facilities are not required to report cases of MRSA, so there are no reliable statistics on the number of sports-related cases, but the CDC estimates that roughly 130,000 people are hospitalized with MRSA each year. Doctors and researchers agree that they are seeing far more cases involving athletes than in years past. "It is an emerging problem," says Dr. Dan Jernigan of the CDC. "For years MRSA was an infection confined mostly to hospitals, where the [patients] who contracted it had immune systems that were somehow compromised. But in the last few years we have seen a noticeable rise in the number of cases among younger, otherwise healthy people, and a significant number of those have been among athletes. While they may be relatively rare right now, the potential for a bigger problem exists."

Dr. Gonzalo Ballon-Landa, an infectious disease specialist at Mercy Hospital in San Diego and past president of the Infectious Disease Association of California, is more blunt. "Certainly we don't want to send the public into a panic, but it is safe to say that this is an emerging epidemic," he says. "It's crucial for both the public and the medical community to be aware of what's happening."

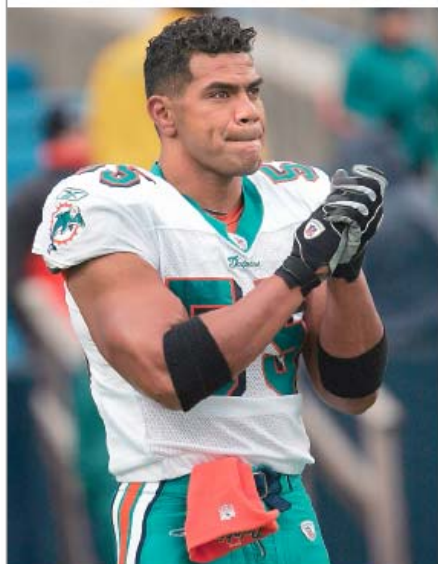
The problem does get people's attention when it affects their sports teams. A 2003 report by the CDC cited cases among fencers at a club-team tournament in Colorado and among wrestlers at an unnamed high school in Indiana. And though ath-

MRSA's early symptoms are so benign that infected people often don't seek medical help UNTIL IT HAS ALREADY SPREAD



STAPH VICTIM Linnetti, a wideout at Lycoming, complained of nausea on a Tuesday, and by Saturday he was dead.

letes in every sport are at risk, football players seem particularly vulnerable. Last November, Daryl Lewis, an offensive lineman at Roosevelt High in Dallas, spent three days in the hospital after a sore on his leg led to surgery to drain his infection. In 2003 12-year-old Nicolas Johnson spent five weeks in Texas Children's Hospital in Houston after a scraped shoulder suffered in football practice turned into an MRSA infection that spread to his lungs.



SHUT DOWN Seau got a scare when a disturbingly swollen arm from an MRSA infection sent him to the hospital.

Even bacterial infections that aren't antibiotic resistant can be dangerous. Rashad Anderson, the leading scorer on the UConn basketball team this season, was admitted to Windham Hospital near Storrs on Feb. 8 to have an abscess on his right thigh drained and treated with antibiotics, after it grew from what looked like a small, ingrown hair. He ended up in the intensive care unit at Hartford Hospital with breathing problems, though UConn officials say it was not an MRSA infection. Anderson was only released from the hospital on Monday.

Ricky Lannetti, a senior wide receiver for Lycoming College in Williamsport, Pa., wasn't so lucky. He discovered what appeared to be a pimple on his buttocks as he was getting dressed for practice one afternoon in December 2003. He called his mother complaining of nausea on a Tuesday, and by Saturday he was dead because of an MRSA infection.

The same fate might have befallen Bettineski, but the doctors finally turned to an antibiotic, Vancomycin, that was effective. It wasn't until a month later that he went back to work. He still hasn't recovered all the sensation in his leg, and there's no guarantee that he ever will. "I still consider myself very lucky," he says.

UNLESS YOU'VE washed your hands in the last few minutes, they probably have bacteria on them at this moment. The bacterium staphylococcus, or staph, is much like gunpowder—harmless under some conditions, lethal under others. About 33% of all people carry staph in their noses, but conditions have to be right for it to start to grow. It can adhere to a minor abrasion such as a turf burn and cause a superficial infection. And in some individuals the bacteria can spread into the blood and cause more severe illness. When a staphylococcus infection does develop, it's usually easily treatable with antibiotics from the penicillin family, such as cloxacillin or cephalexin.

But when an antibiotic effectively treats an infection, a few bacteria still survive, and, to paraphrase Nietzsche, what doesn't kill a germ makes it stronger. The bacteria that survive a dose of antibiotics can mutate into a more virulent strain that's resistant to those drugs, and therein lies a Catch-22: Powerful antibiotics are needed to combat bacteria, but their use helps drive the development of stronger germs. Along with our increasing reliance on antibiotics—in our food and with antimicrobial soaps, for instance—comes increasingly resistant strains.

It only takes the smallest opening in the skin for MRSA to infiltrate the bloodstream. The Rams' cases indicated that scrapes on the skin from artificial turf provided the entry point, and then the germ could have been passed around in any number of ways—by sharing towels, for instance, or using locker room facilities that weren't completely disinfected. "They thought it was in our hot tub because that was where the most guys congregated and it's hot, so germs can fester there," says tackle Kyle Turley. "So they quarantined the hot tub and came in one weekend and did some serious cleaning. They thought they had it nailed. Later on, guys were coming down with it again, and they came back and did some more tests. They found out it was actually in the cold tub. So they quarantined the cold tub, and that finally got rid of it."

MRSA is difficult to control for two main



Preventing Infection

Some simple steps to keep MRSA from spreading

DOCTORS AND researchers are trying to make the general population more aware of MRSA and the ways to prevent its spread. Here are some recommendations.

- **Wash hands regularly.** MRSA may be resistant to some drugs, but soap and water can effectively remove the bacteria before it causes trouble.
- **Cover all wounds, even small ones.** This closes off the potential entry points for MRSA.
- **Monitor even seemingly insignificant abnormalities in the skin and see a doctor at the first sign that a boil or welt seems to be worsening.**
- **Don't share towels or other gear and wipe down heavily used equipment such as weight machines before and after use.**

reasons: Its early symptoms are so benign that people with the infection often don't seek medical attention until it has begun to spread, and it can be passed so easily from one person to another. "An athlete has a cut or an abrasion that we bandage," Courson says. "As he comes off the practice field and is in the locker room or in the shower, he takes that bandage off and throws it on the ground. Then someone in bare feet steps on it. It can happen that easily."

Athletic staffs are trying their best to get players to adopt some basic changes in their behavior (box, above), but CDC researchers want the medical community to change its way of doing things as well. Doctors need to test for MRSA earlier in the treatment, in order to avoid prescribing useless drugs that merely give the bug precious time to spread. "Doctors need to be more judicious in their use of antibiotics in general," says CDC spokesperson Nicole Coffin-Ott. Otherwise new, more powerful strains of MRSA will continue to evolve, and athletes in every sport will have to learn how to play an entirely different form of defense. □