

## MRSA Bacteria Linked to Sports Equipment

*By Joan B. Rose, PhD  
January 26, 2018*

Participating in team sports is both fun and healthy exercise, but a bacterial MRSA infection among players can signal a losing season. Now, [new research](#) traces one potential path of MRSA bacteria through an endless loop from athletes' hands to the ball, to the floor of the court, and back to athletes' hands. The study provides an eye-opening view of an insidious route of exposure to a potentially dangerous pathogen.

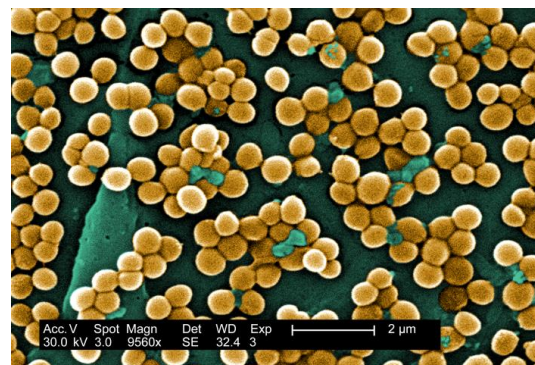
### *What is MRSA?*

MRSA is an acronym for “Methicillin-resistant *Staphylococcus aureus*” bacteria. The name reveals that this variety of *Staphylococcus aureus* bacteria is resistant to the antibiotic drug methicillin and several other related antibiotics.

According to the [Centers for Disease Control and Prevention \(CDC\)](#), MRSA is a leading cause of healthcare-associated infections in the United States and an important cause of serious infections in the community. There is a growing awareness that “community-associated MRSA” is a particular risk to athletes.

Aggressive, difficult to treat, and sometimes fatal, MRSA has earned its “superbug” status. [CDC](#) notes that MRSA usually spreads by direct contact with an infected wound or contaminated hands. Covering infections can help reduce the likelihood of spreading MRSA, but infected individuals can spread MRSA to others without having any symptoms of infection.

Beyond protecting the person by covering infected wounds and hands, surface disinfection of the environment is also very helpful in preventing the spread of MRSA. This is a distinct strategy and surface disinfection is not applied to skin infections but, for example, to sports equipment.



Scanning electron microscope image showing clumps of MRSA bacteria

*Photo courtesy of [CDC](#) and Janice Haney Car and Jeff Hageman, M.H.S.*

## *What Researchers Found*

Pennsylvania physician Dr. Brandon Haghverdian and his colleagues investigated the level of *Staphylococcus aureus*<sup>1</sup> contamination on basketballs and volleyballs in a California university gym. They explored whether a ball in play could act as a carrier of the bacteria during sporting events. Using a smart experimental design in which one of each of three surfaces (hands, ball and floor) was specifically disinfected in progressive trials, the researchers confirmed that bacteria are *transmitted from each surface to the other two* during play. Additionally, bacterial levels on balls in storage decline while not in use, but residual bacterial levels remain viable for 72 hours. The researchers conclude: “Frequent disinfection of sports balls, and intermittent removal of balls from use for at least 24 hr, might reduce the incidence of infectious outbreaks in athletic teams.”

### Disinfecting Sports Equipment to Help Prevent MRSA Infection

*The US Environmental Protection Agency (EPA) [lists products effective against MRSA](#). The tips below are based on CDC’s [guidance for disinfecting sports equipment against MRSA](#).*

- Ensure that janitorial staff regularly clean shared sports equipment and other frequently touched surfaces in athletic facilities, then disinfect them with an EPA-registered disinfectant at a concentration known to destroy MRSA. Alternatively, some shared equipment may be taken out of rotation for at least 24 hours.
- When using cleaners and disinfectants, follow all manufacturers’ label instructions, including:
  - Wearing personal protective equipment such as gloves or eye protection.
  - Taking precautions to avoid damage to surfaces being treated (see manufacturers’ label precautions).
  - Following all mixing directions (for disinfectants that must be mixed with water), surface contact directions (the time period for which the disinfectant must remain in contact with the surface being treated), and whether or not rinsing the surface with plain water is required after the contact period.
- CDC states that if you are using household chlorine bleach, check the label to see if the product has specific instructions for disinfection. If not, use ¼ cup of regular chlorine bleach in one gallon of water (a 1:100 dilution, equivalent to 500 - 615 parts per million of available chlorine) for disinfecting pre-cleaned surfaces.

**We commend Dr. Haghverdian and his colleagues for raising awareness of a dynamic route of MRSA transmission during sports, and we urge athletic facility**

---

<sup>1</sup> It is important to point out that the researchers sampled the more abundant non-methicillin-resistant *Staphylococcus aureus* and used it as a model for the less abundant MRSA.

staff to respond with appropriate disinfection protocols to help avoid MRSA infection.

*Joan B. Rose, Ph.D., is the Homer Nowlin Chair in Water Research at Michigan State University, the editor of the Global Water Pathogen Project, and a member of the Water Quality & Health Council.*

[www.waterandhealth.org](http://www.waterandhealth.org)