



What is methicillin-resistant *Staphylococcus aureus* (MRSA)?

Staphylococcus aureus is a type of bacteria that is commonly found on the skin and in the noses of healthy people—up to 30% of adults.¹ These bacteria can normally be killed by antibiotics, but over time, some become able to resist the effects of certain antibiotics. When *Staphylococcus aureus* bacteria become resistant to the antibiotic methicillin, they are called “methicillin-resistant *Staphylococcus aureus*” or MRSA, and they are more difficult to treat than non-resistant bacteria.

In general, *Staphylococcus aureus* bacteria tend to infect the skin, often causing boils. However, they can also travel through the bloodstream and infect almost any site in the body. If left untreated, MRSA infections may develop into serious, life-threatening complications by infecting the bloodstream, the bones or the lungs. People with weakened immune systems and chronic illnesses are most susceptible to these infections.

How common is methicillin-resistant *Staphylococcus aureus* (MRSA)?

MRSA rates have been climbing in Canada for more than a decade.² This is partly because hospitals are screening more carefully for MRSA infections and therefore finding more of them. However, the misuse of antibiotics—taking them unnecessarily or not completing all the pills in a prescription—can cause infections like MRSA to become more common and more difficult to treat. In 2003, more than 10% of *Staphylococcus aureus* infections occurring in Canadian hospitals were MRSA.³

A 2007 survey of Canadian hospitals found 8.62 MRSA infections per 1,000 patient admissions, a slight increase over the year before.² However, MRSA is also becoming more common outside hospitals.

Who gets methicillin-resistant *Staphylococcus aureus* (MRSA)?

MRSA infections are most often found in hospitals and other health care facilities and have been a problem there for the past 20 years. This is partly because hospital patients often have weakened immune systems and are therefore more susceptible to infection. Another factor is that because antibiotics are widely used in hospitals, those bacteria found in hospitals are more likely to be resistant to several types of antibiotics.

In recent years, more and more infections acquired outside hospitals (called “community-acquired” infections) have been found to be caused by MRSA. Although anyone can get MRSA, recent outbreaks have been seen among athletes, prisoners, military recruits, daycare attendees, and other groups of people who live in crowded settings or who routinely share contaminated items. Poor hygiene practices, such as lack of hand washing, may spread the bacteria more easily.

How to prevent methicillin-resistant *Staphylococcus aureus* (MRSA)?

About 2 to 5% of people carry MRSA bacteria in their noses.⁴ Even though the person carrying them may not be sick, he or she can still spread the bacteria to others, who may become ill.

MRSA is usually spread by direct physical contact or contact with objects that have been contaminated with infected bodily fluids. Anyone who picks up the bacteria by touching an infected person or a contaminated surface can spread it to others, and it’s possible to infect yourself through an open wound on your own body.



What is methicillin-resistant *Staphylococcus aureus* (MRSA)?

The key to preventing MRSA is good hygiene to kill the bacteria. Specifically,

- Keep your hands clean by washing thoroughly with soap and water or using an alcohol-based hand sanitizer
- Make sure that cuts and scrapes are kept clean and covered until they have healed
- Avoid unprotected contact with other people's wounds or bandages
- Do not share personal items such as towels or razors
- If you have a wound that is draining or contains pus, keep it covered with clean, dry bandages (and properly discard used bandages and tape)
- Use regular laundry detergent to kill MRSA bacteria on soiled clothes

These rules are particularly important at sporting events or at the gym, where there is a greater likelihood of physical contact or contact with contaminated surfaces. Use a barrier between your skin and shared equipment, and clean the surfaces of shared equipment before and after using them. Wash your hands after using any sports facilities, and shower with soap immediately after any sports involving close personal contact. Wash any cut or break in the skin with soap and water and replace bandages before and after participating in sports or using sports facilities.

What are the signs and symptoms?

MRSA can cause skin infections that may look like a pimple or boil, with redness and swelling in the infected area. They can be painful and may have pus or other drainage.

If MRSA bacteria spread to other parts of the body, they may cause:

- Pneumonia with a high fever, shortness of breath and a cough that can bring up blood-tinged sputum
- A bloodstream infection, typically causing a persistent high fever and sometimes shock
- Infection of the heart valves, leading to heart failure
- Osteomyelitis, an infection of the bones that causes chills, fever, bone pain and swelling of the tissues over the infected bone

How is the disease diagnosed?

Skin infections are usually diagnosed based on their appearance, but if MRSA is suspected, a sample from the infected area is taken so that any bacteria it contains can be grown in a laboratory. The bacteria are then tested to determine which antibiotics will work against them.

Other MRSA-caused infections are also tested this way, but other tests, such as x-rays, may be needed to diagnose more severe illnesses such as osteomyelitis.

How is methicillin-resistant *Staphylococcus aureus* (MRSA) treated?

Most MRSA infections are limited to the skin and can be successfully treated with antibiotic ointments or oral antibiotics other than methicillin. However, early detection is vital, both because the infection can spread to other parts of the body and because the longer treatment is delayed, the higher the risk of spreading the infection to others. More severe infections may require antibiotics to be taken for a longer time.

If complications have occurred, a combination of antibiotics (oral or intravenously injected) may be needed. Infections affecting bone and artificial parts such as pacemakers or heart valves usually require surgery for a complete cure.



Resources

Congresses

[Association of Medical Microbiology and Infectious Disease Canada](#)

Disease awareness site

[Public Health Agency of Canada fact sheet](#)

References

1. *Staphylococcus aureus* infections. *The Merck Manuals Online Medical Library: Home Edition for Patients and Caregivers*. Available at: <http://www.merck.com/mmhe/sec17/ch190/ch190t.html>.
2. Canadian Nosocomial Infection Surveillance Program (CNISP). *Surveillance for Methicillin-resistant Staphylococcus aureus (MRSA) in Patients Hospitalized in Canadian Acute-Care Hospitals Participating in CNISP, 2006-2007 Preliminary Results*. Available at: <http://www.phac-aspc.gc.ca/nois-sinp/pdf/mrsa-sarm-eng.pdf>.
3. Barton M, Hawkes M, Moore D et al. Guidelines for the prevention and management of community-associated methicillin-resistant *Staphylococcus aureus*: A perspective for Canadian health care practitioners. *Can J Infect Dis Med Microbiol* 2006;17(Suppl C):4-24C.
4. Bartlett JG. Methicillin-resistant *Staphylococcus aureus* infections. *Top HIV Med* 2008;16:151-55

Other Sources

Public Health Agency of Canada. *Fact Sheet—Methicillin-Resistant Staphylococcus aureus*. Available at: <http://www.phac-aspc.gc.ca/id-mi/mrsa-eng.php>.

Public Health Agency of Canada. *Fact Sheet – Community-Acquired Methicillin-Resistant Staphylococcus aureus*. Available at: <http://www.phac-aspc.gc.ca/id-mi/camrsa-eng.php>.