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## MRSA

Methicillin-resistant *Staphylococcus aureus* (MRSA) is a bacterial infection that is highly resistant to some antibiotics.

### Causes

MRSA is a strain of *Staphylococcus aureus* (*S. aureus*) bacteria. *S. aureus* is a common type of bacteria that normally live on the skin and sometimes in the nasal passages of healthy people. MRSA refers to *S. aureus* strains that do not respond to some of the antibiotics used to treat staph infections.

The bacteria can cause infection when they enter the body through a cut, sore, catheter, or breathing tube. The infection can be minor and local (for example, a pimple), or more serious (involving the heart, lung, blood, or bone).

Serious staph infections are more common in people with weak immune systems. This includes patients in hospitals and long-term care facilities and those receiving kidney dialysis.

MRSA infections are grouped into two types:

- Healthcare-associated MRSA (HA-MRSA) infections occur in people who are or have recently been in a hospital or other health-care facility. Those who have been hospitalized or had surgery within the past year are at increased risk. MRSA bacteria are responsible for a large percentage of hospital-acquired staph infections.
- Community-associated MRSA (CA-MRSA) infections occur in otherwise healthy people who have not recently been in the hospital. The infections have occurred among athletes who share equipment or personal items (such as towels or razors) and children in daycare facilities. Members of the military and those who get tattoos are also at risk. The number of CA-MRSA cases is increasing.

### Symptoms

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Staph skin infections cause a red, swollen, and painful area on the skin. Other symptoms may include:

- Drainage of pus or other fluids from the site
- [Fever](#)
- [Skin abscess](#)
- Warmth around the infected area

Symptoms of a more serious staph infection may include:

- [Chest pain](#)
- [Chills](#)
- Cough
- Fatigue
- Fever
- General ill feeling ([malaise](#))
- Headache
- [Muscle aches](#)
- [Rash](#)
- [Shortness of breath](#)

### Exams and Tests

Depending on your symptoms, your doctor may recommend the following tests to detect and confirm the bacteria causing the infection:

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- [Blood culture](#)
- Culture of the drainage (fluid) from the infection
- [Skin culture](#) from the infected site
- [Sputum culture](#)
- [Urine culture](#)

## Treatment

Draining the skin sore may be the only treatment needed for a local skin MRSA infection. This can be done at the doctor's office.

More serious MRSA infections, especially HA-MRSA infections, are becoming increasingly difficult to treat. Antibiotics that may still work include:

- Clindamycin
- Daptomycin
- Doxycycline
- Linezolid (Zyvox)
- Minocycline
- Tetracycline
- Trimethoprim-sulfamethoxazole (Bactrim, Bactrim DS, Septra, Septra DS)
- Vancomycin (Vancocin, Vancoled)

It is important to finish all doses of antibiotics you have been given, even if you feel better before the final dose. Stopping treatment early by not finishing the full course of antibiotics can lead to further drug resistance in the bacteria, or can cause an infection that seemed to be gone to come back (relapse).

Other treatments may be needed for more serious infections. The person may be admitted to a hospital. Treatment may involve:

- Fluids and medications given through a vein
- Kidney dialysis (if kidney failure occurs)
- Oxygen

## Support Groups

For more information about MRSA, see the Centers for Disease Control web site: [www.cdc.gov/mrsa/](http://www.cdc.gov/mrsa/).

## Outlook (Prognosis)

How well a person does depends on the severity of the infection and their overall health. MRSA-related pneumonia and blood infections are associated with high death rates.

## Possible Complications

Serious staph infections may lead to:

- Blood infection (also called [blood poisoning](#) or sepsis)
- [Cellulitis](#)
- Infection of the heart valves ([endocarditis](#))
- [Pneumonia](#)
- [Toxic shock syndrome](#)

Organ failure and death may result from untreated MRSA infections.

## When to Contact a Medical Professional

Call your health care provider if:

- A wound seems to get worse rather than heal
- You have any other symptoms of staph infection

## Prevention

Careful attention to personal hygiene is key to avoiding MRSA infections.

- Wash your hands frequently, especially if visiting someone in a hospital or long-term care facility.
- Make sure all doctors, nurses, and other health care providers wash their hands before examining you.
- Do not share personal items such as towels or razors with another person -- MRSA can be transmitted through contaminated items.

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- Cover all wounds with a clean bandage, and avoid contact with other people's soiled bandages.
- If you share sporting equipment, clean it first with antiseptic solution.
- Avoid common whirlpools or saunas if another participant has an open sore.
- Make sure that shared bathing facilities are clean.

### Alternative Names

Methicillin-resistant *Staphylococcus aureus*; Community-acquired MRSA (CA-MRSA); Hospital-acquired MRSA (HA-MRSA)

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