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## Definition

MRSA infection is an infection with a strain of *Staphylococcus aureus* bacteria that is resistant to [antibiotics](#) known as beta-lactams. These antibiotics include methicillin, [amoxicillin](#), and [penicillin](#).

## Alternative Names

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

## Causes, incidence, and risk factors

*Staphylococcus aureus* ("staph") are common bacteria that normally live on the skin. The bacteria also live harmlessly in the nasal passages of roughly 30% of the U.S. population. Staph can cause infection when they enter the skin through a cut or sore. Infection can also occur when the bacteria move inside of the body through a catheter or breathing tube. The infection can be minor and local (for example, a pimple), or more serious.

Most staph infections occur in people with weak immune systems, usually patients in hospitals and long-term care facilities. MRSA infections in hospitalized patients are known as healthcare-associated MRSA (HA-MRSA). People who have been hospitalized or had surgery within the past year are at high risk for HA-MRSA. People receiving certain treatments, such as [dialysis](#), are also at high risk. MRSA bacteria account for a large percentage of hospital-acquired staph infections.

Over the past several years, MRSA infections in people not considered high-risk have increased. These infections, known as community-associated MRSA (CA-MRSA), occur in otherwise healthy people who have no history of hospitalization in the last year. Many such infections have occurred among athletes who share equipment or personal items (such as towels or razors) and children in daycare facilities.

## Symptoms

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

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

Symptoms of a more serious staph infection may include:

- Rash
- Shortness of breath
- Fever
- Chills
- [Chest pain](#)
- [Fatigue](#)
- Muscle aches
- [Malaise](#) (general feeling of illness)
- [Headache](#)

## Signs and tests

Depending on the extent and severity of your symptoms, your doctor may recommend the following tests:

- A [skin biopsy](#) and culture from the infected site
- Culture of the drainage (fluid) from the infection, to see which organism grows in it
- [Blood culture](#)
- [Sputum culture](#) through coughing or [bronchoscopy](#), if [pneumonia](#) is present or suspected
- Urine culture if a [urinary tract infection](#) is present or suspected

## Treatment

Draining the abscess at the doctor's office is usually the only treatment needed for a local skin MRSA infection.

Few antibiotics are available to treat more serious MRSA infections. These include [vancomycin](#) (Vancocin, Vancoled), trimethoprim-sulfamethoxazole (Bactrim, [Bactrim DS](#), [Septra](#), Septra DS), and [linezolid](#) (Zyvox).

It is important to finish all doses of antibiotics you have been given, even if you feel better before the final dose. Unfinished doses can lead to development of drug resistance in the bacteria.

Other treatments may be given to for more serious infections. These treatments, given in the hospital, may include supplemental oxygen and intravenous medication. In cases of kidney failure, dialysis may be needed.

## Support Groups

Information to the public on community-associated MRSA can be found on the CDC web site at [http://www.cdc.gov/ncidod/dhqp/ar\\_mrsa\\_ca\\_public.html](http://www.cdc.gov/ncidod/dhqp/ar_mrsa_ca_public.html).

## Expectations (prognosis)

Outcome varies with the severity of the infection, and the general condition of the person who has the infection. MRSA pneumonia and blood poisoning have high death rates.

## Complications

Serious staph infections may include:

- Cellulitis
- [Endocarditis](#)
- [Toxic shock syndrome](#)
- Pneumonia
- Blood poisoning

Organ failure and death may result from untreated MRSA infections.

## Calling your health care provider

Call your healthcare provider if a wound seems to get worse rather than heal, or if any other symptoms of staph infection are present.

## 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. Do not share personal items such as towels or razors with another person -- MRSA can be transmitted through contaminated items. 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.

## References

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