

***Staphylococcus aureus* MRSA and CA-MRSA**

Staphylococcus aureus is a Gram-positive bacterium in the form of cocci that form clusters or colonies. The bacterium colonizes the skin and nasal mucosa of humans and certain animals. In healthy people, it is found in the nasal mucosa in as many as 20 to 30 percent of cases. This carriage alone does not cause any symptoms, but it can be a source of transmission to others.

When it enters the body, even through minor, barely noticeable skin breaks, it can cause various infections and illnesses. Infections can be caused by both antibiotic-sensitive and antibiotic-resistant strains. The most common are skin and wound infections, but they can also include pneumonia, surgical site infections, blood infections, heart infections, bone infections, and other invasive infections.

What is MRSA?

The bacterium *Staphylococcus aureus* that is resistant to methicillin (or oxacillin) is called MRSA or methicillin-resistant *Staphylococcus aureus*. MRSA is most commonly acquired in a hospital setting or in connection with medical treatment (hospital-acquired MRSA; HA-MRSA). Typically, this MRSA is also resistant to many other antibiotics.

There is also community-acquired MRSA (CA-MRSA), which is acquired in the community without prior exposure to a hospital or other medical treatment, and which can spread within a hospital setting upon admission of such a patient. In 2005, MRSA in humans associated with farm animals (pigs) and food of animal origin (livestock-associated; LA-MRSA) was first described in the Netherlands. In addition to cases in humans, there have been reports of MRSA infections in horses and domestic pets.

How is MRSA transmitted?

MRSA is primarily transmitted through hands, direct close contact between people, or through personal care items shared with others; direct contacts with farm animals; and, in hospitals, through medical devices and equipment, among other means. The use of antibiotics may also pose a risk of MRSA transmission. Some studies have shown a link between antibiotic use and the prevalence of MRSA.

What are the risks of HA-MRSA infection?

In hospitals, MRSA can enter the bloodstream or other tissues at any time during patient care, particularly during invasive procedures, such as surgery, the use of intravenous catheters, and mechanical ventilation. MRSA acquired in this way in a hospital can cause local skin infections or more life-threatening infections, such as pneumonia, bloodstream infections, and surgical site infections. To reduce the risk, various preventive measures are implemented in hospitals: hand hygiene and disinfection, disinfection of the surgical site prior to surgery, collection of surveillance cultures, and isolation of patients at high risk for these resistant bacteria, as well as the prudent use of antibiotics.

What are the risks of CA-MRSA infection?

CA-MRSA infections occur in otherwise healthy people, most often in the form of small outbreaks affecting a specific group that has close contact and within which MRSA has emerged (e.g., young children, sports teams, prisoners, drug users, homeless people, men who have sex with men, soldiers). Infection most commonly occurs when MRSA enters the body through a skin wound. Infections are usually mild, often limited to the skin and subcutaneous tissues (boils, abscesses), but can also progress to invasive soft tissue infections such as necrotizing fasciitis, necrotizing pneumonia, or bloodstream infection, particularly if CA-MRSA secretes a toxin such as Pantone-Valentine leucocidin (PVL). It is important that, in the case of a skin infection – which is most often caused by the common methicillin-sensitive *S. aureus*, one should consider the possibility of an MRSA infection and ensure it is treated properly and that appropriate measures are taken to prevent its spread to others in the community and possibly to family members.

What are the risks of LA-MRSA infection?

A significant risk factor for infection with LA-MRSA (ST398) is direct or indirect contact with animals. Farm animals are mostly colonized by LA-MRSA and rarely become ill. Farmers, veterinarians, butchers, breeders, and others are most at risk during direct contact between animals and humans. Recent studies indicate that MRSA can also be transmitted to humans through food of animal origin. This MRSA is not highly pathogenic to humans, but it can cause various skin infections, bacteraemia, pneumonia, and endocarditis.

How can I protect myself and my family from MRSA infection?

The best way to protect yourself and family from MRSA (CA-MRSA) is to follow these simple hygiene measures:

- Clean and cover wounds, cuts, and scrapes until they heal;
- Practice regular and frequent hand hygiene;
- Use razors and towels exclusively for yourself and do not share them with anyone.

We protect ourselves against potential LA-MRSA by avoiding direct contact with farm animals (especially pigs) and by following hygiene measures when handling raw meat (especially pork) and preparing food (e.g., separating clean from unclean, and thoroughly cooking meat).

If you are in the hospital as a patient or visitor, practice regular and proper hand hygiene, avoid touching your face, do not touch other patients' surroundings unnecessarily, and follow the instructions of the medical staff. If you contract HA-MRSA, ask your doctor or nurse what hygiene measures you and your family members should follow while in the hospital and after returning home.