

Staphylococcus aureus - golden staph

Staphylococcus aureus, or *S. aureus*, is a common bacterium that lives on the skin or in the nose. It is sometimes called golden staph. In most situations, *S. aureus* is harmless. However, if it enters the body through a cut in the skin, it can cause a range of mild to severe infections, which may cause death in some cases.

How *S. aureus* is spread

S. aureus is commonly carried on the skin or in the nose of healthy people. Around two to three out of every ten people carry the bacterium in their noses. This is known as 'colonisation' – the bacteria are present but do not cause infection. The armpits (axilla), groin and under skin folds are other places *S. aureus* likes to inhabit.

S. aureus can be spread by skin-on-skin contact or by touching contaminated surfaces. Poor personal hygiene and not covering open wounds can lead to infection with *S. aureus*. Thorough hand washing and good housekeeping, such as damp dusting, are important as *S. aureus* is part of our environment.

Types of infections

Common infections caused by *S. aureus* include:

- **Boils and abscesses** – infections of the skin
- **Impetigo** (school sores) – a highly contagious, crusty skin infection that may affect newborn babies and schoolchildren.

More serious infections include:

- **Meningitis** – infection of the membranes lining the brain
- **Osteomyelitis** – infection of the bone and bone marrow
- **Pneumonia** – infection of one or both lungs
- **Septic phlebitis** – infection of a vein
- **Endocarditis** – infection of the heart valves.

Drug-resistant strains

A bacterial infection consists of countless individual bacteria. Most infections caused by *S. aureus* are treatable with antibiotics. However, there is a strong possibility that a few bacteria will survive a course of antibiotics, perhaps due to a gene mutation. The antibiotic-resistant *S. aureus* bacteria that remain then flourish, since they no longer have to compete for resources with the rest of the colony.

Resistant strains of *S. aureus* are known as multi-resistant *S. aureus* (MRSA) or multi-resistant organisms (MROs). Unnecessary or excessive use of antibiotics encourages drug-resistant strains. The overuse of disinfectants in general can also lead to drug-resistance. In most cases, good cleaning or washing with soap and warm water is enough.

Antibiotic resistance is a serious public health problem

Before antibiotics, a severe infection was fatal for many people. Penicillin was effective in treating *S. aureus* until the bacterium became resistant. Throughout the second half of the 20th century, new antibiotics such as methicillin and vancomycin were developed, which successfully treated *S. aureus* infections.

Methicillin-resistant strains of *S. aureus* evolved in the 1970s and have troubled hospitals worldwide with persistent infections in patients. A vancomycin-resistant strain of *S. aureus* emerged in Japan, and strains with partial resistance to vancomycin have been found in the USA, Australia and other countries.

Hospital patients

Hospital patients are more likely to be infected by *S. aureus* because of surgical or other wounds. These people can become seriously ill if their *S. aureus* infections resist treatment from most types of antibiotics, and they may require isolation from other patients.

Standard hygiene practices undertaken by hospital staff include:

- Always washing hands when they are soiled for any reason
- Using an alcohol-based hand rub solution (with or without chlorhexidine) between patients when taking observations (such as pulse and temperature), bed making or performing other similar duties
- Washing hands before, and after, performing procedures on patients
- Wearing gloves, gowns and masks (if necessary)
- Handling used equipment and laundry with care
- Isolating infected patients when required
- Thoroughly cleaning all surfaces.

Community-acquired infection

S. aureus infections with resistant strains are becoming more common in the community, including among people who have not been in hospital recently (within the past year) or had a medical procedure (such as dialysis, surgery or catheters). These infections are called 'community-acquired *S. aureus*' or 'community-acquired MRSA'. These are similar, but different to strains of *S. aureus* found in hospitals, and can cause mild to severe infections.

Preventing the spread of *S. aureus*

Since S. aureus is easily spread by contaminated hands, strict hygiene practices are needed such as hand washing with soap and warm water as well as good housekeeping.

Cover all open wounds with a waterproof occlusive dressing until healed.

The use of alcohol-based hand rub solutions in 'clean' situations when hands are visibly clean, particularly when water is not immediately available, may be useful when travelling or at a picnic, for example. These solutions are not necessary in the home or work situation.

*There are some situations when alcohol-based hand rub solutions should **never** be used – for example, instead of washing after going to the toilet. Hands should be washed with soap and warm water and dried.*

Long-term prevention

Worldwide measures need to be taken to prevent new resistant strains of S. aureus from emerging. Experts propose:

- *A more conservative approach to using antibiotics*
- *The use of narrow spectrum rather than broad spectrum antibiotics*
- *Limiting the use of antibiotics like vancomycin*
- *Maintaining or upgrading hygiene practices in hospitals and the community*
- *Good infection prevention and control measures such as hand washing*
- *Developing new lines of antibiotics that are effective against S. aureus.*

Where to get help

- *Your doctor*

Things to remember

- *Staphylococcus aureus* (*S. aureus*) is a common bacterium that lives on the skin and in some people's noses.
- *S. aureus* can cause a range of mild to severe infections.
- Excessive use of antibiotics has led to drug-resistant strains of *S. aureus* (MRSA).

This page has been produced in consultation with, and approved by:

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