

Methicillin-resistant *Staphylococcus aureus* (MRSA) in Humans and Animals

What is *Staphylococcus aureus* & MRSA?:

- *Staph aureus* (short for *Staphylococcus aureus*) is a bacterium that is normally carried in the nose of about 30% of the general human population. Typically it causes no problems at all, but it is an opportunistic pathogen – if a person gets injured or sick for another reason, *S. aureus* can take advantage of the body's weakened defenses and cause infection. It can infect almost any tissue in the human body, but skin and soft tissue infections are most common.
- Strains of *S. aureus* can be either methicillin-resistant (MRSA) or methicillin-susceptible (MSSA). But MRSA strains are not just resistant to methicillin, they're resistant to all the antibiotics in the same drug family as methicillin (the beta lactams), including many common drugs such as penicillins and cephalosporins.
- Some strains of MRSA, particularly those found in hospitals, are also resistant to other families of antibiotics, which can make infection extremely difficult to treat.
- People and animals can carry MRSA without any signs of infection at all. This is known as asymptomatic colonization, which may be short-term or long-term. Infection with MRSA causes signs of inflammation (e.g. heat, pain, swelling, discharge, fever).
- Pets such as dogs and cats do not commonly carry MRSA. It is suspected that MRSA found in pets usually originates from humans. However, once colonized or infected, dogs and cats can pass the bacterium on to other animals and people.

How Common is MRSA?

Humans:

- MRSA may be carried in the nose of 0.2-3.5% of the general population, depending on geographical location. Studies show that about one in three people carry *Staph aureus* in their nose, usually without any illness.
- MRSA is an important hospital-associated (HA) pathogen, which causes infection in people with risk factors such as recent hospitalization, surgery, antibiotic use, chronic illness, and residence in long-term care facilities.
- Infection with MRSA has also become a community-associated (CA) disease, which can affect anyone in the general population, even without traditional HA risk factors.

- People who work with horses, cattle or pigs may be at increased risk of acquiring MRSA.
- The prevalence of MRSA varies widely in different parts of the world. In some places in the USA, more than half of all *S. aureus* isolates are MRSA, whereas in some European countries less than 1% are MRSA.

Animals:

- *Staphylococcus aureus* is not usually found in dogs and cats, although the frequency with which it is found varies widely between studies.
- Cases of MRSA colonization and infection were first described in dogs and cats in the 1990s, including some reports in which the people who lived with the pet were carrying the same strain.
- As in people, the percentage of healthy pets that carry MRSA is low (less than 4%). Pets may carry MRSA in the nose, intestinal tract or on the skin.
- Risk factors for MRSA infection in pets are largely unknown. Some are likely similar to those in humans, such as previous surgery, hospitalization, and antibiotic

How Do Animals & People Get MRSA?

Transmission of MRSA to people or animals can lead to colonization alone, infection, or both.

- In human hospitals, MRSA is most often transmitted on the hands of healthcare workers.
- Transmission of MRSA in the community occurs through direct contact with high-risk, colonized or infected individuals with an infected wound or by sharing personal items, such as towels or razors that have touched infected skin. MRSA infection risk can be increased when a person is in certain activities or places that involve crowding, skin-to-skin contact, and shared equipment or supplies. Outbreaks have occurred on sports teams, military bases and prisons where many people may have close contact with each other, hygiene may be less than ideal, and breaks in the skin may be common.
- Pets most often probably get MRSA from people, and they can carry MRSA in their noses and around the anus. Direct contact with these areas or tissues infected with MRSA (e.g. an infected incision) are most likely to result in transmission from pets. remain sealed during transport and at all times prior to autoclaving. It is recommended that cage racks be treated with disinfectant prior to removal from animal room.

MRSA can survive in the environment for a limited period of time, but the bacteria are susceptible to most commonly used disinfectants, if the surface/equipment is cleaned properly before the disinfectant is applied.

What are MRSA Symptoms?

Often, people first think the area is a spider bite; however, unless a spider is actually seen, the irritation is likely not a spider bite. Most staph skin infections, including MRSA, appear as a bump or infected area on the skin that might be:

- Red
- Swollen
- Painful
- Warm to the touch
- Full of pus or other drainage
- Accompanied by a fever

What Should I Do If I See These Symptoms?

- Please contact University Health Services

How to Prevent Spreading MRSA If You Have MRSA:

- Cover your wounds. Keep wounds covered with clean, dry bandages until healed. Follow your doctor's instructions about proper care of the wound. Pus from infected wounds can contain MRSA so keeping the infection covered will help prevent the spread to others. Bandages and tape can be thrown away with the regular trash.
- Clean your hands often. You, your family, and others in close contact should wash their hands often with soap and water or use an alcohol-based hand rub, especially after changing the bandage or touching the infected wound.
- Do not share personal items. Personal items include towels, washcloths, razors, clothing, and uniforms.
- Wash used sheets, towels, and clothes with water and laundry detergent. Use a dryer to dry them completely.
- Wash clothes according to manufacturer's instructions on the label.

How Are MRSA Skin Infections Treated?

Treatment for MRSA skin infections may include having a healthcare professional drain the infection and, in some cases, prescribe an antibiotic. Do not attempt to drain the

infection yourself – doing so could worsen or spread it to others. If you are given an antibiotic, be sure to take all of the doses (even if the infection is getting better), unless your doctor tells you to stop taking it.

References:

Centers for Disease Control and Prevention: Methicillin-resistant Staphylococcus aureus Infections,

<http://www.cdc.gov/mrsa/community/index.html>

Worms & Germs: MRSA, University of Guelph,

<http://www.wormsandgermsblog.com/promo/services/>