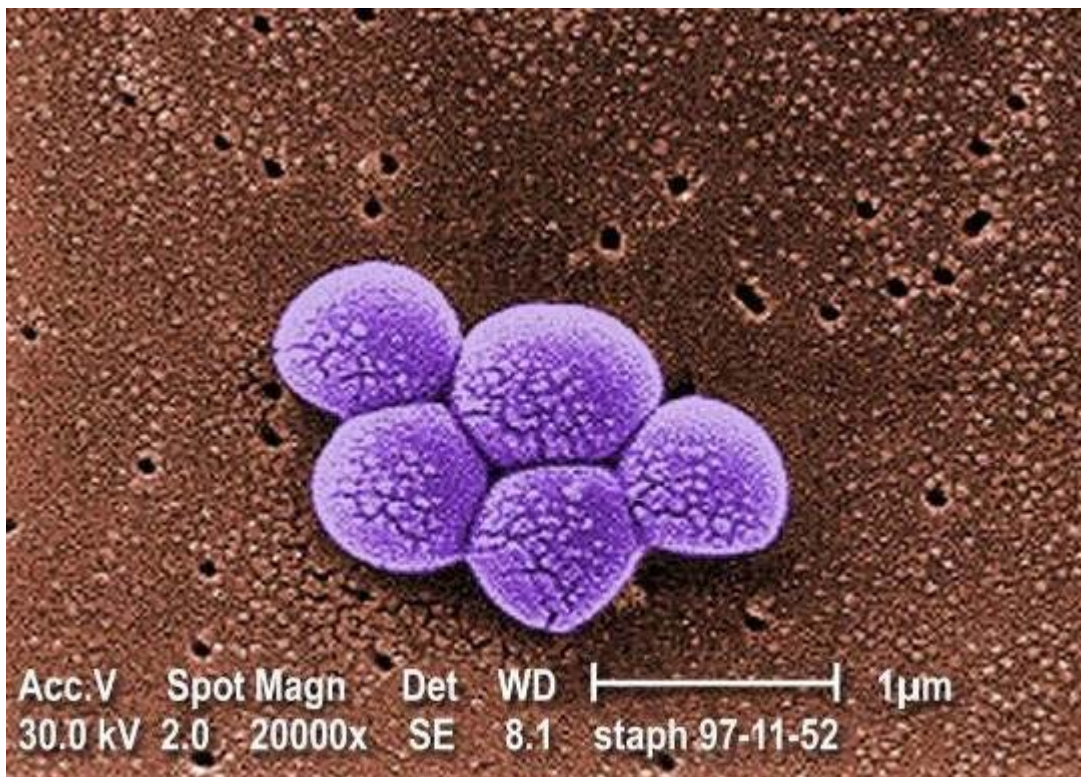


MRSA: Methicillin-resistant *Staphylococcus aureus*

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VP Client Information Sheets



A grouping of methicillin resistant Staphylococcus aureus (MRSA) bacteria. Photo by Janice Carr, courtesy of the Public Health Image Library

Staphylococcus aureus, often called *Staph aureus* or *S. aureus*, is a bacterium that is normally carried in the nose of about 30% of the general human population. While dogs and cats do not commonly carry it, they can. Typically it causes no problems, but it is an opportunistic pathogen – if a pet or person gets injured or sick, *S. aureus* can take advantage of the body's weakened defenses and cause infection. It can infect almost any tissue, 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 are also resistant to other families of antibiotics, which can make them extremely difficult to treat.

People and animals can carry MRSA without any signs of infection at all: This is known as colonization, which may be short-term or long-term.

In dogs and cats, the most common conditions associated with MRSA tend to be skin infections, post-operative incisional infections and wound infections. The bacteria have also been isolated from the urinary tract, auditory canal, skin, eye and joints.

How Common is MRSA?

The frequency with which it is found in pets 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%).

Risk factors for MRSA in pets are largely unknown. Some are likely similar to those in humans, such as previous surgery, hospitalization, and antibiotic use. Pets used in hospital visitation programs may also be at increased risk.

How is MRSA Transmitted?

It is suspected that MRSA found in pets usually originates from humans, but pets can transmit it to people. Transmission can lead to colonization alone, infection, or both. However, once colonized or infected, dogs and cats can pass the bacterium on to other animals and people.

Pets 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) is most likely to result in transmission from pets to people.

How is MRSA Diagnosed?

MRSA is usually diagnosed based on a bacterial culture, which can take one to three days to complete. Molecular tests are now being used that can detect MRSA in people more rapidly (hours versus days), but these tests are not used in animals. Pets tend to have the same strains that are common in people in the same geographic region.

The ideal body site to culture in colonized animals is unknown, but swabs are usually taken of the nose and the area around the anus.

How is MRSA Treated?

Colonization

Most if not all pets eliminate MRSA colonization on their own within a few weeks as long as they are not re-exposed to the bacterium – decolonization therapy with antibiotics is not needed or recommended, but household infection control practices (see below) are important.

Infection

All MRSA strains are resistant to beta-lactam antibiotics, but because different strains may be resistant to other antibiotics as well, the bacteria must be tested in order to choose the best antibiotic. Automatically choosing the most powerful antibiotic to treat the infection when a more common drug will do can be dangerous - and expensive - because the MRSA, or other bacteria in the body, may become resistant to it, and then there may be no drug that can effectively treat it. Local treatment of skin and soft tissue MRSA infections (e.g. lancing and flushing an abscess) is often effective as well and should not be overlooked, even if the animal is also treated with antibiotics.

Infection Control for MRSA in Pets

Even though MRSA colonization is uncommon in healthy pets, if they have been exposed to a hospital environment (such as animals in hospital visitation programs) or to a person who was recently hospitalized, they may be more likely to be carrying MRSA. Hand hygiene is the simplest and most practical way to prevent transmission of MRSA between humans and animals. Use soap and water or an alcohol-based hand sanitizer on your hands.

What Should I do if my Pet is Infected with MRSA?

Don't panic! The majority of MRSA infections can be treated effectively if they are diagnosed and appropriate treatment is started in a timely manner. No matter at what point the treatment begins, follow the treatment recommendations of your veterinarian carefully. It is especially important to completely finish any antibiotic prescriptions, as directed, even if your pet seems to be better earlier.

Avoid contact with the infected area of your pet. If possible the area should be kept covered or bandaged. Wear gloves if you need to change the bandage and place all used bandage materials directly in the garbage. Wash your hands well after handling your pet, and especially after changing any bandages.

Infected pets are often colonized as well, so also follow the recommendations for colonized pets below.

What Should I do if my pet is Colonized with MRSA?

- Animals that are positive for MRSA can stay at home if there are no high-risk people (e.g. HIV/AIDS, cancer or transplant patients) in the household. Avoid touching the pet's nose or anal area because these are the most likely areas to harbor MRSA. Don't allow the pet to lick a person's face or any area of broken or damaged skin.
- MRSA-positive dogs should be walked in low-traffic areas where they are not likely to encounter other animals or people to which they may transmit MRSA through direct contact. MRSA can be found in the stool of colonized animals, so stool should be collected as promptly as possible and disposed of directly into the garbage. Wash your hands after any contact with stool or handling plastic bags containing stool since minor breaks in the bags are possible and contamination of the

- hands could occur.
- MRSA-positive cats should be kept indoors. Cat litter boxes should be scooped out daily. Wash your hands after cleaning the litter box.
 - Although the importance of the environment in transmission of MRSA is unclear, MRSA can survive in the environment for some time. The toys and bedding of an MRSA-positive pet should regularly be changed/cleaned (daily if possible) to reduce the exposure of both the animal and people to MRSA.
 - MRSA can survive in the environment for a limited period of time. However, the bacteria are susceptible to most commonly used disinfectants if the surface/equipment is cleaned properly before the disinfectant is applied.
 - Hand hygiene remains the most important means of preventing transmission.
 - Keep the pet off beds, and especially off of pillows used by people.

Therapy Animals

Animals that regularly visit healthcare facilities are more likely to be exposed to MRSA, and therefore are more likely to carry it. There are guidelines available to help reduce the risk of pets acquiring infectious diseases in hospitals. These include:

- Never let your pet lick a patient's face, hands or any area of broken skin.
- Do not let patients feed your pet any treats.
- If your pet needs to be placed on a bed or patient's lap, place your animal on a clean towel or sheet, never directly on the patient's hospital gown or bed sheets.
- Testing or treating normal animals for MRSA is not necessary, but MRSA should be considered in these animals if they develop infections, particularly of the skin and soft tissues.
- To help prevent the spread of MRSA, wash your therapy pet's vest after a hospital visit.

If I have MRSA, how do I Protect my Pet?

Wash your hands thoroughly before and after handling your pet to help prevent transfer of MRSA to your pet, and transfer of MRSA from your pet if he becomes colonized.

Do not kiss your pet, and do not let your animal to lick your face or any broken skin.

Testing or treating normal pets for MRSA is not necessary, even if a person in the house is infected or colonized with MRSA. However, if one or more individuals in a household repeatedly tests positive for MRSA, then screening of pets for MRSA may be considered as part of a whole-household intervention, which includes screening and decolonization of all people.

Is My Pet the Source of my MRSA Infection?

Pets can be carriers of MRSA, especially in households where people are repeatedly found to have MRSA infections, but this does not mean they are the source. Pets are often innocent bystanders who acquire MRSA from their owners. If all the people in the household are being tested for MRSA, then testing of pets should also be coordinated by your veterinarian in consultation with the attending physician.

If household infection control measures fail to control transmission of MRSA between people, and there is evidence that a pet may be a source of MRSA, you can consider temporarily removing the pet from the household but that is rarely necessary. This should allow the pet to naturally eliminate MRSA colonization while the human members of the household undergo decolonization. Permanent removal of pets is not indicated.

It is impossible to completely prevent pets or people from being exposed to MRSA because so many people and animals carry MRSA without any signs. However, critical prevention tools are proper use of antibiotics according to the prescription and only using antibiotics when really needed.

Prognosis

The prognosis for MRSA infections depends more on the type of infection than the fact that MRSA is present. The majority of MRSA infections are treatable and there is currently no indication that MRSA infections carry a poorer prognosis than methicillin-susceptible *S. aureus* infection, provided proper treatment is started. The key is prompt diagnosis so that appropriate treatment can be initiated.

Links

Centers for Disease Control and Prevention, 2008. Community-associated methicillin-resistant *Staphylococcus aureus* (CA-MRSA). Available at: http://www.cdc.gov/ncidod/dhqp/ar_mrsa_ca.html. Accessed Aug 2008.

Centers for Disease Control and Prevention, 2007. Healthcare-associated methicillin-resistant Staphylococcus aureus (HA-MRSA). Available at: http://www.cdc.gov/ncidod/dhqp/ar_mrsa.html. Accessed Aug 2008.

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