

Methicillin-resistant *S. pseudintermedius* (MRSP)

What are MRSP and *Staphylococcus pseudintermedius*?

Staphylococcus pseudintermedius is a bacterium that is commonly found on the skin or in the mouth, nose or intestinal tract of 50% or more of healthy dogs, and a smaller percentage of healthy cats. Typically it causes no problems at all, but if an animal gets injured or sick for another reason, *S. pseudintermedius* can take advantage of the body's weakened defenses and cause infection and illness.

This bacterium can infect almost any tissue, but skin and soft tissue infections are more common, particularly when the skin has been damaged by something else e.g. allergies, scratching, chronic wetness, wounds, surgery. Skin and ear infections are also very commonly caused by *S. pseudintermedius*. Infections of other body sites and organs are much less common, but can be very severe.

MRSP stands for methicillin-resistant *S. pseudintermedius*, which is a form of *S. pseudintermedius* that is highly resistant to many antibiotics, including most of the drugs that are commonly used to treat bacterial infections in dogs and cats.

People and animals that carry MRSP without any signs of infection at all are said to be colonised. When infection with *S. pseudintermedius* occurs, this causes signs of inflammation e.g. heat, pain, swelling, discharge, fever.



How common is MRSP in dogs and cats?

Healthy animals can carry MRSP. One study found MRSP in 4.5% of healthy dogs and 1.2% of healthy cats.

MRSP infections appear to be increasing substantially in animals, particularly dogs. Veterinary dermatology specialists are reporting very large increases in MRSP skin infections (often called pyoderma). Infections after surgery are also becoming increasingly common, and they can be very difficult to treat.

Risk factors for MRSP in pets are unknown. Antibiotic treatment is a potential risk factor.

Can people get MRSP infections?

Yes, but this seems to be quite rare. There are only a couple of reported MRSP infections in people worldwide. Human infections with methicillin-susceptible *S. pseudintermedius* is also very rare, despite the fact that dog owners are probably

exposed to the bacterium on a regular basis. This bacterium is apparently not well adapted to cause disease in people. While the risk is not zero, it's not a major concern.

How do animals and people get MRSP?

MRSP is probably transmitted to pets by direct contact between animals. Healthy, colonised animals with no signs of infection are probably the major source of MRSP. Indirect transmission, which occurs when a person or animal gets MRSP from touching an object or surface that has been contaminated with MRSP by another animal, is theoretically possible but probably uncommon if it occurs at all.

People most likely get MRSP from direct contact with an infected or colonised pet. It has been shown that people who regularly wash their hands after touching their pets less commonly carry *S. pseudintermedius* compared to people who don't regularly wash their hands. Transmission of MRSP from people to pets can also occur, although the risk of this is probably very low because MRSP in people is so uncommon.

MRSP can survive in the environment for a limited period of time, but it's susceptible to most commonly used disinfectants, if the surface/equipment is cleaned properly first.

What happens if a pet gets infected with MRSP?

In dogs and cats, MRSP most commonly causes skin and ear infections. Wound infections, surgical site infections and other types of infection can also occur.

Rarely, MRSP can cause severe disease like necrotizing fasciitis ("flesh-eating disease").

While MRSP infections can be hard to treat, available evidence indicates that the outcome should not be any different for an MRSP infection compared to an MSSP infection if MRSP is promptly diagnosed and proper treatment is started right away. If MRSP is not diagnosed quickly and ineffective antibiotics are used, it is possible that more serious disease will result.

How is MRSP diagnosed?

MRSP is diagnosed based on bacterial culture, which takes a few days to complete.

How is MRSP treated?

All MRSP strains are resistant to beta-lactam antibiotics e.g. penicillins, cephalosporins, but because different strains may be resistant to other antibiotics as well, the bacteria must be tested in order to choose the best antibiotic. Local treatment of skin and soft tissue MRSP infections (e.g. lancing and flushing an abscess) is often very effective. Sometimes a strain of MRSP may be resistant to almost all available antibiotics, making selection of an appropriate antibiotic extremely difficult. In these cases your veterinarian may need to consult an infectious disease expert or pharmacology specialist to determine the best treatment.

What should I do if my pet has an MRSP infection?

Relax. Although MRSP infections can be very serious, most animals with MRSP infections can be treated quite successfully.

Follow your veterinarian's instructions. Proper treatment right from the start is very important. Make sure you follow all treatment recommendations. Always ensure that dosing and

timing of medications are followed exactly. It is especially important to completely finish any antibiotic prescriptions, as directed, even if your pet seems to be better before they're done.

Avoid contact with the infected area of your pet. If possible the area should be kept covered or bandaged to reduce the risk of transmission and contamination of the environment. Follow all bandaging instructions from your veterinarian very carefully. If you need to change a bandage, wear gloves and put the dirty bandage directly in the bin.

Wash your hands! Hand hygiene, using soap and water or an alcohol-based hand sanitiser, is the simplest and most practical way to prevent transmission of MRSP between animals and people. In general, MRSP colonisation is uncommon in healthy pets, but it is possible that any given animal is carrying MRSP at any time. Therefore, hand hygiene is important for everyone after handling any animal, but it is particularly important for individuals who may have a weakened immune system. It is also especially important after handling an animal with an active MRSP infection, because the risk of contamination with MRSP is greater.

Strict quarantine is not necessary. MRSP is widespread in the dog population, so really aggressive measures to restrict contact with an infected animal in the community aren't indicated. However, use common sense to help reduce the likelihood of transmission of MRSP to other dogs (and people) by:

- Avoiding dog parks, puppy classes and other similar events while the infection is still active.
- Not letting your dog off-leash, as it may then have uncontrolled contact with other dogs.
- Promptly removing any stool that is passed, particularly in public places.
- Keeping your dog away from people with compromised immune systems.

What should I do if my pet is colonised with MRSP?

Avoid contact with the pet's nose, mouth or bottom, as these are the most likely areas to harbour MRSP.

Don't let your pet lick a person's face, or any area of broken or damaged skin.

MRSP-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 MRSP through direct contact. MRSP-positive cats should be kept indoors.

MRSP can be found in the stool of colonised animals, so stool should be collected as promptly as possible and disposed of directly into the garbage. Cat litter boxes should be scooped out daily.

Although the importance of the environment in transmission of MRSP is unclear, MRSP can survive in the environment for some time. The toys and bedding of an MRSP-positive pet should regularly be changed/cleaned to reduce the exposure of both the animal and people to MRSP. Contaminated laundry should be washed separately and dried in a hot air dryer (such as most normal clothes dryers).

Keep MRSP-positive animals off people's beds.

Hand hygiene remains the most important means of preventing transmission



How long will my pet be colonised with MRSP?

There is no information about how long animals remain colonised with MRSP, but long-term colonisation is likely possible, because we know *S. pseudintermedius* is well adapted to live on pets, especially dogs. This is quite different from MRSA, which pets only seem to carry for a short period of time if they become colonised.



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