

MRSA, MRSP & MRSS

MRSA, MRSP and MRSS is increasingly in the news. Over reactions and misrepresented statements inflame the realities of these bacteria. The following points will help define and objectify the reality of living with these bacteria in our “modern” world.

MRSA is: methicillin-resistant *Staphylococcus aureus*

1. MRSA is a bacteria most commonly encountered in humans; usually on their skin or in their nostrils.
2. Most MRSA on pets comes from humans.
3. MRSA in dogs is a concern because it's an important cause of infection in both people and animals. However, it's an opportunist, meaning it typically doesn't cause disease when it encounters a normal, healthy person or animal. In fact, a small percentage (~1-3% probably) of the human and pet populations carry this bacterium in their nose without knowing it, and the vast majority never suffer any consequences.
4. MRSA is distantly related to MRSP (methicillin-resistant *Staphylococcus pseudintermedius*), in pets.
5. MRSA is rare and the overall risk is low to humans as well as pets.
6. MRSA is much more of a concern from a public health standpoint, as it can move between animals and people.
7. MRSA is not really adapted to live in dogs, cats, horses and many other animals. It can, for a while, but doesn't do so long term, and the vast majority of MRSA carriers will get rid of it on their own.

MRSP is: methicillin-resistant *Staphylococcus pseudintermedius*

1. MRSP is a bacteria most commonly encountered in pets; usually on their skin.
2. *Staphylococcus pseudintermedius* is the most common species of bacteria found on dogs. Usually this bacteria resides on the skin. .
3. A small percentage of dogs may develop skin infections (pyoderma) caused by MRSP.
4. MRSP infections do not respond to common antibiotics. MRSP infections are usually seen in pets with recurrent skin infections due to underlying causes such as allergies or hormonal problems.
5. *Staphylococcus pseudintermedius* rarely causes infections in people. However, because this is a more resistant bacteria than the usual bacteria that infects pets, we want to decrease the chance of it being transmitted to you and your family. The most important thing that you can do is frequent hand washing after touching your pet – and always before meals. If you or your family are immune compromised you should either avoid direct contact with your pet or thoroughly wash your hands after handling. The risk of transmission to humans is very low. If, however you develop a non-healing skin wound, please contact your physician.

6. To treat MRSP in your pet *Windsor Animal Hospital* will prescribe antibiotics, and topical therapies.
7. MRSP is distantly related to MRSA (methicillin-resistant *Staphylococcus aureus*), in people.
8. Similar to human medicine, resistant bacteria are becoming more common in veterinary medicine.
9. Pets that live together share bacteria. Thus other dogs or cats in the same home may be colonized with MRSP. As long as the other animals have no underlying diseases that predispose them to skin infections, then the bacteria should not cause problems. If other pets in the household develop skin lesions, then we need to examine that pet and a possible skin culture should be performed to determine if MRSP is the cause.
10. MRSP becomes resistant to common antibiotics, usually by picking up resistance genes from other bacteria. Veterinary medicine is rapidly losing most of our typical antibiotic treatment options for many MRSP strains, and are left with only a couple of viable antibiotics. Amikacin is an antibiotic we try not to use because it has to be injected, and because it can be hard on the kidneys. However, it's literally a lifesaver in many MRSP cases.
11. MRSP can infect people, but it is rare. There are only two such published reports as of 2014.
12. MRSP is not well adapted to infect people. MRSP is not inherently any more likely to cause infection than methicillin-susceptible strains of *Staphylococcus pseudintermedius* (MRSP).
13. A large percentage of the human population has contact with dogs every day. So, a large percentage of people encounter MRSP every day. Yet, reports of MRSP infection in people are very rare.
14. In contrast to MRSA, it appears that MRSP (at least in dogs) can stay with the animal for a very long period of time. Therefore, an animal that has had an MRSP infection has a reasonable chance of shedding the bacterium for a long period of time, which might be of relevance for its health in the future.
15. Use some very basic infection control practices when dealing with infected animals to reduce any possible risk. These would include:
 - avoiding contact with infected sites
 - if contact with infected sites is necessary (e.g. cleaning or treating infected ears), gloves should be worn and hands washed after glove removal
 - hands should be washed thoroughly after any contact with the infected site, and regularly after contact with the animal
16. Quarantine of infected animals in households isn't necessary, because of the limited evidence of transmission and because healthy dogs and cats can also carry this bacterium. In veterinary clinics, isolation of infected animals is reasonable because other animals in the clinic may be at higher risk of developing infections should they become exposed.

MRSS is: methicillin-resistant *Staphylococcus schleiferi*

1. *Staphylococcus schleiferi* doesn't get much respect. Most of the attention gets paid to *Staphylococcus aureus* (because **MRSA**, the methicillin-resistant version, is such a high profile pathogen in humans and it can be transmitted between people and pets) and *Staphylococcus pseudintermedius* (because it's a leading cause of infection and **MRSP**, the methicillin-resistant type, is spreading very quickly and widely in dogs).
2. *Staphylococcus schleiferi* is another *Staphylococcus* species that can cause various infections in dogs, particularly skin and ear infections. It's often overlooked, or more specifically, unnoticed. The problem is it takes some effort to differentiate it from other staph. This species is relatively unique in that it has two distinct subtypes - *Staphylococcus schleiferi coagulans* and *Staphylococcus schleiferi schleiferi*. The first one is very similar to *Staphylococcus pseudintermedius*, and not all diagnostic labs go through the trouble of trying to distinguish one from the other. So there may actually be a lot of *Staphylococcus schleiferi* infections that get mistakenly diagnosed as *Staphylococcus pseudintermedius*. The second subtype is coagulase-negative (whereas *Staphylococcus pseudintermedius*, *Staphylococcus aureus* the first subtype of *Staphylococcus schleiferi* are all coagulase-positive) and most diagnostic labs don't do any identification of coagulase negative staph. As a result, we only have a superficial understanding of it and its epidemiology.
3. It's hard to say whether this means a lot from a clinical standpoint. In generally, coagulase negative staph are much less of a concern than the coagulase positive staph since they are less likely to cause disease. However, we don't really understand the differences between the two *Staphylococcus schleiferi*'s. If the coagulase-negative version is less able to cause disease, then a lower rate of methicillin resistance in the more concerning coagulase positive type is better than vice versa.
4. Methicillin-resistance was more common in the coagulase negative subspecies, *Staphylococcus schleiferi schleiferi*.
5. 57% of *Staphylococcus schleiferi* isolates were methicillin-resistant.
6. We don't really know whether an animal with methicillin-resistant *Staphylococcus schleiferi* poses a risk to people, but the risk is probably quite limited.
7. *Staphylococcus schleiferi coagulans* infections in people are extremely rare, so this bacteria doesn't seem to have much of an affinity for humans.
8. *Staphylococcus schleiferi schleiferi* infections in people are more common, but it is thought that this subtype is a "human *Staphylococcus*." Therefore, while it can cause infections in people (usually infections in people that are already sick and/or in hospital), it probably comes from people, not animals.
9. So, overall, the risk posed by infected animals is minimal. However, some *Staphylococcus schleiferi* can be very drug resistant and you don't really want to have an infection with a multidrug resistant bacterium of any kind.

For additional and up-to-date information on MRSA, MRSP and MRSS:

<http://www.wormsandgermsblog.com/articles/diseases/test-subcategory/>