



88 Beech Street, Essex Junction, VT 05452
(802) 878-6888 voice • www.vtvets.org • kathy@vtvets.org

MRSA One Health Fact Sheet for Veterinarians

Most Relevant Current Facts Concerning Animals as MRSA Carriers

- MRSA in pets is generally of human origin.
- Once established in animals (whether as a carrier state or a true infection), MRSA transmission can subsequently be bi-directional, e.g. it can be transmitted from animals to people and then from people to animals again. It can also be transmitted between animals.
- MRSA has most commonly been found in dogs, but it has also been found in cats, small pets, birds, reptiles, exotics, and fish tanks.
- MRSA as a carrier state in pets tends to be transient and self-clearing.
- The origin of MRSA in large animals is somewhat variable. In the US, the strain most frequently seen in horses (USA500) is of human origin but is currently uncommon in the human population and appears to have become horse-adapted. Nonetheless, MRSA in horses behaves as described above, with bidirectional spread and the carrier state often being transient.
- MRSA in livestock is even more variable. Pigs in Europe have been widely found to carry a livestock-origin strain (ST398) of MRSA, and humans associated with them have been found to be colonized with MRSA at much higher rates than the general population. In the US, two surveys performed in 2015 by U of MN researchers found that herd prevalence of MRSA in 11 major swine-producing states was <10% and that the strains seen (including ST398 and ST5, which is an important player in human clinical illness) tended to lack virulence factors, indicating that they are not likely to cause severe human disease.
- MRSA in dairy cattle has not received much attention despite the facts that Staph aureus is a common mastitis pathogen and that the first isolation of MRSA in an animal was from a dairy cow. This situation may change as a novel MRSA variant in cattle has recently been described.

Is MRSA Screening of Pets/Livestock Recommended?

- MRSA screening of healthy pets is not recommended as Staph aureus is not a typical small animal pathogen.
- MRSA screening of therapy animals is not recommended, as per Animal-Assisted Intervention (AAI) guidelines.
- In single-event cases of human MRSA (either infection or colonization/decolonization events), screening of household pets and livestock is likely not warranted.
- In the case of recurrent human MRSA (either infections or diagnosis of colonization state), pet and/or livestock screening may be considered if the owner desires it and feels it is cost-effective.

How Should Screening Be Done?

- If the veterinarian and owner decide on pet screening, dogs are the species most identified in studies as likely MRSA carriers, though researchers continue to indicate that cats and other pets should be considered.
- Sites to screen may be somewhat dependent on the laboratory chosen. Recent work at Johns Hopkins has suggested that the mouth may be the single most sensitive site to swab; however, commercial labs may have culture protocols that dictate that the nares be sampled instead. The VVMA One Health Task Force has helped to initiate a dialogue between researchers and IDEXX in an effort to bring further clarity on this point.

- Small animal practitioners in Vermont have at least 2 options of laboratories to work with: 1) IDEXX offers a MRSA Screening Culture (2497), intended for use in dogs and cats in households with potential exposure to MRSA-infected humans. The test is designed to be run on swabs from nares and rectum and the cost to the clinic is \$91.75. 2) Antech does not offer a MRSA screening test per se, but does offer aerobic culture and sensitivity (M020), performed on a single site/single swab. Clinic cost is \$85.47

Can/Should Pets Be Decolonized?

- Decolonization for pets is not recommended. Daily intranasal application of mupirocin ointment could be difficult, not to say dangerous. Chlorhexidine shampoos are of unknown efficacy in this situation, though work is being performed in this area. Additionally, there is concern regarding whether such approaches should be reserved for human use with regard to this significant pathogen.

How Should Pets in a MRSA Household Be Handled?

- Patients with MRSA should wash their hands or use hand sanitizer **before and after** touching their animals.
- Patients with MRSA should particularly avoid touching their faces or noses after touching their animals until they have thoroughly washed their hands.
- Pet's blankets, bedding, and toys should be washed at the beginning and end of the patient's decolonization period.
- Pets should not be allowed to sleep in the owners' beds during decolonization.
- Pets should be discouraged from licking people who are colonized or infected with MRSA.
- Pets in a MRSA household should potentially be examined by a veterinarian for signs of active disease since dermatological issues may not be immediately apparent to owners.
- In cases of single-event human MRSA colonization/infection, a human-based clinical approach may be sufficient for control.
- In cases of recurrent human MRSA infections, temporary isolation of pets from their owners is indicated as the most effective strategy.

Importance of the Household Environment for MRSA

- It is important to remember that the household environment and other human household members are important parts of the MRSA transmission picture and must be considered in a comprehensive One Health approach.
- Touched surfaces (light switches, door handles, remote controls, bedding, sponges, etc.) as well as repository surfaces (shelves, cabinet tops, top of entertainment unit) have all been found to harbor MRSA in MRSA households.

Resources — this is a field in which research actively continues, and many answers are still being elucidated. We look forward to a veterinary consensus paper on methicillin-resistant staphylococci (including MRSA) that should be available later in 2016. Here are some currently available resources:

- MRSA and the Need for a One Health Approach - VVMA 2015 backgrounder for veterinarians and physicians – available at <http://vtvets.org/> under the Public Health/MRSA link
- MRSA in Animals: A One Health Approach – VVMA 2016 client education brochure - available at <http://vtvets.org/> under the Public Health/MRSA link. Print versions available to VVMA members.
- Methicillin-resistant Staphylococcus aureus – AVMA 2009 MRSA Literature Review <https://www.avma.org/KB/Resources/Reference/Pages/Methicillin-resistant-Staphylococcus-aureus.aspx?container=quicklink>
- MRSA and Pets Podcast http://www.avmamedia.org/display.asp?container=quicklink&sid=152&NAME=MRSA_and_Pets
- Methicillin-resistant Staphylococcus aureus (MRSA) Infections in Animals <http://pods.dasnr.okstate.edu/docushare/dsweb/Get/Document-5317/VTMD-9133.pdf>