

## **MRSA and Horses: What You Need to Know**

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The prevalence of Methicillin-resistant *Staphylococcus aureus* (MRSA) in routine infections in people and hospital outbreaks has initiated world-wide concern. *Staphylococcus aureus* is a common bacterium that colonizes the skin and has been found to cause disease in many species. *Staphylococcus aureus* began developing resistance to antibiotics almost as soon as they were introduced, beginning with penicillin, and progressing to methicillin resistance. MRSA is typically resistant to all beta-lactam antibiotics (penicillin and cephalosporin families) and often many other antibiotics as well. This antimicrobial resistance can make MRSA infections a challenge to treat. Although MRSA seems to be increasingly prevalent in the news, the rate of hospital discharges in Florida where *Staph aureus* was the primary reason for hospitalization has remained essentially the same over the last 7 years according to the Florida Department of Health. However, the percentage of community-associated infection (milder, outpatient type illness like skin infections/abscesses) from MRSA had risen from 35.1% in 2003 to 50.0% in 2006 in Florida. But what about infection in horses?

Methicillin-resistant *Staph aureus* infections in the horse have manifested as wound and surgical site infections, cellulitis (soft tissue infections, typically of the limb), catheter-site infections, pneumonia, septic arthritis, and skin infections, among others. Historically, equine MRSA infections were uncommonly reported, and began to increase in prevalence in the late 1990s. More recent studies have demonstrated that MRSA is an important emerging pathogen in horses and can be zoonotic (horses can transmit the infection to people). It is also possible for humans to transmit the bacteria to horses as well. Approximately 25% of healthy children and adults can carry the *Staphylococcus aureus* bacteria in their nose or on the skin. For most people and horses, carrying the bacteria in the nose or on the skin causes no ill-effects. Certain circumstances such as a wound or an illness requiring hospitalization can result in active infection.

Studies done in horses have found that approximately 0-5% of horses carry the MRSA bacteria in their nasal passages, which is the most common site for colonization (bacteria are present but do not cause a problem). Horses can also have the bacteria on their skin or in their intestinal tract. Although generally very few horses carry the bacteria, some farms with a history of MRSA infections in horses have demonstrated carrier rates of 50% or more (reported in Canada). As mentioned previously, horses that carry the bacteria in their nasal passages may not ever develop a clinical MRSA infection. However, these horses may transmit MRSA to other horses or people, and will sometimes develop active infections under certain conditions. People who work with horses seem to have a higher carrier rate of MRSA. Studies of equine veterinarians have reported colonization rates ranging from 10-14%, with predominantly the equine strain of the bacterium. This provides further evidence that carrier horses can transmit MRSA to humans.

Clinical infection with MRSA is certainly concerning. Fortunately, a multicenter study reported that 80% of horses with MRSA infections survived. Many horses with clinical infections such as pneumonia or wound infections required prolonged hospital stays and needed additional surgeries. However, acceptable antibiotic options exist in most cases, especially when

infection is identified early. In this author's experience, catheter site infections with MRSA, while uncommon, result in the highest mortality rates if the infection spreads through the bloodstream and into the lungs or other sites. Early detection and treatment is certainly critical for the best outcome for the horse. Currently, there is no evidence that horses that carry MRSA need to be treated with antibiotics. Farms with documented MRSA prevalence have successfully eradicated MRSA with good hygiene and infection control practices.

So how can you reduce your chance and your horse's chance of infection with MRSA? Wash your hands! Hand contamination has been identified as one of the most important methods for MRSA to infect people and horses. It is critical to wash your hands before and after contacting different horses and always before you eat or touch your face. The use of disposable gloves is also recommended when working with horses that have wounds or may be infected with MRSA. If you or your horse has a skin infection with signs of redness, heat, pain, swelling, and abscess formation, seek medical advice as soon as you can.

The Florida Department of Health suggests the following Centers for Disease Control and Prevention (CDC) recommended precautions:

- Keep your hands clean by washing thoroughly with soap and water or using an alcohol-based hand sanitizer.
- Keep cuts and scrapes clean and covered with a bandage until healed.
- Avoid contact with other people's wounds or bandages.
- Avoid sharing personal items such as towels or razors.

Methicillin-resistant Staph aureus has been recognized in people, dogs, cats, pigs, horses, cattle, and poultry. It is an emerging infection in veterinary medicine that has zoonotic potential. Consequently, it is an area of active research at several veterinary schools across the country, including the University of Florida. Practicing good hygiene and hand washing in all areas of your life will decrease the chance of infection with this bacterium.