

Of Dogs and Men: Methicillin-resistant Staphylococcus aureus

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One Health Educational Framework

The proposed case study will address the component of Microbiologic Influences on Health and Disease with specific emphasis on both antimicrobial resistance and the emergence of disease at the cross species (human and animal) boundary.

Target Student Audience(s)

Students in Professional Degree (DVM, MD, etc) and upper division undergraduate courses would be the primary intended audience.

Case Synopsis

“A healthy, adult male presents to the primary care professional for a routine MRSA (methicillin-resistant *Staphylococcus aureus*) screen. The doctor obtains a swab from the perineal area by gently lifting the patient’s tail.....yes, tail. The patient is Rusty, a 6 year-old, Golden Retriever, whose family is experiencing recurrent MRSA episodes.”

In 2013, the Centers for Disease Control and Prevention listed methicillin-resistant *Staphylococcus aureus* as a Serious Antibiotic Resistance Threat in the United States. Although MRSA was traditionally considered a nosocomial pathogen, community-associated infection, especially skin and soft tissue infection, is increasingly common. In addition, strain types that were traditionally considered “community associated” are becoming the predominant strain types in many medical centers. In addition to skin and soft tissue infections, MRSA may colonize individuals completely asymptotically, or cause invasive disease such as blood stream infection, pneumonia, and bone and joint infections. Using a **directed case study** approach, the proposed case will utilize the above *fictional scenario* to enhance student understanding of the basic microbiology / mechanisms of resistance for MRSA, potential diagnostic measures, and epidemiological challenges associated with MRSA. The interplay of this organism between companion animals and humans, and infection prevention measures will be discussed, in light of current scientific literature, with emphasis on the interaction that is needed between human and veterinary medical professionals in resolving recurrent household MRSA infections.