National Wildlife Disease Program

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Program Activity Report (PAR)

Streptococcus suis

Streptococcus suis is a zoonotic agent that can cause meningitis and septicemia in swine and other domestic animals. *S. suis* infection is a leading cause of post-weaned piglet deaths in North America. Infection with the gram-positive bacterium can result in potentially fatal meningitis and toxic-shock syndrome in humans. Many serotypes of *S. suis* are common and relatively non-virulent.

Photo by Craig Hicks,NWDP

Since 2005 there have been several outbreaks of virulent serotypes of *S. suis* in humans in China, Vietnam and Thailand. In China, 215 humans were infected in an outbreak during 2005, resulting in 38 deaths (18% mortality rate). In the United States only 3 cases have been documented in recent years, including a New York farmer in 2006 and a Hawaiian butcher in 2009, both of whom presented with meningitis. Treatments with steroids and antibiotics was successful in both cases. The CDC believes that human infections with *S. suis* in the United States are likely more common than recognized with possible cases being either underdiagnosed or misdiagnosed. One study found 9.6% of United States swine workers had antibodies to at least one serotype of *S. suis*. The disease agent is classified by serotypes, and within serotypes, by Sequence Types (ST's) or strains. For example, there are 16 sequence types within serotype 2.

Streptococci. Photo: Public Domain/CDC/Janice Carr

The recent human outbreaks in Asia have been caused by an ST1 complex of serotype 2. Domestic swine in North America are known to carry primarily serotype 2 strains with low virulence. In Asia, surveillance has shown that the highly virulent ST1 strains have been rapidly replacing the less virulent strains in recent years. There is concern that the same thing could happen in the United States. The New York case in 2006 resulted from infection with an ST1 strain that was acquired while the patient was travelling in the Philippines.

Virtually nothing is known about *S. suis* in feral swine in North America. Over the past few months Wildlife Disease Biologists from several states have been collecting tonsil samples from feral swine for a pilot study. Collaborating scientists at the University of Montreal, Canada, will conduct a series of diagnostic tests for *S. suis*. The tonsils will initially be screened by PCR. PCR positive samples will be isolated and further tested to confirm the zoonotic serotype. In addition, matched serum samples will be screened for mycoplasma and A pleuropneumoniae using serological methods.

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The original artwork on this page was created by the National Wildlife Disease Program's Erika Kampe and Sarah Goff