

Study finds MRSA in Midwestern swine, workers

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The first study documenting methicillin-resistant *Staphylococcus aureus* (MRSA) in swine and swine workers in the United States has been published by University of Iowa researchers.

The investigators found a strain of MRSA, known as ST398, in a swine production system in the Midwest, according to the paper published online Jan. 23 by the science journal *PLoS One*.

"Our results show that colonization of swine by MRSA was very common in one of two corporate swine production systems we studied," said Tara Smith, Ph.D., associate professor of epidemiology in the University of Iowa College of Public Health and lead author of the study. "Because ST398 was found in both animals and humans, it suggests transmission between the two."

"Our findings also suggest that once MRSA is introduced, it may spread broadly among both swine and their caretakers. Agricultural animals could become an important reservoir for this bacterium," Smith added.

Staphylococcus aureus, often called "staph," are bacteria commonly carried on the skin or in the nose of healthy people. MRSA is a type of staph that is resistant to the broad-spectrum antibiotics commonly used to treat it. A recent study estimated that MRSA caused 94,000 infections and more than 18,000 deaths in the United States in 2005.

MRSA has been found in a variety of animals, including horses, cattle,

dogs, cats and swine. Previous studies have shown that many swine and swine farmers in Canada and the Netherlands are colonized with MRSA. However, the University of Iowa study was the first to investigate carriage of MRSA among swine and swine farmers in the United States.

For the study, investigators analyzed nasal swabs of 299 swine and 20 swine workers from two different production systems in Iowa and Illinois. At Production System A, the overall prevalence of MRSA was 70 percent in swine and 64 percent in workers. At Production System B, all swine and human samples were negative for MRSA.

The researchers could not determine why System A had a high prevalence rate of MRSA among its swine and swine handlers, but listed several differences compared to System B. First, the systems raised different breeds of swine. Second, System A was an older, more established operation that had approximately twice the number of animals as System B. Third, both systems imported sows from different sources, raising the possibility that ST398 may have been introduced via live swine or pork products.

Other research has shown that ST398 accounts for 20 percent of all MRSA detected in the Netherlands, demonstrating the importance of considering livestock and other animals when examining the epidemiology of MRSA.

"Iowa ranks first in the nation in swine production," Smith said.

"Transmission of MRSA on swine farms or in veterinary facilities could complicate efforts to reduce MRSA transmission statewide and beyond."

The investigators recommended that future studies assess the risk of MRSA disease among swine workers and their contacts, survey retail meat products for MRSA contamination, study larger populations of swine and humans to define the epidemiology of MRSA within swine

operations, and assess MRSA carriage rates in other livestock.

Source: University of Iowa

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