



Scott Weese

MARTIN SCHVALBE

Nine out of 20 farms studied proved positive for methicillin resistant *Staphylococcus aureus* in a 2006-2007 study, but unanswered questions remain

**M**ethicillin resistant *Staphylococcus aureus* (MRSA) colonization has been found in pigs and people who work with them in southwestern Ontario, raising questions which only future studies will be able to answer, including whether pigs are reservoirs of MRSA for human infection.

In a four-month study ending in January 2007, researchers collected nasal and rectal swabs from 285 pigs of three different age groups from 20 different farms. Nasal swabs were collected from farm personnel and a brief questionnaire was also administered. The study, which has been published in *Veterinary Microbiology*, has been widely quoted.

Nine out of 20 farms studied, or 45 per cent, were positive for MRSA. Prevalence in pigs was 24.9 per cent with no difference in colonization between age groups. Twenty per cent of pig farmers tested positive for MRSA and researchers found a correlation between the presence of MRSA in pigs and humans on farms.

The study's senior author, Dr. Scott Weese of the Department of Pathobiology, Ontario Veterinary College, University of Guelph, says that the study left researchers with a number of unanswered questions. "We need to find out how broad this is," Weese says. "We need to find out how representative southern Ontario is compared to the rest of North America."

He notes that there are also questions about transmission. "It's going to be hard to control MRSA on farms, especially since we don't know how it is spread. Do pigs get infected early? Are sows reservoirs? Are farm personnel infecting pigs? We need to figure out how transmission occurs on

# Farmers and pigs both colonized with *Staphylococcus* in southwestern Ontario

by MIKE MULHERN

farms." He adds: "We also need to know whether there is going to be an extension of it from pigs into people."

The issue of so-called community-acquired MRSA, Weese says, is a "big deal." The community strain in the United States, called USA 300, "is the one that causes thousands and thousands of infections." Those include "skin and soft tissue infections like flesh-eating disease, as well as pneumonia."

Journalist and author Michael Pollan, writing in the Dec. 16, 2007, issue of the *New York Times Magazine*, referred to MRSA as "the very scary antibiotic resistant strain of *Staphylococcus* bacteria that is now killing more Americans each year than AIDS – 100,000 infections leading to 19,000 deaths in 2005, according to estimates in *The Journal of the American Medical Association*." Pollan quotes the study authored by Weese and speculates about whether there is a connection between pigs given antibiotics to prevent or treat disease and MRSA.

Weese points out that none of the farm workers colonized with MRSA in his study showed any ill effects. He says that MRSA can be serious, but with community-acquired MRSA patients typically "have a skin infection, an abscess, a boil or something like that." He says that more serious problems arise in people who are already sick.

MRSA in Canada has also been found in horses and dogs. "To make the direct comparison between community MRSA in people in North America and pigs at this point is not very accurate," he says.

One of the interesting findings in Weese's study is that one of the farms with the highest rate of MRSA was an antibiotic-free farm. "I think it's overly simplistic to say that

antibiotic use in pigs is the sole reason this has emerged. There's gotta be something else going on."

Weese says that he and his fellow researchers want to "look at ways to eradicate MRSA from farms" and that they hope to get funding to pursue "a variety of approaches, both in terms of infection control and ways to get rid of MRSA itself."

Funding for the 2006-07 study was provided by Ontario Pork.

## MRSAfacts

- There are no reports of pig farmers becoming ill from these bugs over the last several decades.
- MRSA has for decades been intimately linked to infections acquired in hospital environments and especially intensive care units, where extensive antibiotic use is routine.
- U.S. data suggest that about 2.5 million healthy Americans are asymptomatic carriers of MRSA.
- MRSA is found in animals which have had little or no exposure to any antibiotics at all – for example horses and sea mammals.
- There is no food safety concern between MRSA in pigs and contamination in pork.
- It is remotely possible that food handlers, who happen to be carriers of MRSA, might contaminate pork, or anything else for that matter if proper hygiene methods are not utilized.
- Routine cooking of pork would destroy any MRSA's, if indeed they did manage to get on to pork.

## researcherprofile



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### Scott Weese

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**D**r. Scott Weese, an associate professor in the Department of Pathobiology at the Ontario Veterinary College, University of Guelph, has three distinguished awards to his credit, even though

his teaching career is less than a decade old.

He won the Ontario Distinguished Researcher Award in 2002 and the University of Guelph Distinguished Faculty Award both for the period 2004-2006 and for 2006-2008.

Dr. Weese earned his Doctor of Veterinary Medicine from the University of Guelph in 1996. He practised vet-

erinary medicine for a year at Dufferin Veterinary Services in Orangeville before returning to the University of Guelph to complete his Doctor of Veterinary Service in 2000. That same year, he was named a Diplomate by the American College of Veterinary Internal Medicine.

His current research is focused on infectious diseases and infection control, with a special emphasis on zoonotic diseases, antimicrobial resistance and *Clostridium difficile*.

Dr. Weese grew up in Dresden, where he trained Standardbred horses. He currently raises rare breed (Soay) sheep.