

## PORK SAFETY

**Title:** Methicillin Resistant *Staphylococcus aureus* in pigs, pork products and swine veterinarians  
NPB # 07-196

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### Scientific Abstract:

Cross-sectional studies were conducted to obtain preliminary data on the prevalence of MRSA in swine veterinarians and market hogs, and *S. aureus* in retail pork, in the USA. Convenience sampling was employed, but samples were broadly sourced across the country. Nasal swabs were collected from 111 swine veterinarians at a national swine veterinary meeting, and from 539 market hogs slaughtered at large US packing plants (45 groups sourced from 42 zipcodes, across 10 states). Fresh pork products (pork chops or ground pork) were obtained from retail stores in 15 states. Samples were cultured using double enrichment methods and selective plating as conducted in previous studies in Europe. PCR methods were used to determine the identity of isolates and methicillin resistance (16S rRNA and *mecA* genes respectively). Spa typing was conducted following published methods for sequencing the staphylococcal protein A gene, and spa types were determined using both the eGenomics software and Ridom SpaServer website. MRSA prevalence was 6% in swine veterinarians and 30% in market hogs. *S. aureus* was detected in 80% of pork samples. Diverse spa types were detected in all three subprojects, but spa type 539 (Ridom t034) was the most common spa type isolated from both market hogs and swine veterinarians. This is the predominant spa type reported in pigs and pork producers in Canada, and one of the spa types corresponding to ST398 MRSA. Only 3 isolates of spa type 539 MRSA were found in retail pork samples. Spa type 2, the second most frequent spa type in market hogs (and also detected in retail pork and one veterinarian), was likewise the second most common spa type in pigs in Canada. In Europe MRSA isolates from pigs almost exclusively belong to the ST398 group. However, our results indicated more diversity and were similar to those reported from Canada. The same contrast exists for results for recent studies of meat samples, in which livestock associated strains of MRSA predominated in Europe, but not in a study in Louisiana. In summary, MRSA isolates consistent with the 'livestock associated' strains common in Europe were found in swine veterinarians, market hogs and retail pork in the USA. The MRSA isolates obtained were more diverse than reported from Europe, and more similar to published data from Canada. Further studies are needed to better understand the ecology of *S. aureus* in pigs and the potential occupational risks for people working with pigs.

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These research results were submitted in fulfillment of checkoff-funded research projects. This report is published directly as submitted by the project's principal investigator. This report has not been peer-reviewed.

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