Antibiotic use in hog production can lead to resistant strains of Staphylococcus aureus colonizing pigs and, eventually, humans. Using a systematic review and meta-analysis, this research quantifies the prevalence of swine-associated, methicillin-resistant Staphylococcus aureus (MRSA) and multi-drug-resistant Staphylococcus aureus (MDRSA) in humans, hogs, and the environment near swine farms. In total, the review found 166 relevant articles. Pooled prevalence of swine-associated MRSA was statistically significant for air inside hog barns (pooled prevalence=66%), whole hog herds (55%), householders of swine workers (49%), hospital patients in swine-dense areas (39%), slaughterhouse surfaces (13%), slaughterhouse workers (2.4%), and prepared pork (0.021%). Among the few studies of swine-associated MDRSA, pooled prevalence was statistically significant for raw pork (24%), workers’ household members (13%), and residents near swine farms (5.4%). Overall, prior studies consistently indicate that antibiotic-resistant Staphylococcus aureus can colonize reservoirs even distantly linked to hog farming, suggesting the need to improve control of antibiotic use.

Committee:
Jackie MacDonald Gibson, Ph.D.
Jill Stewart, Ph.D.
Courtney Woods, Ph.D.