RESEARCH ABSTRACT

PORK SAFETY

Title: A Survey of Patterns and Persistence of Antimicrobial Resistance on Swine Farms Using Three Different Antimicrobial Use Strategies **- NPB #01-147**

Investigator: David E. Reeves DVM, MS

Institution: University of Georgia

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Abstract: This study examined the epidemiology of antimicrobial resistance on farms with different antimicrobial use strategies. One farm used no antimicrobials (NAU), one farm used limited antimicroibials (LU), and one farm used antimicrobials continuously (CU). At the time of sampling, the NAU farm had not used antimicrobials for 28 years. Resistance persisted on the NAU farm, particularly in *Campylobacter* and *E. coli*. Resistance to antimicrobials was not observed among *Salmonella* isolates from the NAU farm. The other two farms demonstrated very different resistance characteristics, particularly in the *Salmonella* isolates. On the LU farm, *Salmonella derby* was the most common serotype recovered. It was resistant to more than one antimicrobial. Ribotyping and PFGE suggested that these isolates were clonal. Further, this clone was the most common *Salmonella* recovered from the farm. Together these suggest that selective pressures exist on the farm that select for this particular clone's survival i.e., give it preference for persistence within the farm. From the CU farm, *untypable Salmonella* was the most common isolate. Ribotyping and PFGE suggest that this isolate was a clone as well. In contrast to the LU farm isolates, the CU farm isolates were predominantly sensitive to all antimicrobics tested. This suggests that, while different clones were present on the LU and CU farms, there were selective pressures present on both farms which gave preference to farm specific clones. *Campylobacter* isolates across the farms did not demonstrate this clonal relationship suggesting that if resistant *Campylobacter* are to be eliminated from farms, very different strategies may be needed when compared to *Salmonella*. Many questions remain about the effects of antimicrobial use on resistance prevalence on farms. However, if reduction in resistance prevalence on farms is the ultimate goal, management that selects for non-resistant microbe clones needs to be defined.