

Title: Determining the necessity of preventive use of antimicrobials at tail-docking and castration including comparison with alternatives – **NPB #17-124**

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Scientific Abstract: The perception of overuse of antibiotics in production animal species is an on-going concern and has been implicated as contributing to the growing problem of antibiotic resistance in humans. One of the primary areas of concern is the routine application of antibiotics in food producing animal species. In order to validate the current practice of antibiotic use when processing litters, scientifically validated data must be collected that demonstrates the usage of antibiotics at processing improves animal health and well-being. The objective of this study was to evaluate the potential benefit of antibiotics given concurrently with processing procedures (castration and/or tail docking) performed at 1-4 days of age. Live animal work involved 960 piglets (n=960) on four different commercial sow farms within the same production system of varying health statuses. Animals were enrolled in the study and data collection occurred June-July 2017. Two hundred and forty piglets from each farm were assigned to one of four treatment group: beta-lactam (procaine penicillin G - 15,000 IU/lb.), macrolide (Draxxin 25 - 2.5 mg/kg), tetracycline (oxytetracycline - 19.8 mg/kg), or saline control (2cc/piglet). At the time of processing, treatments were administered via intramuscular injection in the post-auricular region using a 20-gauge x 0.5-inch needle. The outcomes measured from processing to weaning included percent mortality, wound healing, complete blood cell counts (CBC), average daily gain (ADG), and navel size. Scoring of castration wounds

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and tail-docking wounds occurred two days post-processing, seven days post-processing and at weaning. Data analysis did not reveal statistically significant differences ($p < 0.05$) on growth (ADG), % mortality, or castration or tail docking wound scores between the three antibiotic classes evaluated during this study or in comparison to the untreated pigs. There were statistically significant differences between the farms ($p < 0.05$) for growth (ADG), with the highest health status farm having the highest ADG, but no statistically significant farm by treatment interaction was noted on any of the farms. Comparing treatments and analyzing CBC results, there did not appear to be any statistically significant differences ($p < 0.05$). Data analysis did not reveal statistically significant ($p < 0.05$) differences between navel size of antibiotic treated and non-treated animals, between castration or tail docking wound scores of antibiotic treated and non-treated animals. A statistically significant ($p < 0.05$) gender associated navel size difference was observed with males (barrows; castrated males) having a 2.1 mm larger umbilicus at weaning in comparison to females (gilts).