

SWINE HEALTH

Title: Determination of effective protocols for cleaning processing tools –
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I. Abstract: Use of contaminated processing tools could introduce bacteria to the pig's bloodstream during tail docking and result in joint infections. The purpose of this study was to determine effective protocols for cleaning processing tools. Tail clippers were dipped in Nolvasan® solution, dipped in tap water; or wiped with a clean cloth in between clipping the tail of individual pigs. Protocols were evaluated by counting the number of bacteria on the clippers after each procedure and comparing it to clippers that were not cleaned after tail docking. Wiping the clipper with a clean cloth after tail clipping was the most effective cleaning method.

II. Introduction: Primary risk factors for preweaning mortality due to polyarthritis and septicemia are infections with beta hemolytic *Streptococci*, *Staphylococcus spp.* and *E. coli*. These bacteria are common environmental contaminants of swine buildings. Literature suggests that tail docking and teeth clipping frequently contribute to polyarthritis and septicemia.^{1,2} Use of contaminated processing tools allows introduction of bacteria to the pig's bloodstream through cuts in the skin made during tools may have a significant impact on pig health. Disinfection protocols on pork production facilities require that tools used in processing

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such as teeth clippers, tail clippers and ear notchers be cleaned and disinfected before each use. However, strict implementation of instrument sanitation can be difficult. Many times people neglect such procedures because they are inconvenient. Moreover, there is no scientific evidence that these procedures are effective.

III. Objectives:

1. To quantify the level of bacterial contamination of tail clippers immediately after tail docking.
2. To determine which of the following protocols is most effective:
 - (a) dipping the clippers in Nolvasan® solution;
 - (b) dipping the clippers in tap water; or,
 - (c) wiping the clippers with a clean cloth in between each pig during processing.

V. Procedure: Forty, 2- to 4-day-old barrows from 10 litters were randomly allocated to three treatment groups and one control group of ten pigs each. Each treatment group corresponded to one of three protocols: (1) Tail clippers were dipped in Nolvasan® solution for 3 seconds; tail clippers were dipped in tap water for 3 seconds; or tail clippers were wiped with a clean cloth in between clipping the tail of individual pigs. The positive control consisted of sampling uncleaned tail clippers after clipping the tail of individual pigs. Ten repetitions were performed for each treatment.

Forty, individually wrapped, sterile tail clippers (“Supravet” Syrvet, Des Moines IA), one per pig, were used. All tails were clipped to ¾ inch in length. Nolvasan® solution (Fort Dodge Laboratories, Fort Dodge, IA) was diluted according to label instructions (3 oz./gallon of water).

A standardized area of about 2 cm² of each tail clipper was sampled using a sterile cotton swab. The ventral cutting edge and ventral surface of the tool facing the pig's tail was sampled. Swab samples were immediately placed in individual tubes containing 2 ml of D/E Neutralizing Broth (Becton-Dickinson, Franklin Lakes, NJ) to inactivate residual disinfectant. Samples were cooled until processing. Serial dilutions of original samples were plated onto 5% blood agar and incubated for 24 hours at 37°C. Colonies of aerobic bacteria were counted and total bacterial counts were calculated. Median bacterial counts were compared using Kruskal-Wallis Test (Nonparametric ANOVA) followed by Dunn's Multiple comparisons test.

VI. Results: Median bacterial count from uncleaned tail clippers after clipping was 835 colony forming units /cm². Wiping the clipper with a clean cloth significantly ($P < 0.01$) reduced the number of bacteria cultured compared to not cleaning the clipper. Dipping the clipper in Nolvasan® solution or water did not significantly reduce the number of bacteria cultured. Thus, wiping the processing tool with a clean cloth in between pigs appears to be an effective way to decrease the number of bacteria on the tool.

References:

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2. Riising HJ. Nielsen NC. Streptococcal infection in sucking pigs.1. Epidemiological investigations. Nordisk Veterinaermedicin Feb.1976;28(2):65-79.