

SWINE HEALTH

Title: Human Transmission of Enterotoxigenic *Escherichia coli* from Infected to Non-Infected pigs, NPB #01-011

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I. Abstract:

Post-weaning diarrhea in swine caused by enterotoxigenic *Escherichia coli* can be an important cause of mortality in weaned pigs and has become a frustration for many pork production units. On some farms post-weaning scours due to *E. coli* persists despite vaccination, aggressive use of antibiotics, and improved facility sanitation. One possibility is that *E. coli* is spread by caretakers tracking the pathogen from infected to susceptible groups of pigs. To determine the minimum standards for biosecurity measures to prevent such transmission 125, 19- to 21-day-old weaned pigs, negative to the challenge strain of enterotoxigenic *E. coli*, were randomly allocated to 5 rooms. Pigs in one room were inoculated with enterotoxigenic *E. coli* M1823B. Once a day for 10 consecutive days, a caretaker stood in the pen with these pigs for 10 minutes and then walked directly to another room of healthy pigs without using any biosecurity procedures and stood in the pen with these pigs for 10 minutes. The protocol was repeated to test two biosecurity procedures. The caretaker contacted sick pigs and then washed hands and changed outerwear before contacting a second group of healthy pigs. Next, the caretaker contacted sick pigs and then showered and changed outerwear before contacting a third group of healthy pigs. A separate caretaker cared for negative control pigs. Fecal samples were collected from pigs and cultured to detect the spread of *E. coli*.

The caretaker mechanically transmitted *E. coli* from sick pigs to healthy pigs when biosecurity procedures were not used. Handwashing and changing into clean outerwear did not prevent the mechanical transmission of *E. coli* by the caretaker. However, showering and changing into clean outerwear prevented the mechanical transmission of *E. coli* by the caretaker. The study also demonstrated that *E. coli* could spread among groups of pigs before diarrhea was observed in infected pigs. In conclusion, under the conditions of this study, showering and changing into clean outwear was the minimum biosecurity standard that could be implemented to prevent caretakers from mechanically transmitting *E. coli* among groups of pigs.

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