

SWINE HEALTH

Title: Effect of age, dose and antibiotic therapy on the development of neonatal *Clostridium difficile* disease - NPB #10-058

Investigator: Darin Madson

Institution: Iowa State University

Date Submitted: January 27, 2012

Scientific abstract

Neonatal piglet diarrhea is associated with increased pre-weaning mortality, poor growth rates, and variation in piglet weight at weaning. *Clostridium difficile* is a known factor contributing to diarrhea at this age, yet risk factors associated with *C. difficile* disease in neonatal piglets is unknown. The objectives of this study were to: (1) evaluate the use of antibiotics as a contributing risk factor in 1-day-old piglets, to (2) evaluate the consistency and severity of disease lesions in piglets challenged at different bacterial doses, and to (3) provide a clinical and histological evaluation of *C. difficile* infection in 10-day-old piglets. One hundred and eleven conventional neonatal pigs were snatched farrowed and divided into three separate experiments: DOSAGE, ANTIMICROBIAL, and AGE. In the DOSAGE experiment, 40 1-day-old-piglets were sham inoculated or challenged with varying amounts of *C. difficile* heat shock spores and euthanized 72 hrs. post infection. Results indicate a clear trend for disease development as bacterial amounts increase. In the ANTIMICROBIAL experiment, 39 1-day-old-piglets were challenged and treated with one or four different antibiotics 16hrs later. No significant difference for disease development was found. Thirty-three 10-day-piglets were given varying doses of *C. difficile* in the AGE experiment. Disease and lesions were reproduced in this age of piglet. Combined results from the three experiments indicate that *C. difficile* dosage appears to be an important factor that influences the appearance and severity of lesions, 10 day-old pigs can develop disease associated with *Clostridium difficile*, and antibiotic administration following inoculation may not be a substantial factor for disease in neonatal piglets.

These research results were submitted in fulfillment of checkoff-funded research projects. This report is published directly as submitted by the project's principal investigator. This report has not been peer-reviewed.

For more information contact:

National Pork Board • PO Box 9114 • Des Moines, IA 50306 USA • 800-456-7675 • Fax: 515-223-2646 • pork.org
