HHM-020

INFLUENZA TRANSMISSION: CREATING A SEEDER PIG MODEL USING NATURALLY INFECTED PIGS

S. Dee [1], J. Nerem [1], D. Hanson [1], M. Torremorell [2], C. Goodell [3], T. Wetzell [3], E. Schmaling [3].

[1] Pipestone Applied Research, Pipestone, United States; [2] University of Minnesota, St. Paul, United States; [3] Boehringer Ingelheim Vetmedica, Duluth, United States.

Introduction

The objective of this study was to develop a seeder pig model that simulates transmission of influenza A virus in growing pigs, to evaluate strategies to control influenza under field conditions.

Materials and Methods

554 weaned pigs from a known IAV-S PCR negative source were placed in a Pipestone Applied Research (PAR) barn. These pigs served as direct contacts and were distributed in 21 pens alternating with empty pens. Seventeen weaned pigs from a known IAV-S positive source served as seeder pigs. These pigs tested IAV-S positive by nasal swabs (NS) using BD Veritor™ System Flu A+B (Becton Dixon) and IAV screening PCR assays. Day 0, seeder pigs were placed 1 per pen in 17 of the 21 pens. Four pens were left without a seeder pig for indirect IAV transmission assessment. Six randomly selected IAV-S negative pigs, as well as the seeder pig itself, were systematically sampled in each pen by NS 3 times per week until the IAV PCR results were negative for 3 consecutive sampling events. All pens had oral fluids (OF) collected three times per week until three consecutive samplings proved negative. Oral fluids and nasal swabs were tested for IAV-S PCR targeting the matrix gene.

Results

All direct contact pigs tested IAV-S PCR positive within 2-5 days post seeder pig introduction. Pigs in the indirect contact pens became infected within 5-7 days. Pigs remained positive for 16-35 days post introduction of seeder pigs. All sequenced viruses were found to be a H3N2 cluster IV IAV-S.

Discussion and Conclusions

The seeder pig model developed in this study proved effective in providing a method of mimicking influenza field transmission dynamics. Heat maps used to visualize the spread of IAV-S throughout the barn showed the transmission period lasted over 3 weeks.