RESEARCH ABSTRACT
SWINE HEALTH

Title: Dissemination of PCV2 viral particles from sow to piglets - **NPB # 09-184**

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Scientific Abstract.

Porcine circovirus 2 (PCV2) infection, which is necessary for PCV-associated disease (PCVAD), is widespread in swine farms throughout the United States. Vaccination of pigs, frequently around the time of weaning, has been effective in preventing PCVAD and reducing the level of PCV2 in serum, but it does not eliminate infection. Since nearly all of the finishing herds in the United States are vaccinated, we are inadvertently providing a large-scale selective pressure on PCV2 for new strains that grow better in the presence of an anti-PCV2 vaccine response. Improving vaccine efficacy against infection requires a better understanding of when and how pigs are exposed to and become productively infected with PCV2. Infection is thought to occur in finishers at 10-15 weeks of age, when they become viremic. However, infection of sows may be prevalent, and PCV2 is known to be shed in colostrum, milk, and feces, and the virus is stable in the environment. Therefore, we hypothesized that piglets are exposed to PCV2 at or before birth and throughout the suckling period, and that anti-PCV2 antibodies in colostrum might suppress viremia. We examined sows, pre-suckling piglets, and the farrowing environment of farrowing farms for PCV2 virus and PCV2-specific antibodies. PCV2 DNA was observed in serum, oral fluids, and colostrum of sows, even though antibody levels were high in serum and colostrum. PCV2 DNA was detected in tissues from stillborn pigs and mummified fetuses, and in serum of pre-suckling liveborn piglets, indicating that piglets are readily infected with PCV2 in utero. PCV2 also was detected on the axillary skin of presucking pigs and sows and on farrowing crate surfaces. Farrowing crate disinfection procedures reduced, but did not eliminate detection of viral DNA. Overall, PCV2 is widely distributed in sow farms and is transmitted to piglets in utero and after birth. The presence of high levels of antibodies does not resolve infection in sows, but may suppress infection in piglets since absence of viremia is commonly observed in nursery-age pigs.