Significance & Diagnosis of Porcine Circovirus Type 2 (PCV2) as a Reproductive Pathogen of Swine

TECHNICAL BULLETIN

Key Points:

- Porcine circovirus type 2 (PCV2) is a pathogen of swine that has been associated with several disease processes including reproductive failure (1, 2, 3).
- As a reproductive pathogen of swine, PCV2 has the ability to cause mummified piglets, stillborn piglets, low viability piglets and elevated pre-weaning mortality (2, 3, 4).
- PCV2 infection is characterized by months of viremia in infected pigs and is capable of being vertically transmitted (from dam to offspring) in utero as well as in colostrum and milk. It is important for sows and gilts in breeding herds, as well as replacement gilts, to be free of PCV2 viremia during gestation and lactation.
- When Circumvent® PCV or Circumvent PCV M (Merck Animal Health) are given to replacement gilts at five and eight weeks of age with a booster prior to breeding, no tested piglets from 82 litters were found to be viremic with PCV2 (9). These results are in stark contrast to the PCV2 survey work by Shen et al (5).
- Vertical transmission is a potentially important means of PCV2 transmission in swine breeding herds.

Prevalence of Vertical Transmission of PCV2

One survey of the prevalence of PCV2 viremia in dams and newborn piglets in clinically normal breeding herds demonstrated that 6 percent of dams and 43 percent of piglets in five different herds were positive for the presence of PCV2 by polymerase chain reaction (PCR) testing (5).

PCV2 Control in Swine Breeding Herds

To prevent potential reproductive failures and vertical transmission of PCV2 to offspring, it is important to effectively immunize the breeding herd and replacement gilts against PCV2 infection and/or viremia.

It has been demonstrated that intentional exposure of pigs to live PCV2 by serum injection does not prevent disease or viremia (6).

There is a quantitative (amount) and qualitative (quality) difference in the immunity resulting from Circumvent PCV or Circumvent PCV M use compared to other PCV2 vaccines (7). It has also been demonstrated that vaccination of gilts with CircoFLEX® (Boehringer Ingelheim Vetmedica, Inc) with subsequent PCV2 challenge does not prevent viremia in gilts, nor does it prevent vertical transmission of PCV2 to offspring (8).

Vaccination of breeding herd members and replacement gilts with Circumvent PCV has been demonstrated to be an effective tool for the control of PCV2-associated disease and reduction of vertical transmission of PCV2 in breeding herd members and offspring (9).

PCV2 Diagnostic Series #1: Diagnostic Evaluation of PCV2 Status of Replacement Gilts

Purpose of Testing:

This diagnostic evaluation assesses the PCV2 status of a group of replacement gilts.

Target Animals:

Newly or recently delivered gilts to isolation/acclimation barns that have a vaccination history of:

1. Partial dose Circumvent PCV or Circumvent PCV M vaccination
2. CircoFLEX vaccination
3. No vaccination against PCV2, although this is rare

Number of Gilts to Test:

30 individual blood samples

Test to Request (Each test costs $25-$30):

- PCR for PCV2 on 1:5 composite, pooled samples
- Six PCV2 PCR tests will be run from 30 individual gilt blood samples

Laboratory to Use:

Any diagnostic lab that does a significant volume of swine diagnostic work will be able to perform a PCV2 PCR.

Possible Outcomes:

1. If all collected samples are NEGATIVE:
   - No further testing or action required
   - Monitor additional replacement gilt groups periodically, or if source changes
   - Evaluate newborn piglet's PCV2 status
2. If some or all collected samples are POSITIVE:
   - The potential for vertical transmission of PCV2 exists