

Investigating the role of the environment and the lactating sow in PRRSV infections during an outbreak (Part 2)

Carles Vilalta, Juan Sanhueza, Bob Morrison, Montserrat Torremorell

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Key Points:

- PRRS virus can be detected in the environment of the farrowing house (surfaces and air) and on the udder skin of lactating sows. However, PRRSV detection in the environment decreases as time after an outbreak increases.
- PRRSV was not detected in the environment after 4 months of an outbreak
- Role of environmental PRRSV in the transmission of the disease is still unknown.

Background and Objective

PRRSV can be detected in the environment of the farrowing house and the udder skin of lactating sows. However, the temporal detection of PRRSV in the environment and the sow's skin in relation to an outbreak is unknown. Overall, there is limited information on the role that the environment or lactating sows play at transmitting PRRSV to newborn piglets. The objective of this study was to assess the temporal distribution of PRRSV in the farrowing environment and the lactating sow at processing and weaning in a recently infected farm.

Materials and Methods

Sample collection started 2 weeks after a PRRSV outbreak was reported in a sow farm. Samples at processing (~ 3 days of age) and at weaning (~20 days of age) were collected from 10 litters every 3 weeks for a total of 24 weeks. Samples included:

- Surface wipe of farrowing crates (feeders, waterers) – 1 gauze/crate (n= 10/sampling age/visit).
- Udder wipers of lactating sows – 1 gauze/sow (n=10/sampling age/visit).
- Airborne particle deposition (AD) was collected by placing 1 m of aluminum foil paper on top of a crate away from direct pig access and wiped 60 min after placement.—3 samples/room

All samples were collected with a gauze previously impregnated with transport media (cell culture media with antibiotics), stored at 4°C and tested for PRRSV RT-PCR (Ct cut off was considered 37.5 in order to avoid suspects)

Results

PRRSV was detected at processing up to 14 weeks after the outbreak in surfaces and udder skin of lactating sows. At weaning, PRRSV was detected up to 17 weeks post-outbreak using udder skin wipers. The number of positive samples decreased over time and the Ct values of the positive samples increased over time (Figures 1 and 2) indicating a decrease in infection load overtime. Detection of airborne particle deposition positive samples followed a similar pattern to those of the crate surfaces and udder wipers. Virus could be isolated and sequenced from all sample types.

Conclusions and Implications

PRRSV was detected in the environment and the skin of lactating sows at processing and at weaning for up to 4 months after the outbreak. PRRSV sequences were obtained from all sample types. Sampling the environment or the lactating sow could be alternative sampling methods to determine the PRRSV stability of the farm but further research is needed to compare these methods with processing fluids or oral fluids. Udder skin and environment may play a role in the transmission and maintenance of PRRSV in piglets in breeding herds; however further research is needed to validate this observation.

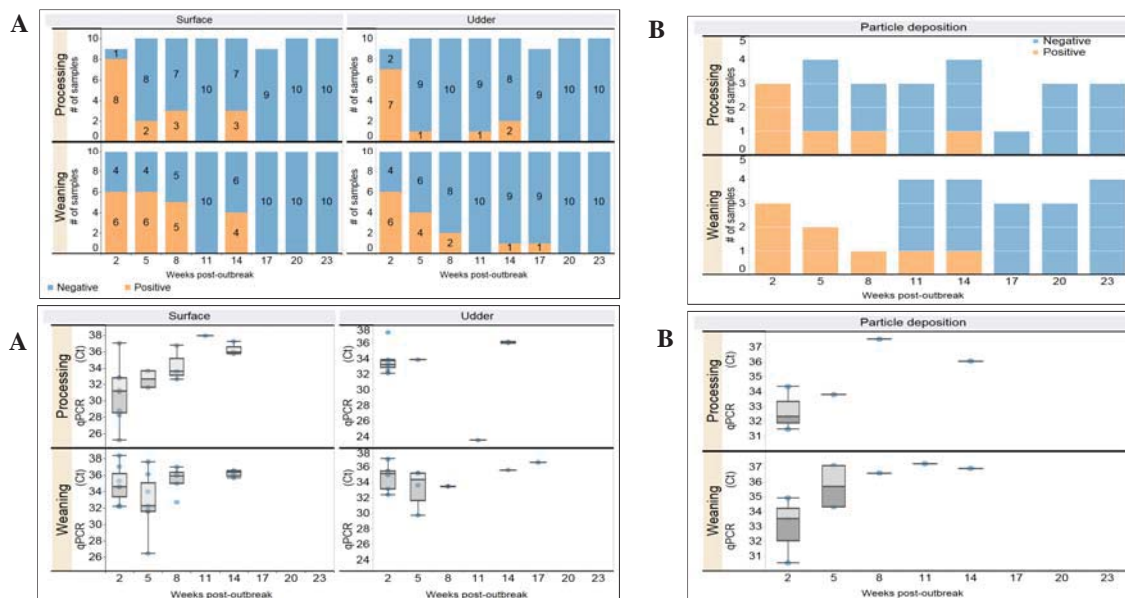


Figure 1. Number of positive and negative samples at processing and weaning in: A. Surface and udder wipers; B. Particle deposition wipers.

Figure 2. Comparison of Ct values over time at processing and weaning in: A. Surface and udder swabs, and B. Particle deposition wipers.