Assessment of area spread for sow herd outbreaks in US swine dense regions

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Keypoints:
- Strong evidence of area spread was not found after evaluating three farm clusters located in two swine dense regions.
- All barns of a nursery/finishing site should be sampled to define status.
- Sick pen might not be the best target when sampling for PRRSV in grower pig sites

Background
Porcine Reproductive and Respiratory Syndrome virus (PRRSV) “airborne” transmission and “area spread” are terms commonly used interchangeably. It is anecdotally believed that airborne transmission, defined as transmission of the virus by small particles suspended in the air for long periods, is an important means for PRRSV spread, especially in swine dense regions. However, the term “area spread” can also include transmission of PRRSV deposited in fomites.

Objective
The objective of our assessment was to determine if the virus detected in a recently infected sow farm was similar to the one detected in neighboring farms (in other words: was local spread a likely source of infection?)

Methods
A total of 35 sow farms located in Iowa, Minnesota and North Carolina were followed up prospectively. As soon as the first three sow farms broke, veterinarians from respective systems sampled neighboring farms, independently of production type. All samples were submitted to the University of Minnesota Veterinary Diagnostic Laboratory, and attempted to be sequenced. All sequences obtained from neighborhood sites were compared and wind direction for days preceding the outbreak were described and examined using the Iowa Mesonet website. Whenever possible, the sick animal pen was also sampled within those barns.

Results
Results from one of our three clusters are presented in the figure below as an example. This representation agrees with the results obtained from the other clusters. The thickness of the circle represents the status of the sick pen. For two of the three area spread assessments performed, no similar sequence to the one obtained from the farm under investigation was found. Also it was not always possible to detect PRRSV in sick pens of the growing pig sites sampled in our study.

Figure 1. Graphical representation of the results of one specific region of the three studies. In the figure, each icon represents one swine barn, each circle represents a site, and icons colors represent PRRS status. The thickness of the circle represents the status of the sick pen.

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