Risky pigs: Moving weaned pigs during an FMD outbreak part 2

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Key points:

- During a FMD outbreak, the risk of spreading FMD due to weaned pig movements can be lowered by applying enhanced biosecurity at the farrowing facility, during transportation and at the destination.
- Pre- and post movement quarantine periods are advisable when moving pigs from a control area during a foreign animal disease outbreak.
- Swine workers' ability to detect vesicular disease is one of the key elements in ensuring low risk movements and prevention of disease spread.

Foot-and-mouth disease (FMD) is a vesicular foreign animal disease that affects several domestic and wild animals, including swine. The role of infected but undetected animals in epidemics has been shown to be extremely important in the spread of the disease. Due to a lack of validated diagnostic assays suitable for on farm sample collection from a population, farmers need to rely on active observation to detect disease. The lowest practically attainable FMD detection limit in the current farm infrastructure occurs when 5% of the pigs in a herd are showing clinical signs. If transporting 10,000 weaned pigs, of which one is latently infected, detection times at destination site can vary anywhere from as few as 5 days to as long as 16 days. It is vital that swine workers are adequately trained to look for and identify foreign animal diseases like FMD, so that infection detection time is as short as possible.

Weaned pigs assumed to be uninfected can potentially become infected with FMD through multiple pathways, either by disease introduction to the origin farm or during transportation. If enhanced biosecurity measures are applied at the origin, during transportation and at the destination farm, the risk of disease spread is significantly lower than if the movement occurred while the farm was just applying routine (aka normal) operational biosecurity measures. Precision biosecurity, therefore, is of importance here, as it really does matter which protocols are used and how they are applied. For example, the difference between correct and incorrect cleaning & disinfection (C&D) techniques is enormous: If done correctly, C&D using hot water (142 F) or low pH solutions (pH <5), FMD virus is destroyed in a matter of seconds. If using just cold water or high pH solutions for C&D, FMD will survive hours or even weeks.

Infected but undetected swine are very efficient in spreading FMD, especially to other species. Swine are considered amplifying hosts for FMD, which means that while they themselves will likely not get infected through aerosols, they spread large quantities of virus in their respiratory secretions. Weaned pig movements are low likelihood, high consequence movements. This means that although the likelihood that weaned pigs are infected is low (especially if they come from a farm operating under enhanced biosecurity and skilled active observance), if they do end up being infected this movement will have very high consequences because the disease will very easily spread further. Thus, where these movements allowed, destination sites should also operate under enhanced biosecurity and should not have any other susceptible species on site. Both pre-movement and post-movement quarantine periods are advisable.

Number of days to detect FMD after arrival of latently infected pigs - Assumes 1000 pigs were transported in a truck with one latently infected pig on board:

Detection limit (% of pigs with clinical signs of FMD infection)	Mean time to detection in days (95% prediction interval)
5	8.1 (5.3-12.5)
10	8.8 (6.0-13.3)
25	10.1 (7.2-14.5)
50	11.7 (8.8-16.3)