

Swine influenza A virus transmission in the farrowing unit – mission impossible?

Pia Ryt-Hansen¹, Flemming Thorup², Marianne Agerlin¹, Nicole Bakkegård Goecke¹, Elisabeth Okholm Nielsen² and Lars Erik Larsen¹

¹Department of Veterinary and Animal Sciences, University of Copenhagen, Denmark

² SEGES innovation P/S, Production and welfare - Pigs, Denmark

Background and objectives

Intensification of swine production in large herds, has led to optimal conditions for virus circulation. Furthermore, increasing litter sizes enhance the use of nurse sows and cross fostering.

The aim of this study was to investigate the effect of nurse sows and cross fostering on swine influenza A virus (swIAV) transmission in the farrowing unit. Additionally, the occurrence of other respiratory pathogens were also investigated.

Material & Methods

STUDY DESIGN



Three sow herds with three weekly batches of sows and piglets. In total: 156 control litters and 203 case litters
Control litter: sows fostering their own piglets or receiving piglet within the first 24 hours
Case litter: nurse sows and later cross-fostering (> 24 hours)

SAMPLES

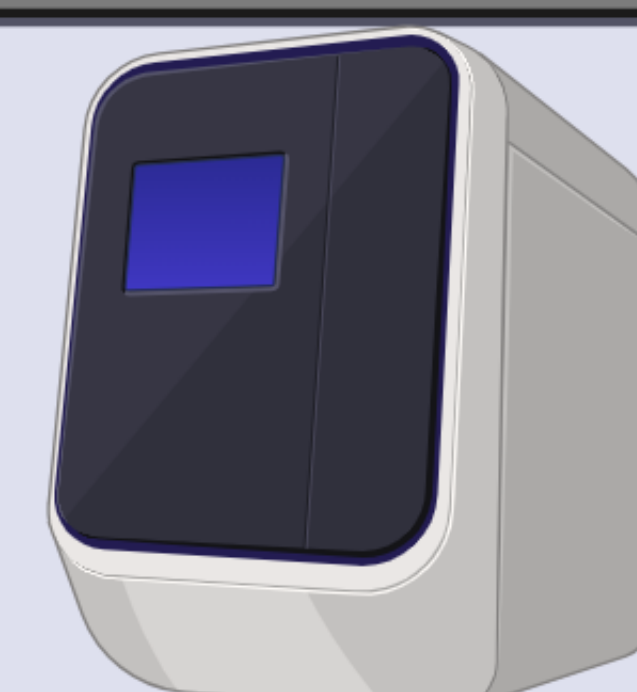
Piglets: nasal swabs day 10 and 21



Sows: udder wipes day 10 and 21
Nurse sows: udder wipe at entry

ANALYSES

Extracted DNA/RNA



High through-put microfluidic real time PCR for swIAV and 12 other respiratory pathogens

Results swIAV

Table 1. SwIAV positive litters in nasal swabs in the control and case litters at the two samplings. No significant differences between control and case litters were observed at day 10 and 21 and 8/9 batches showed swIAV circulation.

	Control		Case		p-value
	No. of litters:	swIAV pos	No. of litters:	% swIAV pos	
Day 10	156	31%	203	21%	0.053
Day 21	142	57%	203	54%	0.62

Interestingly, 39 % of the sows included were defined at nurse sows from another section, and 25 % of these sows arrived with a swIAV positive udder wipe.

Co-infections

While the presence of some of the other respiratory pathogens were unique to the individual herds (*Actinobacillus pleuropneumonia*, *Bordetella bronchiseptica*, *Mycoplasma hyopneumoniae* and *hyorhinis*, Porcine circovirus 2 (PCV2) and Porcine Respirivirus 1 (PRV-1)), some were detected in all three herds including *Glaeserella Parasuis*, *Pasteurella multocida*, Porcine cytomegalovirus (PCMV) and Porcine circovirus 3 (PCV3).

Discussion & Conclusion

The result of this study illustrates the extensive circulation of swIAV and use of nurse sows in farrowing units. Neither the introduction of swIAV positive nurse sows, nor the cross-fostering of piglets between litters explained transmission of swIAV in the study. Thus, in these herds other potential routes of swIAV transmissions were of more importance. Such routes could includes transmission by aerosols and mechanical vectors including personal and equipment, emphasizing the need for further studies of swIAV within-herd transmission. The results of the co-infections underline that influenza is one of many agents agonizing each other in the Porcine Respiratory Disease Complex (PRDC).