



Investigation of the impacts and dynamics of swine influenza virus in Danish swine herds

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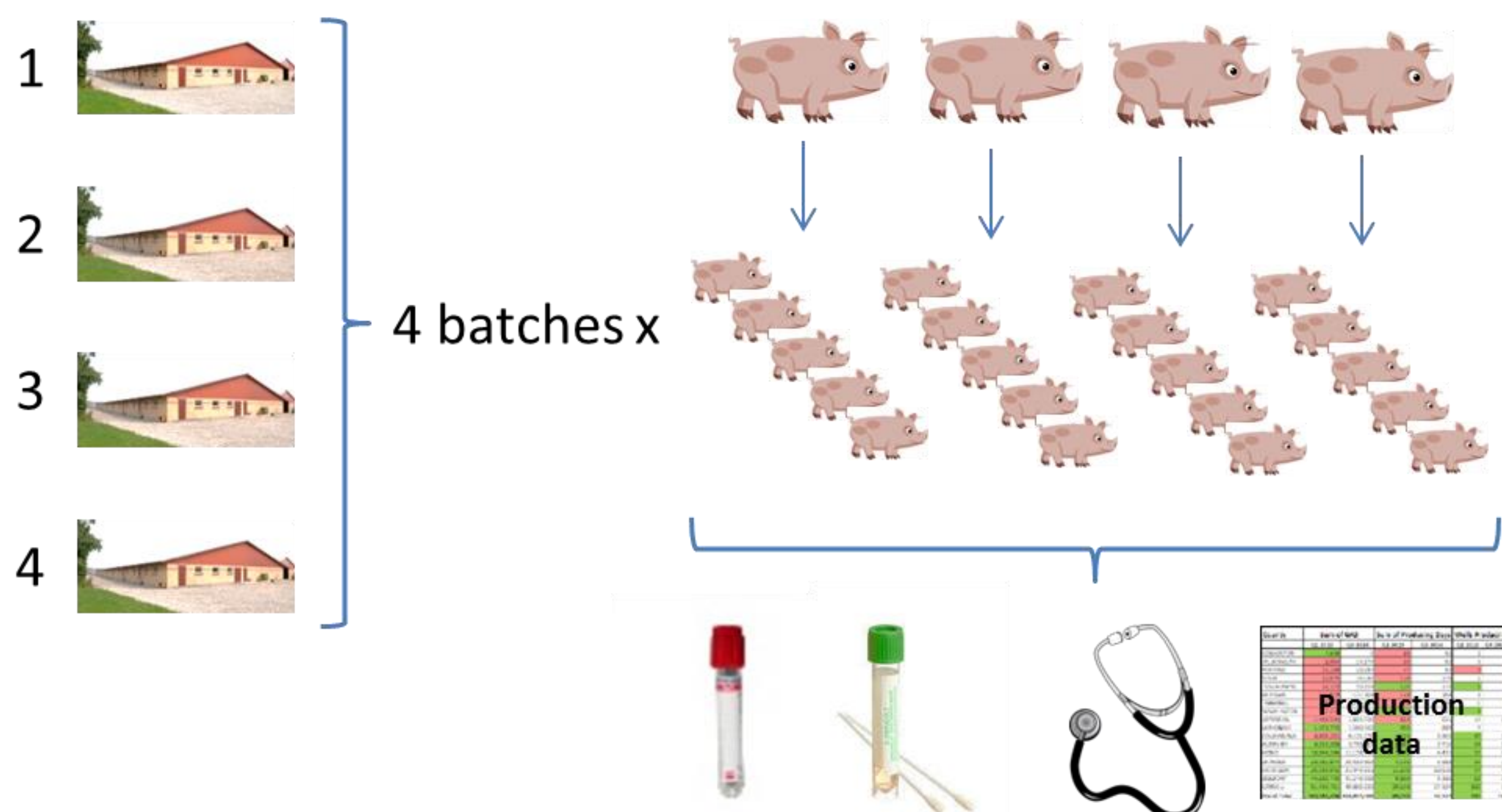
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INTRODUCTION

In the recent years our national surveillance of Influenza A virus (IAV) in swine has revealed an increasing number of herds becoming enzootically infected, which indicates that IAV has changed its infection dynamics. Furthermore veterinarians have more focus on IAV as a major pathogen, which is also recognized through the vaccine sales which has increased 350 % since 2010. Therefore the aim of this study was to investigate the dynamics and impacts of IAV in Danish swine herds.

STUDY DESIGN

A total of 64 sows and 320 piglets were included. Sampling was performed in four sow and nursery herds. For each herd, four sows from four consecutive batches were sampled. For each sow, five ear tagged piglets were sampled at one, three, five and 10 to 12 weeks of age.



METHODS

1. Litter-wise pooling of nasal swabs
2. RNA extraction
3. Pan-influenza real time RT-PCR on pools and afterward on individuals of the IAV positive pools
4. Subtyping using a multiplex real time RT-PCR
5. Sequencing of the surface proteins of selected viruses

TAKE HOME MESSAGES

- Despite that, the majority of the sows were antibody positive prior to farrowing, a high prevalence (26.6 -73.7 %) of IAV was seen in the farrowing unit, and **98 % of all infected pigs became infected before six weeks of age.**
- Despite high infection pressure in all herds **a low percentage of pigs had antibodies against IAV at week 10-12**, thus, it is likely that the majority of the pigs would be susceptible to IAV infection in the slaughter unit.
- The findings indicated that sow vaccination programs for controlling IAV infection in piglets may be insufficient in herds with high infection pressure in the farrowing unit

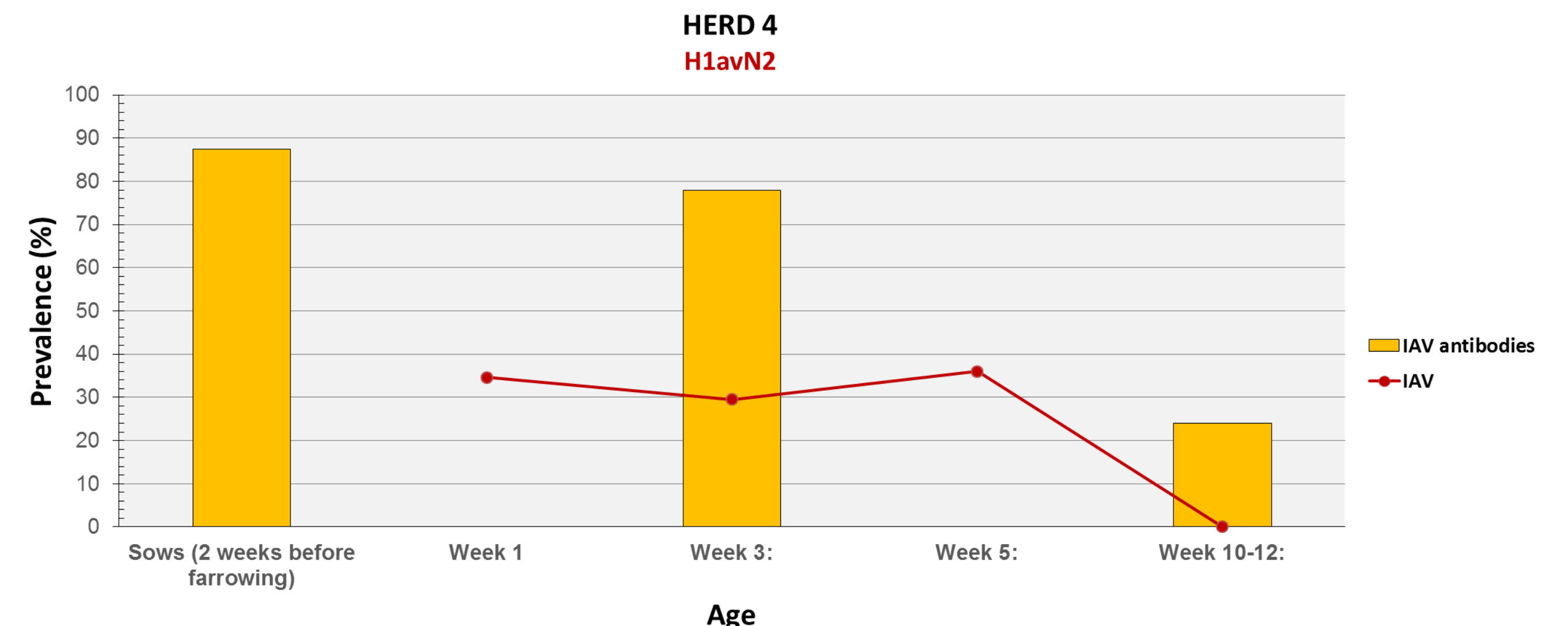
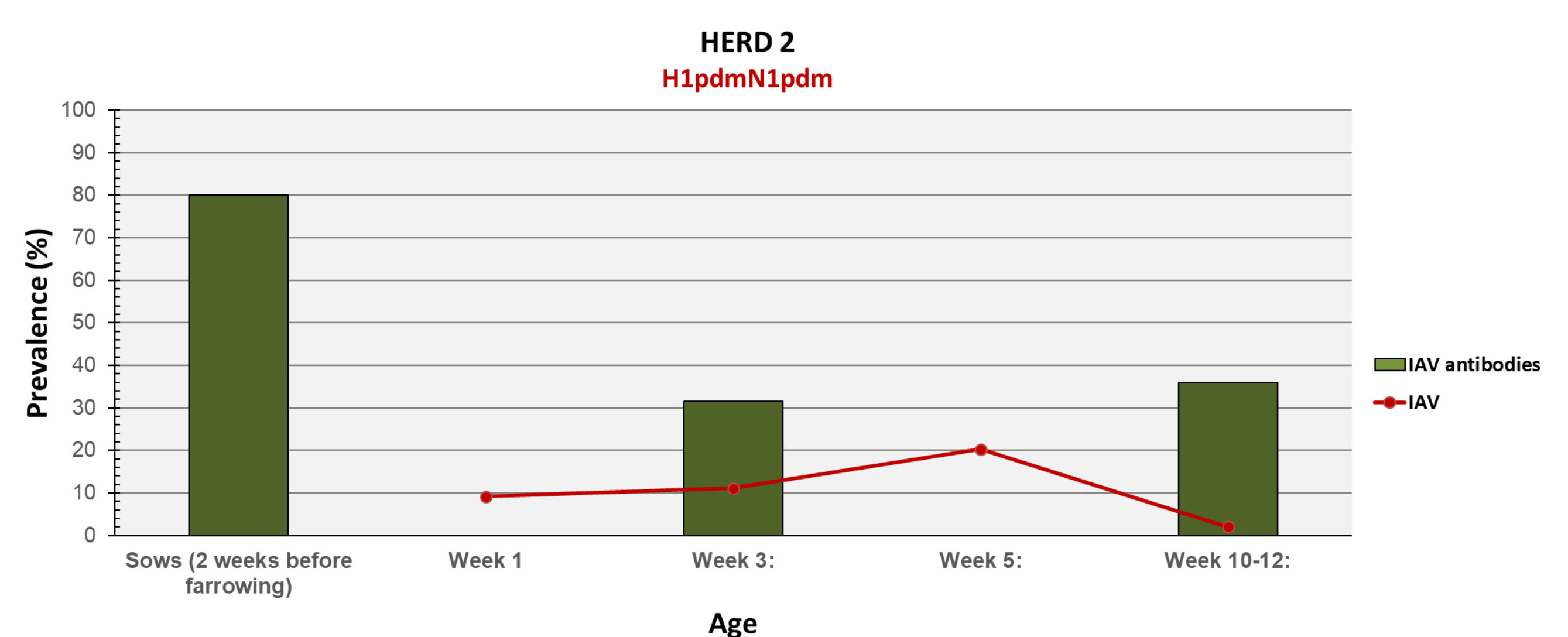
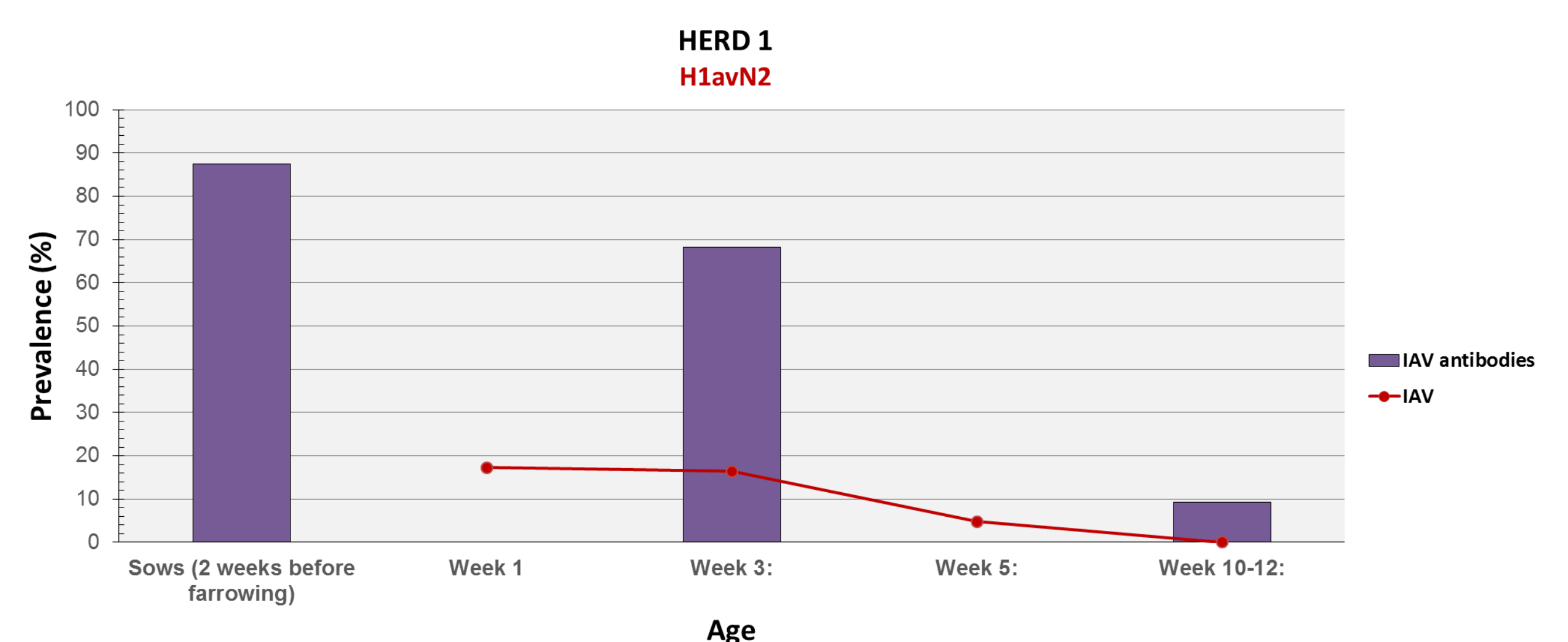
ACKNOWLEDGEMENTS

This project was funded by IDT Biologika GmbH and SEGES Pig Research Center.

RESULTS

Herd 1, 2 and 4

- IAV was highly prevalent in all herds (36-68 % of the pigs became infected)
- Circulation of IAV in both the farrowing and nursery unit
- Highest percentage of infected pigs in the farrowing unit
 - Despite sows being positive for IAV antibodies before farrowing
 - Infection seen as early as three day old piglets
- A low number of “persistent” shedders (positive > 2 weeks) was observed in all herd ranging from 1,3-6,3 %



Herd 3

- Acute outbreak with a new subtype H1avN1 → H1avN2
- IAV only present in the farrowing unit
 - 73 % of all 1 week old piglet were infected, despite 100 % of the sow being positive for IAV antibodies before farrowing
- HA sequencing of the H1av of the previous strain and the outbreak strain revealed only 85,5 % sequences identity

