MSD Animal Health

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ESPHM 17th EUROPEAN SYMPOSIUM OF PORCINE HEALTH MANAGEMENT

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MSD Animal Health

Introduction

The 17th European Symposium of Porcine Health Management (ESPHM) brings together veterinarians and swine health professionals to discuss global challenges and foster collaborations with like-minded individuals.

As a proud Gold Sponsor of this event, we demonstrate our total commitment to pivotal issues affecting swine health and our drive to find solutions that promote efficacy and empowerment to move the industry forward, together.

Our comprehensive swine portfolio includes one of the broadest ranges of veterinary biopharmaceuticals, technologies and services available. This range is grounded in science and customer insights, supported by a dedicated R&D team that understands and provides solutions based on today's field challenges.

In this booklet, you will find our scientific contributions showcasing our continuous efforts to innovate for the welfare, productivity and sustainable future of our industry, because no one sees animal health like we do.

We wish you an inspiring learning journey at ESPHM 2026 and look forward to seeing you at our booth and engaging in meaningful conversations.

Yours sincerely,

Dr. Stephan von Berg and Dr. Jasmin Mischok

Dr. Stephan von Berg

Global Technical Director Swine
- PigCare MSD Animal Health

Dr. Jasmin Mischok

Europe Technical Lead Swine

MSD Animal Health

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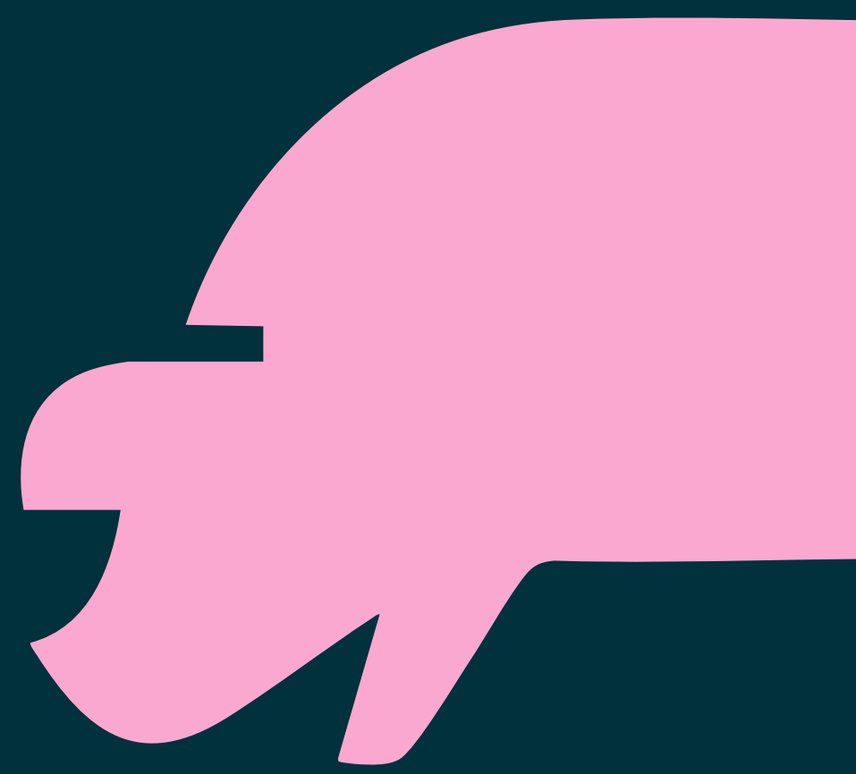

Oral Presentations

Evaluation of intramuscular injection sites in German sow farms

Luboslav Jurovic[1], Isabel Hennig-Pauka[2], Christine Renken[3], Lisa Witt[3], Johanna Vogels[3], Philipp Könighoff[3], Robert Tabeling[3]

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Background & Objectives

The parenteral administration of drugs and vaccines by intramuscular injection is a method in pigs that holds a prominent position due to its advantages of targeted, individualized treatment. The number of injections in German sow farms has increased significantly over the past 15 years, performed by veterinarians, but more frequently by farm staff. These practices are generally only questioned when obvious problems arise (e.g. high number of injuries or inflammations, unexplained sow losses after treatment, too frequent injections into the subcutaneous or fatty tissue). This evaluation aims to gain insights into the practice of intramuscular injections in German sow farms.

Materials & Methods

In 10 German sow farms (100-1500 sows, farm staffs 2-7), vaccination procedures of the farm staff were documented by the same vet. The injection sites of the neck were systematically scored (each farm 54-132 sows) by a scheme according to good veterinary practice (“acceptable”, “too far cranial/ caudal, ventral/ dorsal”) and a questionnaire was performed.

Results

The average percentage of successful injections (acceptable) across all farms was 54.4% (46.1-80.0%). The highest percentage of suboptimal injection sites, 31.1% (17.0-40.2%) was too far caudal towards the shoulder joint. 5.06 (2.11-7.84%) were judged to be too far up, 5.87% (0.00-11.8%) % too far down and 3.54% (0.00-7.37%) too far forward.

Discussion & Conclusion

Intramuscular administration remains one of the most important tools for vaccinations and treatments of sows. We consider reducing injuries to sensitive anatomical structures (vessels, nerves, lymph nodes) and improving suboptimal vaccine and treatment efficacy as relevant aspects for improving sow health. As a result of this study, we identify practical opportunities for optimizing intramuscular injection sites in sows. To improve the results obtained, monitoring and training materials for farm personnel have been developed.

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MSD Animal Health

Investigation of complaints related to vaccine failures

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Introduction

Vaccination is a cornerstone of disease prevention in swine, reducing pathogen circulation, antimicrobial use and improving welfare. Nevertheless, field reports of suspected lack of expected efficacy (SLEE) challenge confidence in vaccine performance and complicate herd health management. We reviewed five years of investigations into SLEE to identify common causes and inform mitigation strategies.

Materials & Methods

From 2019–2024, the Veterinary Technical Services team reviewed >100 SLEE complaints submitted by commercial swine operations. Investigations collected standardized data including number and age of pigs vaccinated, timing of vaccination relative to disease onset, products used (including lot and expiry), vaccination protocols and slaughter/post mortem findings. Investigative support included laboratory analyses (serology, PCR, tissue diagnostics) to assess vaccine response, maternal antibody interference, presence and timing of infection, and circulating pathogens across production phases.

Results

Investigations identified multiple, recurrent contributors to apparent vaccine failure. Improper vaccination practices accounted for approximately 10% of cases; in these events 10–50% of sampled pigs had undetectable antibody titers, attributable either to failure to administer vaccine to all animals or a poor immune response. Concomitant or improper mixing of products, off label use, and vaccination schedules not aligned with herd challenge dynamics were additional operational causes. Novel viral strains not targeted by the vaccine were implicated in 23% of investigations. Viremic animals at the time of vaccination were detected in 20% of cases, and inadequate vaccination timing explained 12% of complaints. Despite comprehensive field and laboratory inquiry, 20–25% of investigations remained inconclusive due to limited or non-representative sampling, insufficient data, or ambiguous laboratory results.

Discussion & Conclusion

SLEE events are multifactorial, combining management, product, pathogen and sampling issues. Key actionable steps to reduce apparent vaccine failures include rigorous vaccination audits (technique, coverage, cold chain, product compatibility), alignment of vaccination timing with herd-specific challenge risk, enhanced sampling protocols for diagnostic confirmation, and ongoing surveillance for emergent strains. Incorporating slaughter and post-mortem data into routine vaccine performance monitoring enhances detection of true vaccine escape versus operational shortcomings. Where investigations remain inconclusive, structured farm audits and targeted sampling plans are recommended to resolve uncertainty and guide corrective actions.

Key Words

Vaccination, efficacy, investigation, challenges.

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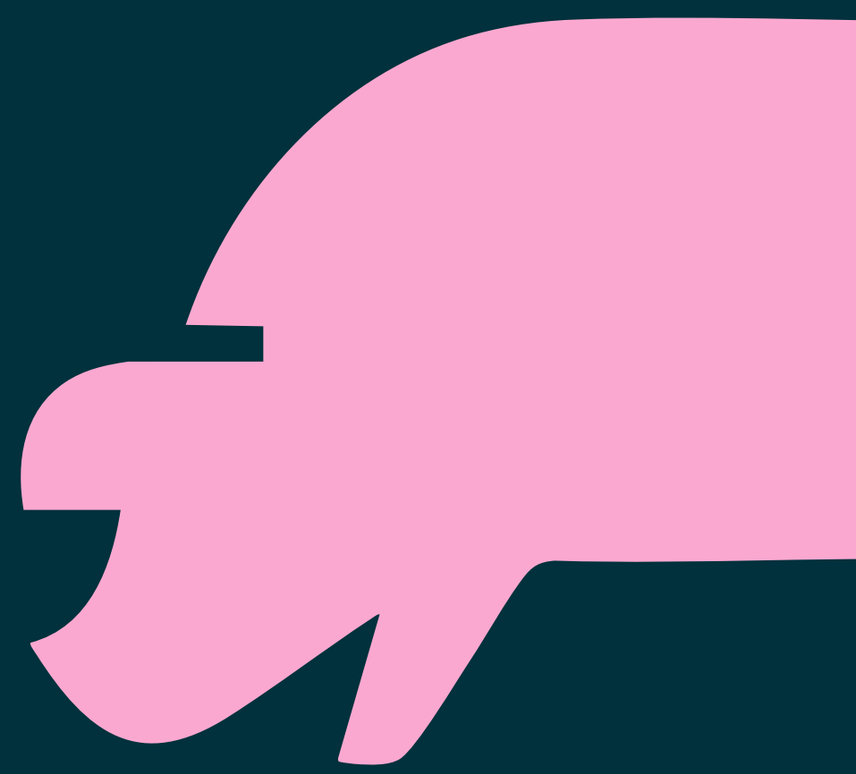

ResPig

Improvement of performance data and slaughterhouse monitoring after introduction of a new combined intradermal PRRS, PCV M Hyo and Lawsonia vaccination schedule

J. Böving[1], S. Offenberg[1], J. Vogels[2], Christine Renken[2], Robert Tabeling[2]

[1]Vets Wettringen [2]Intervet Deutschland GmbH - MSD AH Tiergesundheit, Unterschleissheim

Background & Objectives

Due to the widespread prevalence of PCV2, *M. hyo*, PRRSV, and *Lawsonia* in northwest Germany, vaccination programs are widely established. With the introduction of an intradermal vaccine combination of PCV and M Hyo, where Lawsonia can be mixed in and the concurrent PRRS administration is possible, producers' interest increased, anticipating strong protection and benefits in terms of labor, animal welfare, and hygiene. The aim of this field observation was to examine the effects of this vaccination concept on animal performance and lung health.

Materials & Methods

On a farrow-to-finish farm with established vaccinations against *M. hyo* (i.m., 1st-woa), PRRS and PCV2 (i.m., 3rd-woa) and *Lawsonia intracellularis* (orally, 7th-woa), it was decided to switch to the combined intradermal vaccination (IDAL® Twin device).
Porcilis® PCV M Hyo ID + Porcilis® Lawsonia ID were mixed and administered in parallel with Porcilis® PRRS (i.d., 4th-woa). Finishers before (n=1516) and after vaccination change (n=1078) were monitored for clinical and production-related parameters and by slaughterhouse checks for lung health (Madec, SPES).

Picture 1: Piglet vaccination against four diseases with the IDAL® Twin device.
Source: Böving and Offenberg 2026

Results

With the new combined intradermal vaccination, the clinical situation remained stable. The proportion of animals without lung lesions increased from 24.4% to 70.1% (Figure 1), and without pleurisy from 93.3% to 98.7% (Figure 2). The Madec score dropped by 68% (4.63 to 1.48).

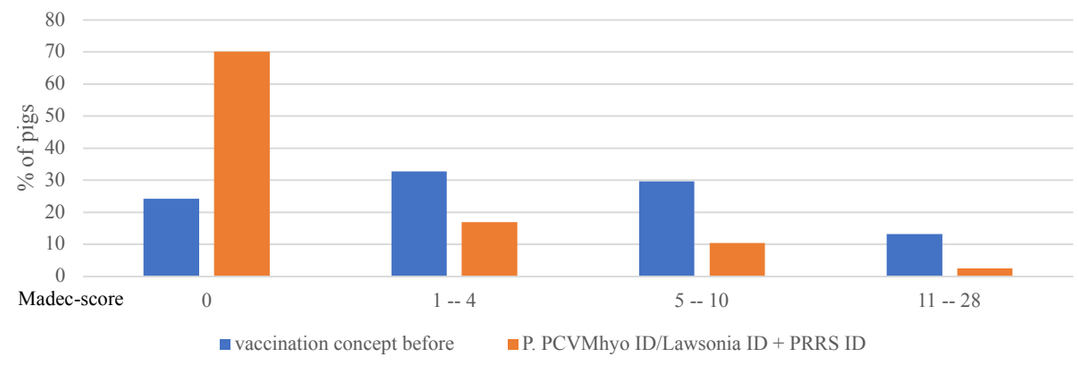

Figure 1: Slaughterhouse lung lesion scoring according to MADEC of different groups with previous vaccination concept vs. Porcilis® PCV M Hyo ID/Lawsonia ID + Porcilis® PRRS ID

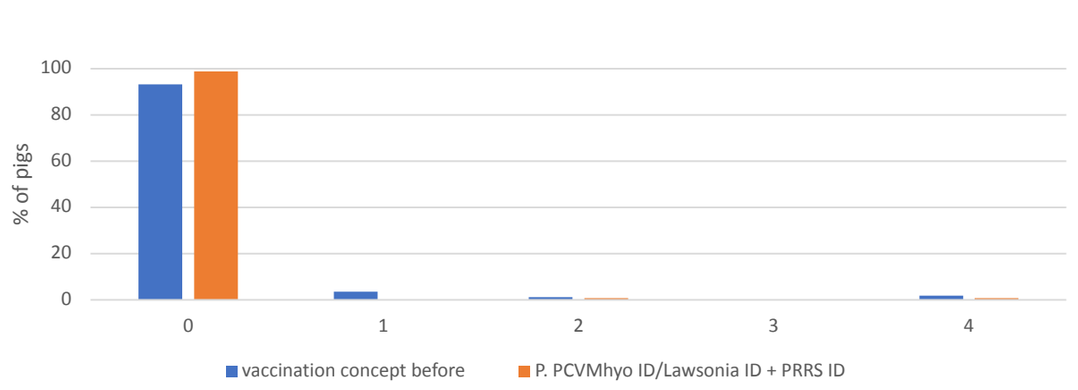

Figure 2: Slaughterhouse pleurisy scoring according to SPES of different groups with previous vaccination concept vs. Porcilis® PCV M Hyo ID/Lawsonia ID + Porcilis® PRRS ID

Finisher losses (Table 1) decreased from 1.27% to 0.94% (-0.26%). ADWG decreased insignificantly (920.7 vs. 900.6 g/d), but FCR improved significantly from 1:2.63 to 1:2.51 (-1:0.12). This means a benefit of €3.38/100 kg by reduced losses and improved FCR.

Performance data	Vaccination concept before	Porcilis® PCV M Hyo ID/Lawsonia ID + Porcilis® PRRS ID
Animals evaluated	1516	1078
Average fattening duration (d)	90.23	93.71
Entry weight (kg)	38.64	38.08
Slaughter weight (carcass, kg)	95.15	96.19
Mean lean index (IXP)	1.003	1.007
Weight gain/animal (kg)	82.97	84.25
Average daily weight gain (g/d)	920.7	900.6
Feed conversion ratio (1 to "X")	2.63	2.51
Losses (%)	1.27	0.94

Table 1: Performance data from the finisher periods of different groups with previous vaccination concept vs. Porcilis® PCV M Hyo ID/Lawsonia ID + Porcilis® PRRS ID

Discussion & Conclusion

The primary drivers for change on this farm were the stress experienced by piglets due to repeated intramuscular and oral drench vaccinations, the pursuit of an optimal combined vaccination schedule, and the associated labor demands. Furthermore, the introduction of the new combined intradermal vaccination procedures for PCV, *M. hyo*, *Lawsonia* and PRRSV, improved clinical herd health, slaughterhouse lung health and associated performance parameters, as well as economics.

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MSD Animal Health

Evaluation of safety and PCV2 immune response induced by a new intradermal vaccine compared to intramuscular vaccination in a commercial farm

M. Jiménez[1], M. Coma[2], C. Laza[3], R. Menjón[1], M. Marcos[1], Hanny Swam[4]
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Introduction

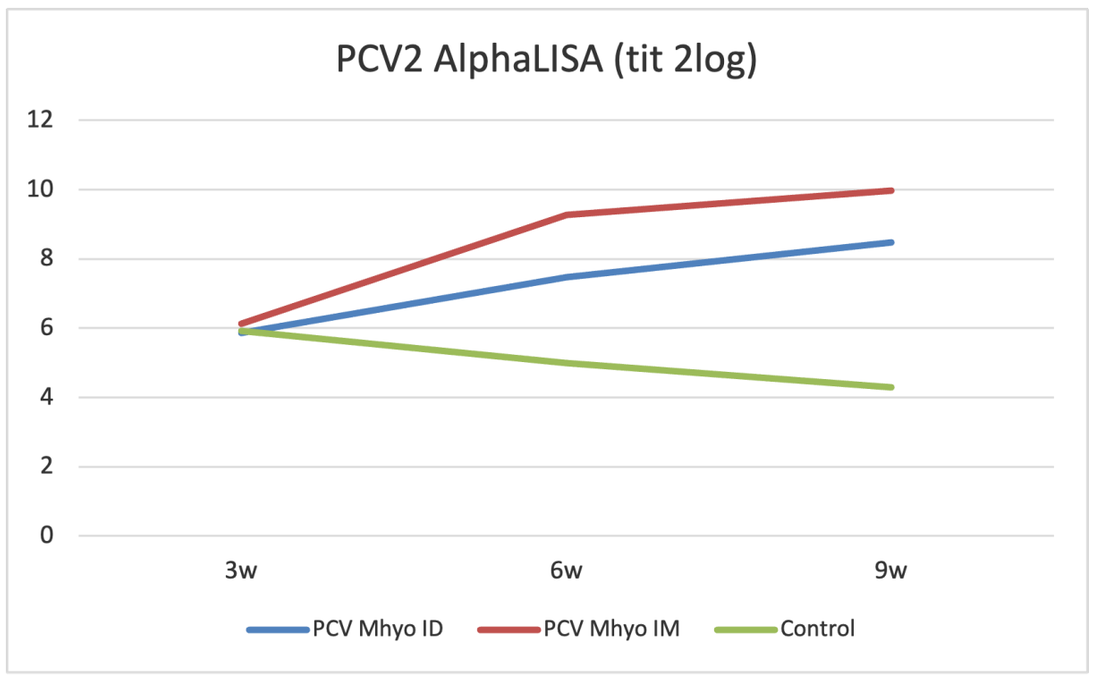
PCV2 vaccines can be applied via the intramuscular or via the intradermal route. The aim of this study was to evaluate the safety and the PCV2 immune response of Porcilis® PCV M Hyo ID, and to compare it with the one elicited by a vaccine applied intramuscularly.

Materials & Methods

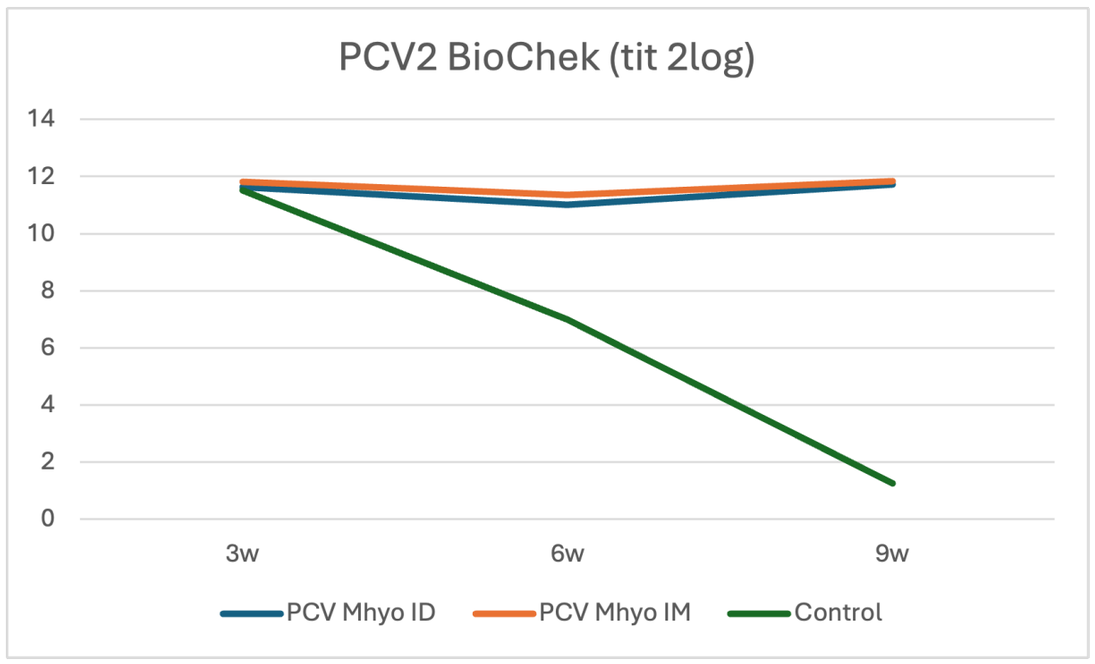
The study was conducted in a commercial Spanish farm, PCV2 vaccinated, without clinical disease. Eighty piglets (21±2 days) were individually identified and randomly assigned to three groups: IDAL® (n=30) vaccinated with Porcilis® PCV M Hyo ID; IM (n=25) vaccinated with Porcilis® PCV M Hyo intramuscularly; CONTROL (n=25); not vaccinated. Rectal temperature was recorded at vaccination (21 days) and 24h, 7d, and 14d post-vaccination. Blood samples were taken at vaccination (3w) and at 6 and 9 weeks of age. PCV2 antibodies were measured with an in-house AlphaLISA (MSD Animal Health) and a commercial BioChek ELISA. PCV2 PCR was performed at 9w. Statistical comparisons used Pearson chi-square and two-way mixed ANOVA.

Results

No differences in rectal temperatures were observed between groups at any time. At vaccination, all groups showed moderate levels of MDA (IDAL® 5.87 log_2; IM 6.13 log_2; CONTROL 5.92 log_2; $p>0.05$). All animals were PCV2-PCR negative at 9w of age. By the AlphaLISA test at 9w, 96.8% of IDAL® and 100% of IM piglets had antibody titers above the expected protection level, versus 4.34% in CONTROL ($p<0.001$) (Graph 1); BioChek results were similar (Graph 2). Quantitatively, at 9w, both vaccinated groups had significantly higher antibody titers than CONTROL in both ELISAs ($p<0.001$). Both ELISA tests showed a high significant association between results ($p<0.001$) with high level of concordance (91,1% at 9w). Correlation between Ab levels was positive, high and highly significant.



Graph 1: PCV2 seroconversion (AlphaLISA test)



Graph 2: PCV2 seroconversion (BioChek PCV2 test)

Discussion & Conclusion

Both intradermal and intramuscular vaccination showed a very strong PCV2 humoral response in all animals, clearly above protective level despite moderate MDA levels at vaccination.

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MSD Animal Health

Study of the humoral immune responses using a novel needle-free intradermal vaccine against PCV2 and *Mesomycoplasma hyopneumoniae (M. hyo)*, under field conditions

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[1]Sigmakreas, [2]MSD Animal Health Spain

Background & Objectives

Bivalent vaccines targeting Porcine circovirus type 2 (PCV2) and *Mesomycoplasma hyopneumoniae (M. hyo)* are widely used for convenience and production benefits. This study characterized humoral response kinetics after administration of a new needle-free intradermal bivalent vaccine (Porcilis® PCV M Hyo ID) and evaluated whether ELISA testing can verify correct vaccination in a commercial herd.

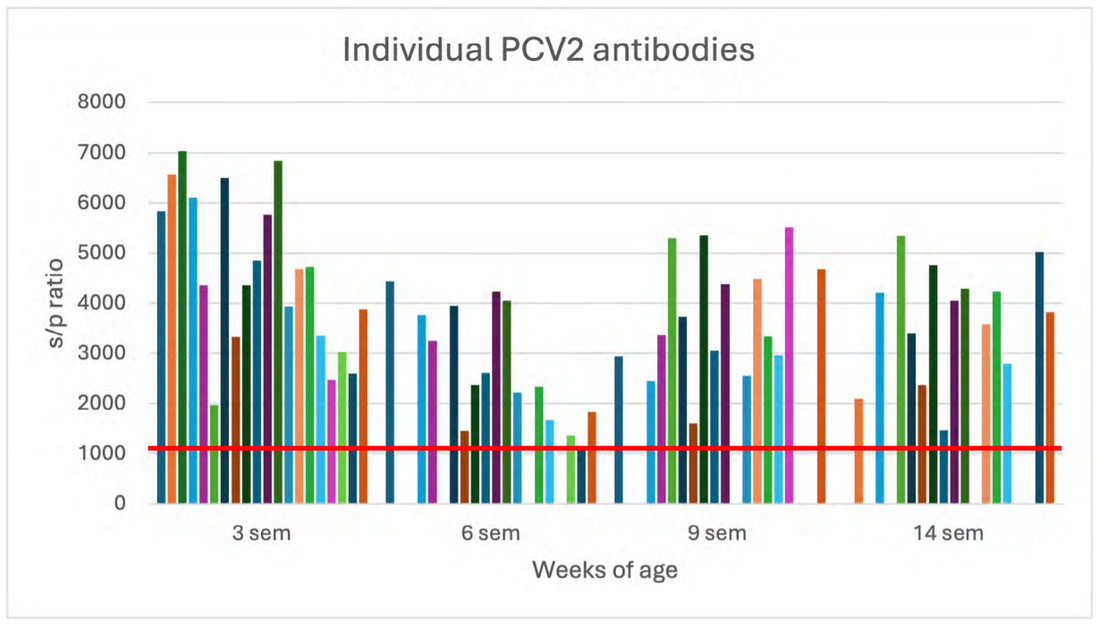
Materials & Methods

On a 2,100-sow commercial PRRS-positive farm (sows vaccinated against PCV2 at weaning), twenty piglets from different litters were randomly selected at 3 weeks, individually identified, and vaccinated with the intradermal vaccine. Blood was collected at 3 (baseline), 6, 9, and 14 weeks. Serum was analyzed with IDEXX *M. hyo* Ab Test (positive: S/P > 0.4) and BioChek PCV2 Ab Test (positive ≥ 1,071). Pooled qPCR for PCV2 (5 sera/pool) evaluated field virus exposure. Clinical observations continued through 14 weeks.

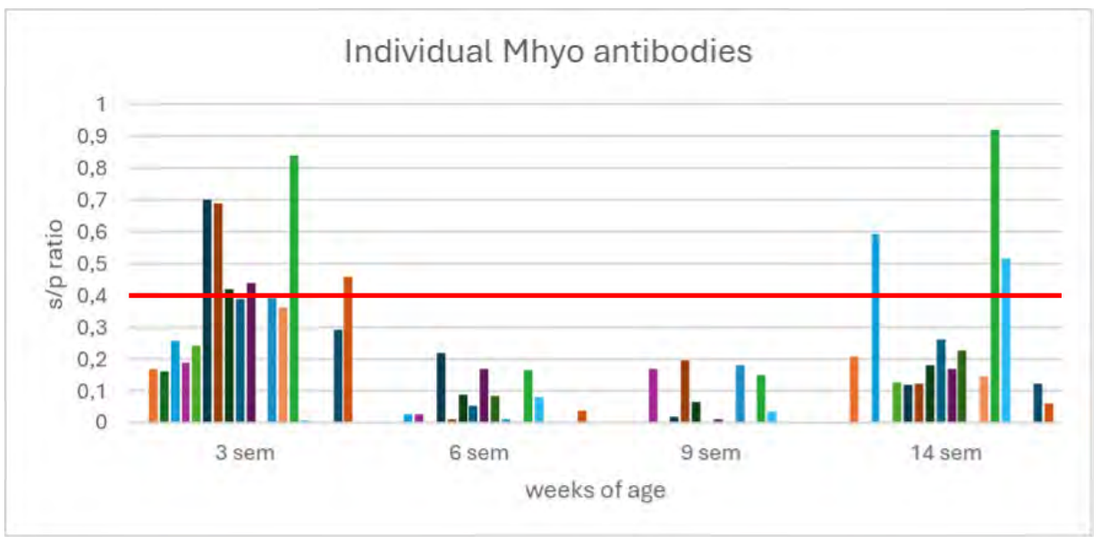
Photo 1: Piglet vaccinated with IDAL®.
Source: MSD Animal Health internal

Results

PCV2 antibody levels (mean values) were 4,608 at 3 weeks, 2,709 at 6 weeks, 3,712 at 9 weeks and 3,675 at 14 weeks; seropositivity was 100% at all times. Pairwise comparisons were significant for 3 vs. 6 weeks and 6 vs. 14 weeks ($p < 0.001$). For *M. hyo*, mean S/P values were 0.30 (3 weeks), 0.065 (6 weeks), 0.055 (9 weeks), and 0.27 (14 weeks); statistical differences occurred between 3–6 weeks and 3–9 weeks ($p < 0.05$). Seropositivity rates were 25% at 3 weeks, 0% at 6 and 9 weeks, and 21.4% at 14 weeks. All pooled PCV2 PCR results were negative. No clinical signs attributable to PCV2 or *M. hyo* were recorded.



Graph 1: Individual antibody response to PCV2 from vaccination until 14 weeks of age



Graph 2: Individual antibody response to *Mesomycoplasma hyopneumoniae* from vaccination until 14 weeks of age

Discussion & Conclusion

The intradermal vaccine induced a consistent, sustained humoral response to PCV2 through at least 14 weeks despite high maternal antibodies. ELISA responses to *M. hyo* were infrequent and variable, consistent with published mycoplasma vaccine data. PCV2 ELISA seroconversion, therefore, appears useful for monitoring correct administration of this vaccine in the field.

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Use of PCV2 humoral antibody detection as a method to verify proper PCV2 vaccination in a new commercial PCV2 vaccine

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[1]MSD Animal Health, [2]Inga Food S.A., [3]PORCISAN S.A.U., [4]GUCO

Background & Objectives

Some PCV2 commercial vaccines have shown to induce a very strong humoral response. This fact allows the use of post-vaccination seroconversion as a reliable way to demonstrate proper vaccination of piglets in addition to PCV2 PCR. The aim of this trial was to study the humoral immune response induced by a new intradermal PCV2 vaccine and its possible use as a method to verify proper vaccination.

Materials & Methods

In 18 commercial Spanish farms, piglets were vaccinated at 3–4 weeks with the new intradermal bivalent vaccine Porcilis® PCV M Hyo ID (MSD Animal Health). Six weeks post-vaccination, 407 piglets (9–10 weeks old) were bled. PCV2 antibodies were measured with the semi-quantitative BioChek PCV2 Ab ELISA. PCV2 PCR was additionally performed to exclude field infection.

Photo 1: Piglet vaccinated with the IDAL® device (MSD Animal Health)

Results

All samples were PCV2 PCR negative, indicating antibody responses were likely vaccine-derived.

Among 407 samples, 40 were PCV2 antibody-negative, resulting in 89.68% overall seropositivity. Average titer of positives was 3,207 (positive >1071). On farm level, positivity ranged from 75% to 100%; average titers ranged from 2,462 to 4,446 (Table 1). No correlation was found between percentage positive and mean PCV2 titer at farm level.

Farms	18
Nº Samples	407
PCV2 PCR negative (9w)	100%
% PCV2 Pos BioChek (9w)	89.68%
Average PCV2 titer	3207

Table 1: PCV2 seroconversion at 9w (BioChek test)

Discussion & Conclusion

The results of this trial show that in all farms observed, the new vaccine induced a clear PCV2 immune response 6 weeks post-vaccination, detected by a commercial PCV2 ELISA. These results are especially useful as they suggest that a simple serological test performed 6 weeks post-vaccination, in combination with PCV2 PCR to ensure that no field virus is recirculating, makes it possible to verify proper administration of the vaccine and, therefore, to implement corrective measures if necessary.

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MSD Animal Health

A case report of efficacy and profitability of piglet vaccination to control Highly Pathogenic (HP) PRRSV1 infection in weaners

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Background & Objectives

The objective of this trial was to evaluate the efficacy and profitability of piglet PRRS vaccination, in combination with management measures, to control post-weaning mortality induced by a variant of a highly pathogenic PRRSV1 strain (Genbank accession number ON571708, commonly known as Rosalia).

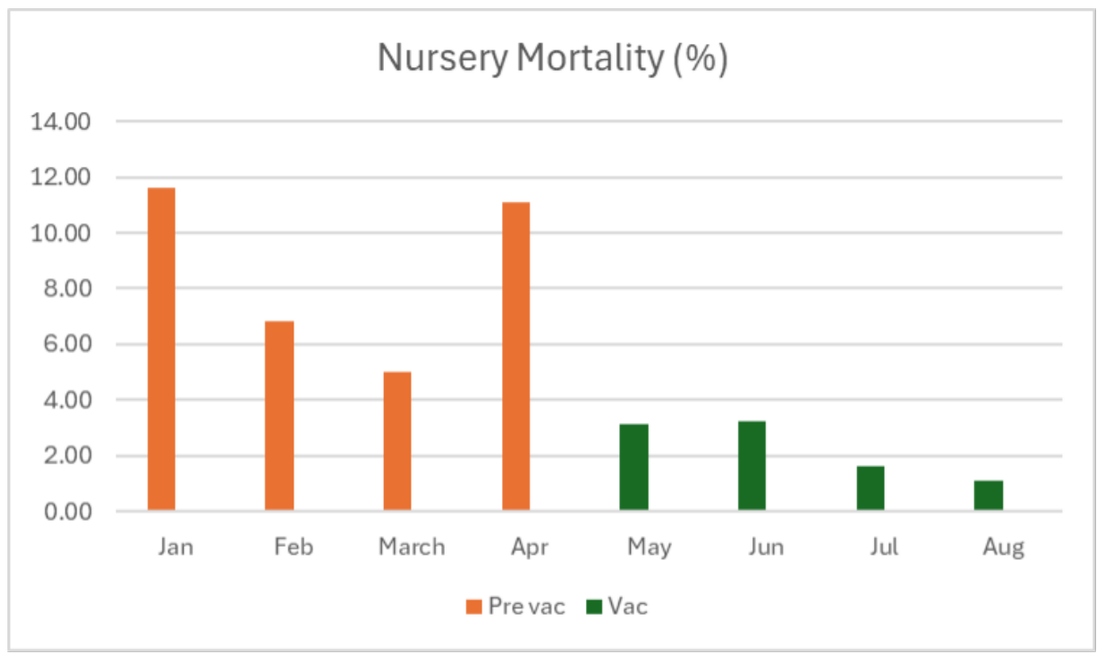
Materials & Methods

The study took place in a 270-sows closed herd, located in Catalonia (Spain). In 2024, the farm suffered a PRRSV outbreak of a variant of the highly pathogenic PRRSV strain Rosalia (97.52% homology with Genbank ON571708). In April 2025, although sows were stable, nursery mortality was still higher than expected. Once confirmed via PCR that piglet flux was PRRSV negative at birth, it was decided to vaccinate piglets at 2w of age (Porcilis® PRRS via intradermal (ID) administration, MSD Animal Health) for a 6-months period. Also, some management strategies were implemented, such as the 3w batch-system, AI-AO and a strict policy of sacrifices of non-recoverable animals.

Efficacy of vaccination was determined by comparing mortality and clinical signs compatible with PRRS of pre- and post-vaccination batches. PRRSV presence was determined by PCR in blood samples from piglets at 6 and 9w of age. Data were statistically analyzed based on monthly mortality using the Pearson's Chi square test.

Results

The mortality of nursery was reduced by 87%, from an average of 8.66% pre-vaccination, to 2.2% after the implementation vaccination with Porcilis® PRRS ($p<0.001$) (Table 1 and Graph 1).
No clinical signs compatible with PRRS were observed in the vaccinated batches.
No field virus was found in blood samples of piglets at 6 and 9w of age.
Vaccinated batches, only considering the reduction in mortality in nursery phase, had an extra benefit of 2.62 €/piglet, including cost of vaccination.



Graph 1: Monthly mortality rate by batch in nursery

	Pre-vaccination	After implementation of Porcilis® PRRS vaccination	Statistical significance
Number of animals	2906	3106	
Mortality (%)	8.66	2.26	$p<0.001$

Table 1: Monthly mortality rate in nursery pre-vaccinated versus post-vaccinated batches

Discussion & Conclusion

In this field experience, the combination of piglet vaccination and management measures was shown to be an effective and profitable strategy to reduce PRRS-induced mortality in weaners induced by a HP PRRSV1 strain.

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MSD Animal Health

Epidemiological update on the prevalence of *Actinobacillus pleuropneumoniae* serotypes in Spain

M. Jiménez[1] , M. Marcos[1], R. Menjón[1]

[1]MSD Animal Health Spain

Background & Objectives

The objective of this study was to broaden current knowledge on *Actinobacillus pleuropneumoniae* (*APP*) serotypes involved in clinical cases in Spain and to evaluate their possible temporal evolution.

Materials & Methods

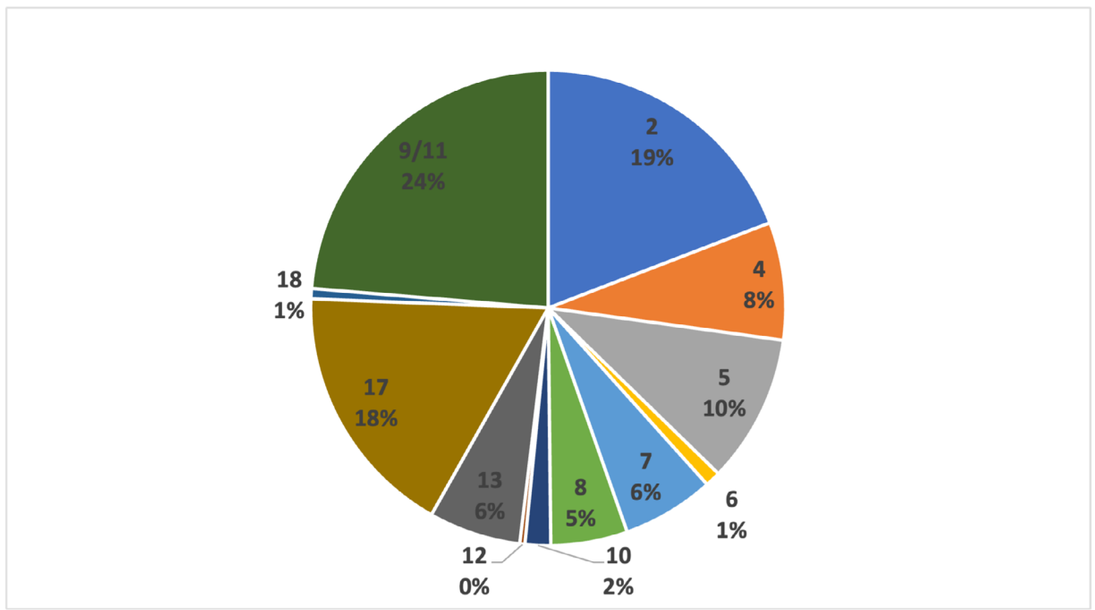
A total of 492 *Actinobacillus pleuropneumoniae* isolates from retrospective clinical cases between January 2023 to September 2025 were processed in six diagnostic laboratories situated in different geographic areas of Spain. Serotyping was performed on 288 isolates, via serotype-specific PCR. The seasonal frequency of cases, the most common serotypes and their development over time were examined in comparison with previous data from 2017 to 2022 (same systematic).

Results

Clinical cases of *APP* were detected every month of the year, although winter and spring were the seasons in which prevalence of cases was higher (41% and 32% respectively) (Graph 1).

The most prevalent serotypes found were 9/11 (24%), 2 (19%), 17 (17%) and 5 (10%), and were found equally all around the country. The less prevalent serotypes found were 12 (0.4%), 18 (0.7%), 6 (1%), and 10 (1.7%) (Graph 2). This data differs from previous data, where most prevalent serotypes were 2 (16%), 9/11 (14%), 4 (14%) and 10 (14%).

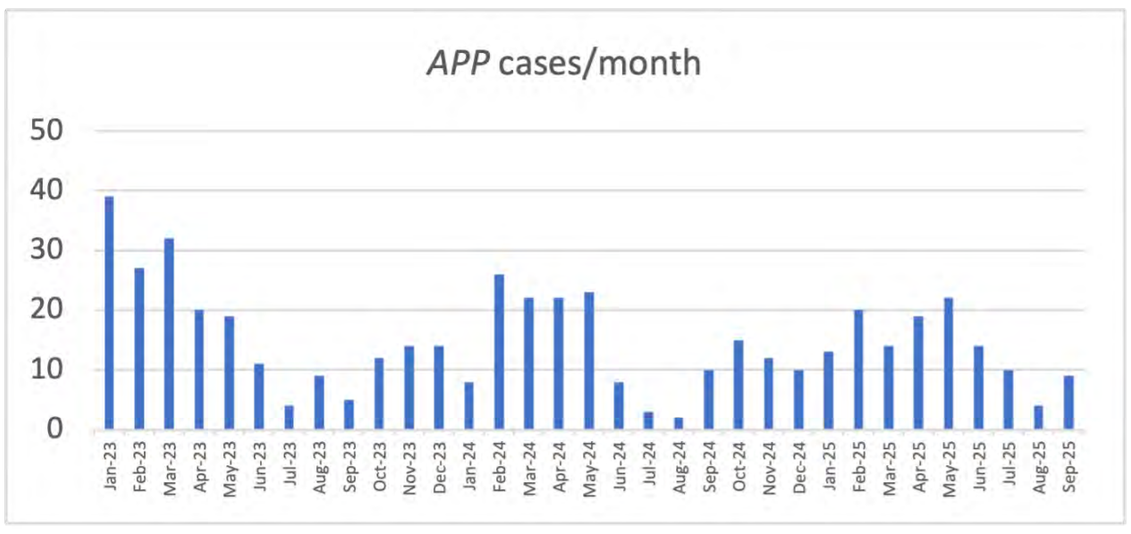
The only serotypes not found were 1, 3, 14, 15 and 16. These data partially coincide with previous years' findings, when the only serotypes not found were 1, 12, 14, 15 and 16.



Graph 2: Prevalence of *APP* serotypes

Discussion & Conclusion

The results of this retrospective study demonstrate that most *APP* serotypes circulate in Spain and are connected to clinical disease. Of note is the increase in serotype 17, which has become one of the most prevalent ones.



Graph 1: Monthly distribution of *APP* cases from January 2023 to September 2025

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MSD Animal Health

IntestiPig

Bloody diarrhea in fatteners – Beyond the Lawsonia line. A field study

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Background & Objectives

If a herd is vaccinated against *Lawsonia intracellularis*, but still shows signs of bloody diarrhea, it may raise concerns about whether the vaccine is working effectively. However, such assumptions may not accurately reflect the underlying etiology. In these cases, antibiotic metaphylaxis may prove ineffective.

The objectives of this study are to highlight the role of other pathogens and to promote the use of targeted laboratory diagnostics to support evidence-based therapeutic decision-making.

Materials & Methods

The investigation was conducted on a commercial fattening farm consisting of eight identical pens, with a total capacity of 6,000 pigs. One batch (3,000 pigs) can be housed in four pens. Despite vaccination of the pigs with Porcilis® Lawsonia IM, cases of bloody diarrhea were observed during the first third of the fattening period.

Pooled fecal samples (5 individual samples per pool) were collected from the affected batch and submitted for the following laboratory tests:

- Aerobic bacterial culture
- *Salmonella* enrichment
- PCR testing for *Brachyspira hyodysenteriae*, low-pathogenic *Brachyspira* species, and *Lawsonia intracellularis*

In addition, environmental conditions, vaccination history, and clinical observations were documented to aid interpretation of the laboratory results.

Results

Beta-hemolytic *Escherichia coli* was isolated from all pooled samples. Low-pathogenic *Brachyspira* species were detected in 75% of the samples.
All samples tested negative for *Lawsonia intracellularis*, *Brachyspira hyodysenteriae* and *Salmonella spp.*

Multiplex PCR analysis of the isolated *E. coli* strain revealed the presence of the *eae* virulence factor gene which is a key virulence factor in pathogenic *E. coli*. MIC analysis was performed, identifying effective antibiotics from AMEG categories D and C (Table 1).

Fecal samples						
Pool	Origin	Bacterial culture	*Salmonella spp.*	Low pathogenic *Brachyspiras* PCR	*Lawsonia intracellularis* PCR	*E. coli* mPCR
1	1st pen	beta-haem. *E. coli*	negative	positive	negative	not examined
2	2nd pen	beta-haem. *E. coli*	negative	positive	negative	not examined
3	3rd pen	beta-haem. *E. coli*	negative	negative	negative	***eae* positive**
4	4th pen	beta-haem. *E. coli*	negative	positive	negative	***eae* positive**

Table 1: Results of laboratory investigations

Discussion & Conclusion

Pooled fecal sampling combined with molecular diagnostic techniques such as PCR, serves as a valuable tool for the differential diagnosis of enteric diseases in fattening pigs. Accurate pathogen identification not only facilitates the prudent antibiotic use and improves therapeutic outcomes but also informs biosecurity measures and herd-level management strategies.

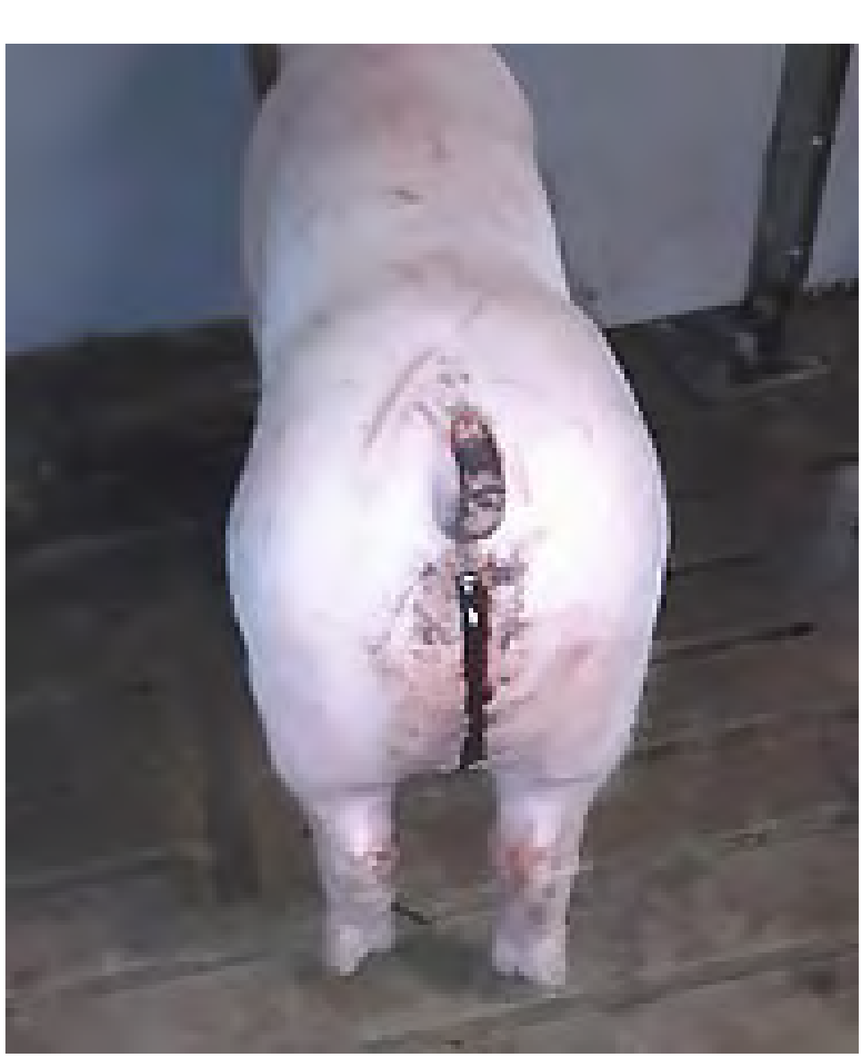

Figure 1: Bloody diarrhea in fattener (photo by the author)

Figure 2: Fecal sampling (photo by the author)

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MSD Animal Health

Comparison of production parameters in groups vaccinated against Ileitis via oral and intramuscular routes. A field study

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Background & Objectives

Ileitis (caused by *Lawsonia intracellularis*) exerts a substantial influence on production parameters, thereby significantly affecting economic performance indicators. Due to the emphasis on responsible antibiotic use, vaccination of piglets has become a key strategy in controlling the damage caused by this disease.

The objective of this study was to compare the effects of oral - and intramuscular vaccination on production performance and economic parameters in a Hungarian swine herd.

Materials & Methods

The study was conducted on a commercial farrow-to-finish pig farm housing with 600 sows. Piglets were allocated into two experimental groups:

Group A (oral Lawsonia vaccination): 5,636 piglets, with 26.61 kg average initial body weight.
Group B (intramuscular vaccination, IM with Porcilis® Lawsonia IM): 5,425 piglets, with 26.55 kg average initial body weight.

Both vaccination protocols were administered strictly in accordance with the manufacturer's instructions. Both groups were under the same environmental and nutritional conditions throughout the trial with the same length of the fattening phase.
The following production parameters were recorded:

- Average Daily Gain (ADG)
- Feed Conversion Ratio (FCR)
- Mortality rate (MR)
- Culling rate (CR)
- Market weight (MW)

Results

We observed improvements across all measured parameters in **Group B (IM) compared to Group A**: ADG increased by 21 g/day (from 873 to 894), while FCR improved by 0.03 points (from 2.62 to 2.59), indicating more efficient feed utilization. MR decreased by 1.9% points (from 3.5 to 1.6) CR decreased by 0.5% points (from 1.4 to 0.9) (Table 1). These performance gains translated into an average market weight increase of 3.39 kg/pig (from 107.32 to 110.71), contributing to enhanced higher profitability.

	Fatteners (No.)	Initial weight (kg)	Market weight (kg)	ADG (g)	FCR	Mortality rate (%)	Culling rate (%)
Oral	5636	26.61	107.32	873	2.62	3.5	1.4
Intramuscular	5425	26.55	110.71	894	2.59	1.6	0.9
Diff.			3.39	21	-0.03	1.9	0.5

Table 1: Changes in production parameters between group A (oral) and group B (IM)

Discussion & Conclusion

Under the conditions of this study, we highlighted the effectiveness of intramuscular vaccination, as well as the fact that it resulted in an extra profit of €5.1 per pig compared to the group treated with oral vaccine.

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MSD Animal Health

Salmonella antibody development in a *Lawsonia intracellularis* i.d. vaccinated herd

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Background & Objectives

The ubiquitous *Salmonella* infections in German fattening pig farms are monitored with an antibody (AB) monitoring program (Quality&Safety GmbH; QS), which closely correlates with infection rates and risk of food contamination (1; risk categories Cat I: low, II: medium, III: high). Practitioners describe that *Lawsonia intracellularis* (*LI*) vaccination can show improvements of the *Salmonella* AB status (2). The objective of this field case was to monitor clinical *Lawsonia* infection and the development of *Salmonella* ABs following intradermal (i.d) *LI* vaccination in an affected farm.

Materials & Methods

In a farrow-to-finish herd the *Salmonella* categorization worsened to Cat II since 12/2023 (Figure 1) in parallel to clinical *LI*-diarrhea.

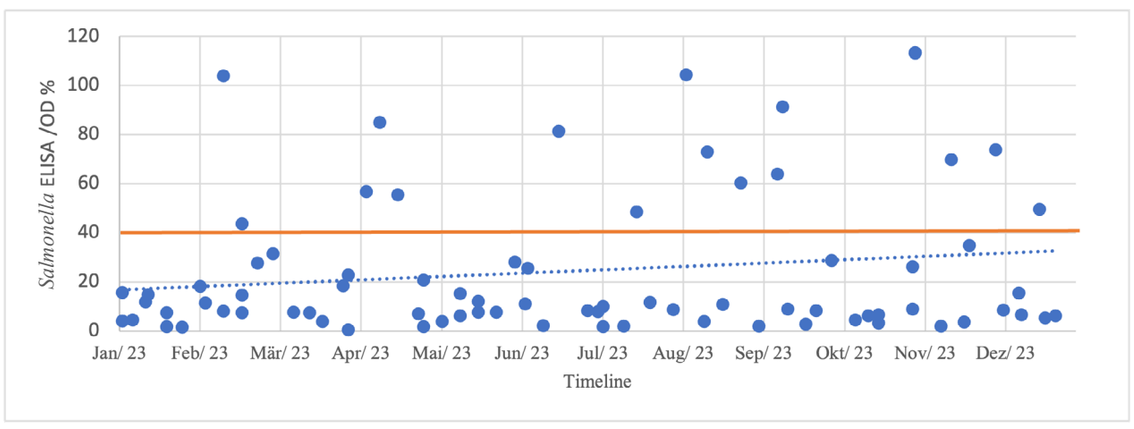

Figure 1: Results of the *Salmonella* monitoring of slaughter pigs **(fattening) 2023** from meat juice and blood samples (orange line QS cut-off value >=40 OD% for positive animals)

As reaction piglet vaccination with Porcilis® Lawsonia ID was added to Porcilis® PCV ID/M Hyo ID ONCE (no further *Salmonella* specific measures). Sampling and testing plan: *Salmonella* direct detection: microbiology (dust/fecal sock samples, nursery/finishing); *LI*/*Brachyspira pilosicoli* (*BP*): PCR (feces, nursery/finishing); *Salmonella*: ABs Elisa (positive ODs=>40); serum (nursery n=160; early/mid/end finishing n=95 each) and meat juice at slaughter (2023: n= 79; 2024: n= 82).

Results

Introduction of vaccination reduced the occurrence of diarrhea, animal losses (Table 1) decreased (-40%) and daily gain of finishers increased (16 g/animal/day).

	Lawsonia	Animal number in farm		Start weight	End weight	Preliminary sales	Losses	ADWG	FCR	Fattening duration	Lean meat
Period		start	end	kg	kg	%	%	g/d	1 to …	days	%
Q 1-4 2023	Unvaccinated	5307	5105	29.30	123.0	4.98	3.85	928.0	2.96	101.0	57.4
Q 2-4 2024	Vaccinated	5383	5581	30.65	122.7	5.30	2.30	944.0	2.94	98.0	57.7
	Δ			1.35	-0.30	0.32	-1.55	16.0	-0.02	-3.00	0.30

Table 1: Data from the farm records of the fattening farm (the period before vaccination, 01.01.-31.12.23, is compared with the period 01.04.-31.12.24 vaccinated groups; period Q1/24 is omitted because of non-vaccinated and vaccinated mixed groups)

Salmonella and *BP* were not detected directly in any age group. *LI* was negative in feces of nursery and partly positive in unvaccinated/vaccinated finishers. All *Salmonella* serum ODs were <40 in nursery (0/160) and early finishing (0/95) over all periods. *Salmonella* OD-values =>40 were seen more often in mid (Figure 2; 8/25) and end (Figure 3; 14/25) finishing before *LI*-vaccination (11/2023-03/2024). With *LI*-vaccination *Salmonella* ODs =>40 were reduced in mid (Figure 2; 0/70) and end (Figure 3; 1/70) finishers (04/2024-11/2024).

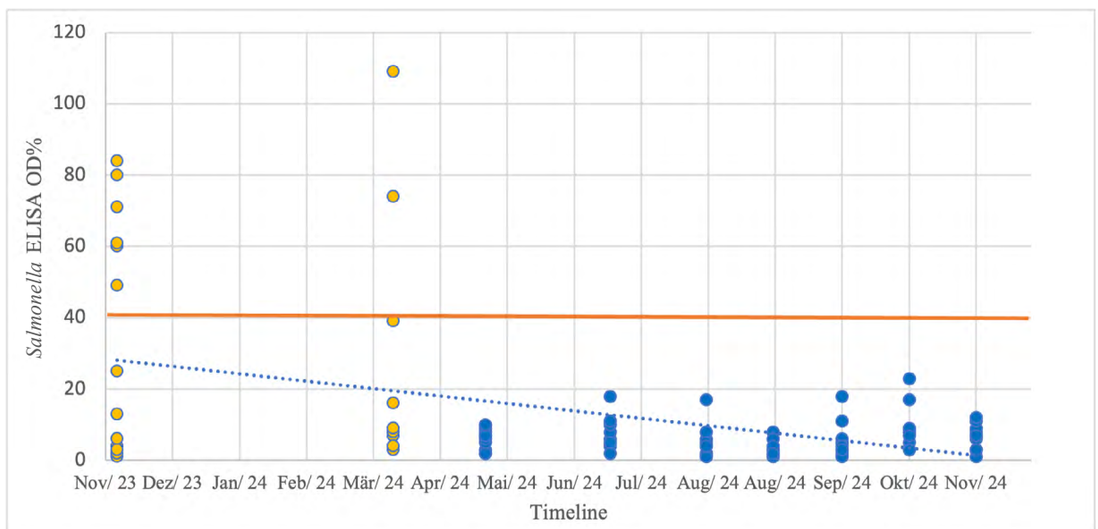

Figure 2: Results of the test for *Salmonella* antibodies in the blood without (yellow 10.11.2023; 13.03.2024) or with Porcilis® Lawsonia ID vaccination (blue) from mid fattening (orange line QS cut-off value >=40 OD% for positive animals)

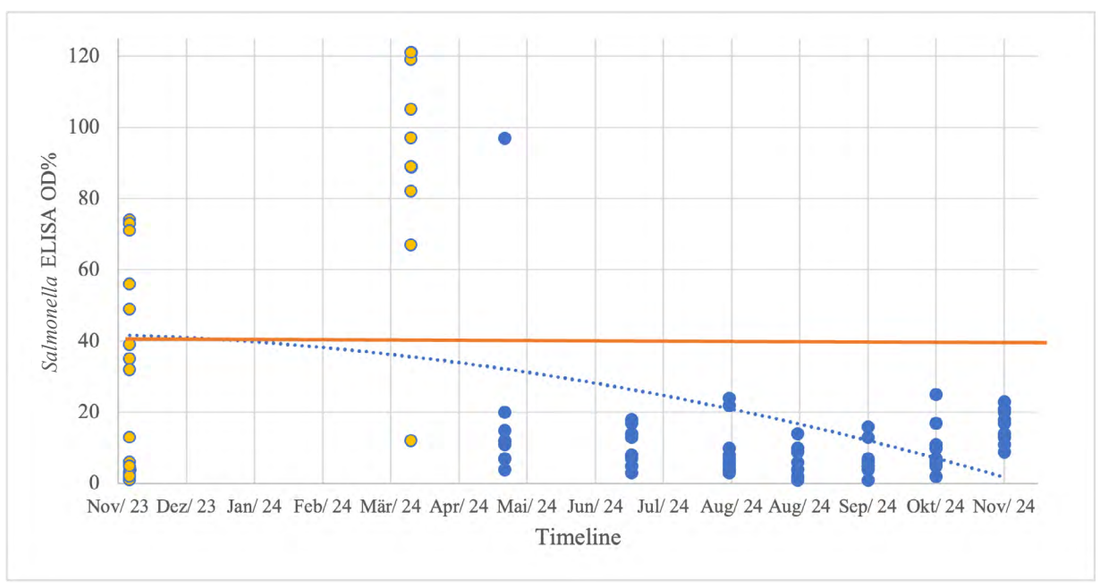

Figure 3: Results of the test for *Salmonella* antibodies in the blood without (yellow 10.11.2023; 13.03.2024) or with Porcilis® Lawsonia vaccination (blue) from the end-finishing stage (orange line QS cut-off value >=40 OD% for positive animals)

The number of positive meat juice samples (Q3 2023-Q1/2024 19/59) also decreased clearly with the *LI*-vaccinated pigs (Q2-Q4/2024 3/61) and farm returned to Cat I.

Discussion & Conclusion

The results from this study indicate that in finisher farms with notable *Salmonella* antibodies, *LI* may be a co-factor. *LI*-vaccination in this farm was able to improve reduction of diarrhea, biological performance and the *Salmonella* antibody development.

References

1. Grosse Beilage E und Wendt M (2013): Diagnostik und Gesundheitsmanagement im Schweinebestand, Band 1., 7.3. Salmonellenmonitoring; Verlag Eugen Ulmer.
2. Meschede J, Holtrup S, Deitmer R, Mesu A P, Kraft C (2021): Reduction of *Salmonella* prevalence at slaughter in *Lawsonia intracellularis* co-infected swine herds by Enterisol® Ileitis vaccination, Heliyon. 2021 Apr 14;7(4):e06714. doi: 10.1016/j.heliyon.2021.e06714.

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MSD Animal Health

Impact of *Lawsonia intracellularis* vaccination on tail-bites and related diseases, evaluated by antimicrobial treatments and slaughterhouse remarks in Finnish herds

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Background & Objectives

Lawsonia intracellularis (LI) causes porcine proliferative enteropathy impairing growth and with vaccination being a well-known control measure. Tail biting is a multifactorial problem in pigs, leading to secondary lesions such as abscesses, arthritis and carcass losses. Previous studies suggest that improved health, including gut health and *LI*-vaccination, may reduce the risk of tail-biting.

The aim of this study was to investigate whether *LI*-vaccination impacted the prevalence of tail bites and associated health problems using antimicrobial treatment and slaughterhouse remarks as outcome parameters in commercial, non-tail docking pig herds.

Materials & Methods

Data from six finisher herds delivering pigs to one slaughterhouse were analyzed.

Antimicrobial treatments (four herds) and potential tail bite-related slaughterhouse remarks (tail bites, abscesses, arthritis, condemnations; six herds) were compared between two seasonally matched six-month periods before and after *LI*-vaccination.

Results

Antimicrobial data was found to only contain diagnoses potentially related to tail biting (e.g. no treatment against diarrhea). Treatments for tail bites alone increased slightly after versus before *LI*-vaccination (+1.9 %-points) though not reported in all herds. However, the overall proportion of pigs treated decreased by -2.9 %-points (range -10.7 to +2.3). Most notably, total antimicrobial consumption (mL/animal) decreased in three of four herds, averaging -29.7% (range -65.6% to +39.6%) after vaccination (Figure 1).

Tail bite remarks at slaughter were consistently low and below 6.2% (avr.: 2.0%; range: 0-6.2) with a negligible average change (-0.02 %-points; -0.8 to +0.4). Slight increases were noted in carcass condemnations (+1.4; 0.2-3.6), abscesses (+0.2; -0.9-1.4), arthritis (+0.2; -0.6-1.0), and total remarks (+1.8; -1.0-3.8) (Figure 2).

Results - continued

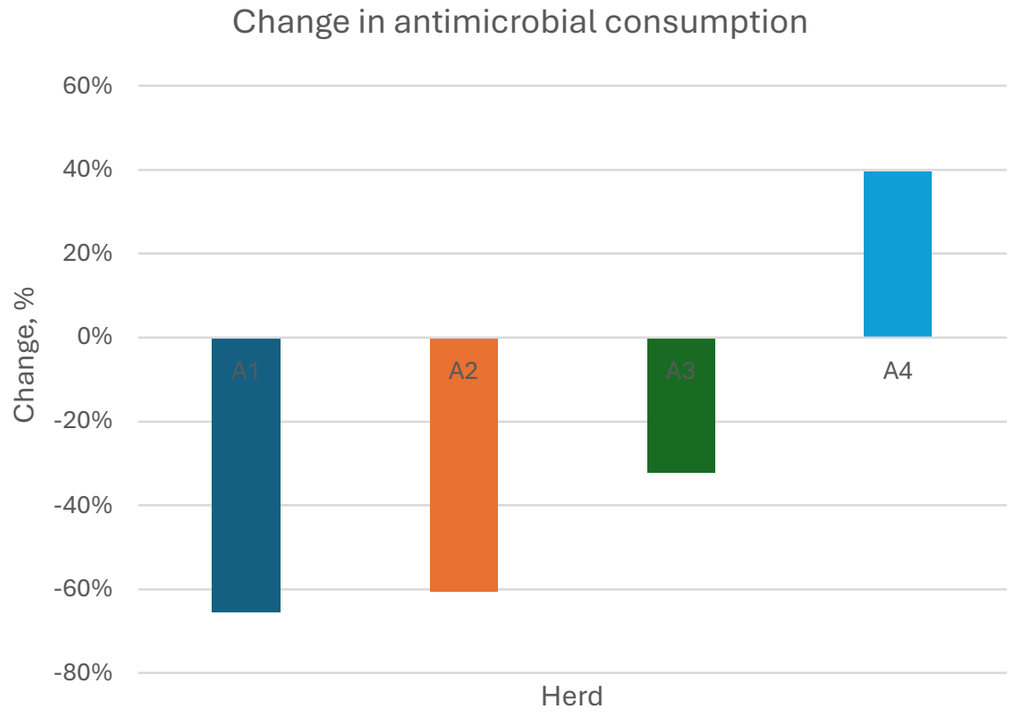

Figure 1: Change in percent in total antimicrobial consumption (measured in mL/animal) BEFORE vs. AFTER *Lawsonia intracellularis* vaccination in each of four herds

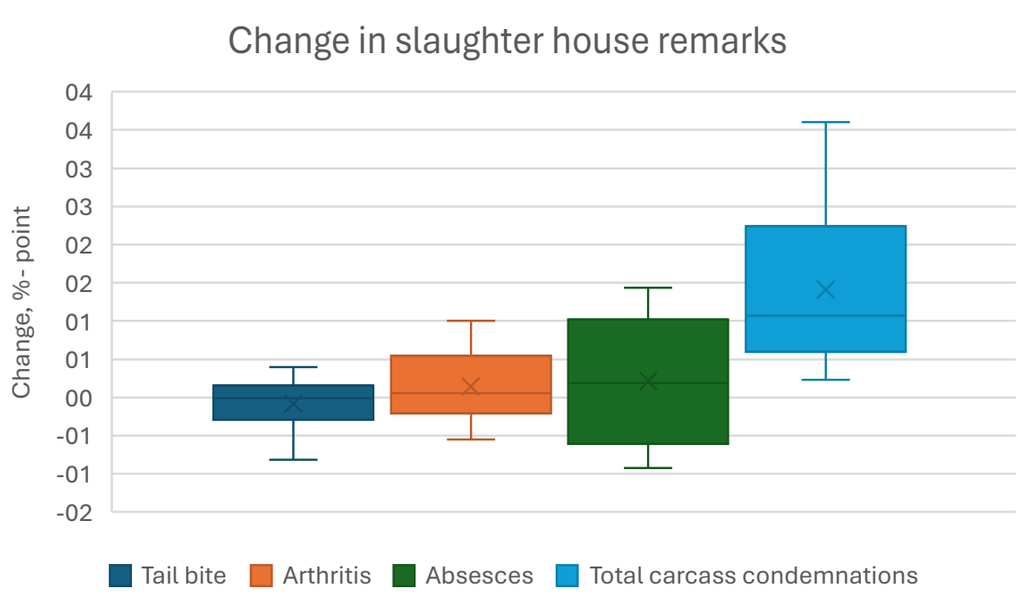

Figure 2: Change in percent-point in slaughterhouse remarks potentially related to tail bite diseases when comparing BEFORE vs. AFTER *Lawsonia intracellularis* vaccination in six herds

Photo 1: Finnish pigs with non-docked tails. Source: Nikunen, 2025, private photo

Discussion & Conclusion

Antimicrobial treatments showed clear reductions in both treated animals and total antimicrobial consumption after *LI*-vaccination. Slaughterhouse remarks may misjudge tail biting and do not express changes in severity, as wounds can heal before slaughter or severely affected pigs may not reach the abattoir. These findings indicate that *LI*-vaccination may indirectly reduce stressors predisposing to tail-biting, improve pig welfare, and decrease herd-level antimicrobial usage.

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MSD Animal Health

Inter-laboratory agreement in quantifying bacterial load of *Lawsonia intracellularis* and *Brachyspira pilosicoli* using quantitative PCR

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Background & Objectives

Diagnostic analyses are an important tool for optimizing herd health management, and familiarity with the different analyses is essential for correct interpretation of results. A ring trial was performed to evaluate the inter-laboratory agreement in quantifying the fecal bacterial load of *Lawsonia intracellularis* (*LI*) and *Brachyspira pilosicoli* (*BP*) in grower pigs using quantitative PCR (qPCR).

Materials & Methods

Twenty-eight pooled fecal samples were collected from end-nursery pigs in 28 different farms. Upon collection, each fecal sample was thoroughly mixed and divided into two identical subsamples and analyzed in parallel by two laboratories: MSD Animal Health R&D Service Laboratory, The Netherlands (CDS), and Danish Pig Research Centre, Denmark (Kjellerup).

At CDS, *LI* was quantified using the BactoReal® Kit *Lawsonia intracellularis* (Ingenetix), with results reported as $\log_{10}$ DNA copies/µL of fecal solute. The quantification range for this assay was 1.0 to 6.3 $\log_{10}$ copies/µL. *BP* was analyzed using the Kylt® BRA kit (SAN Group Biotech, Germany), with results expressed in quantification cycle (Cq) values ranging from 0 to 40.

At Kjellerup, in-house test were used for both *LI* and *BP* and qPCR results were expressed as DNA copies per gram of feces that subsequently were transformed to $\log_{10}$ copies/gram for comparison.

Results

Analysis revealed a strong agreement between laboratories for both pathogens. The Pearson correlation coefficient for *LI* was 0.980 ($p < 0.001$, two-tailed), indicating excellent concordance (Figure 1). For *BP*, the correlation coefficient was -0.973 ($p < 0.001$, two-tailed), reflecting the expected inverse relationship between DNA copies and Cq-values (Figure 2).

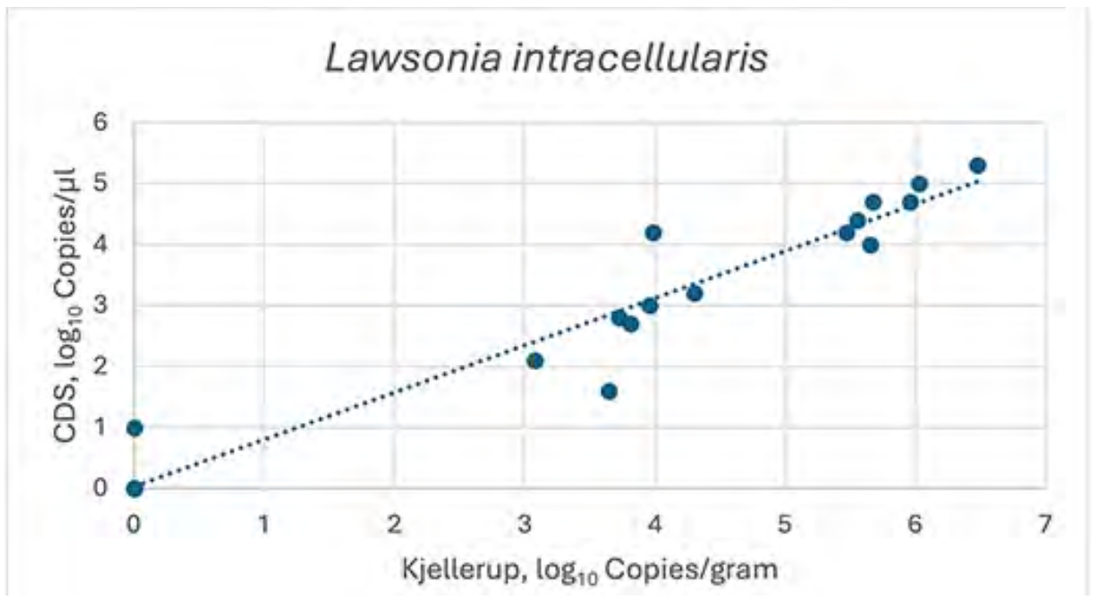

Figure 1: The inter-laboratory agreement in quantifying the fecal bacterial load of *Lawsonia intracellularis*

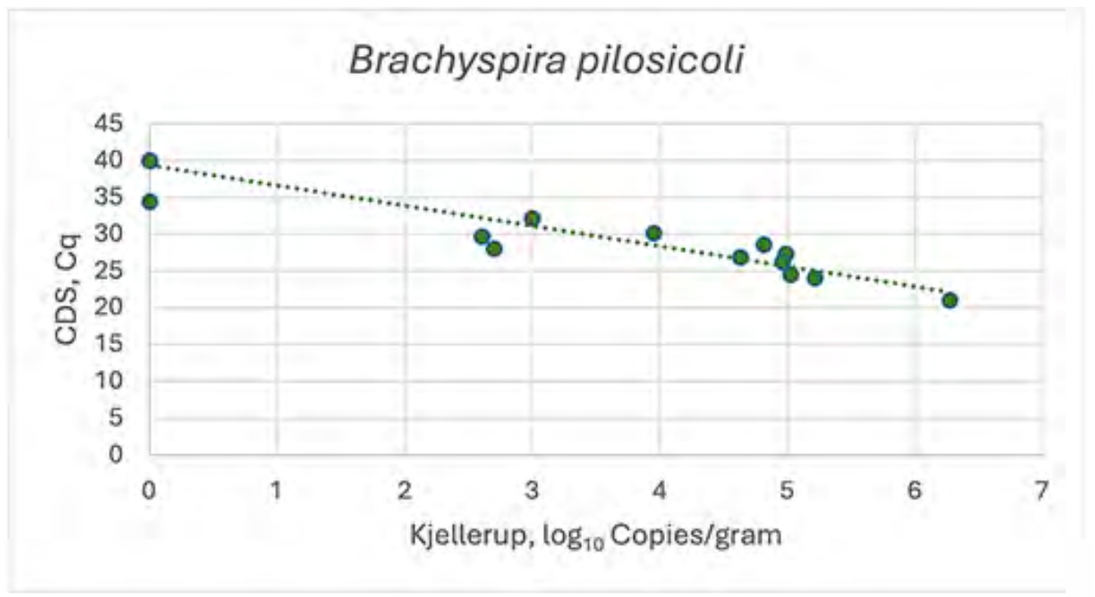

Figure 2: The inter-laboratory agreement in quantifying the fecal bacterial load of *Brachyspira pilosicoli*

Discussion & Conclusion

These results demonstrate high inter-laboratory consistency in qPCR-based quantification of *LI* and *BP* in porcine fecal samples, supporting the robustness and comparability of the diagnostic methodologies used. However, it also highlights the importance of familiarity with the analysis used when interpreting the significance of a given laboratory result as values needs to be translated accordingly.

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MSD Animal Health

Prevalence, level and correlation between *Lawsonia intracellularis* and *Brachyspira pilosicoli* in Danish weaners

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[1]MSD Animal Health Nordics, [2]Porcus Aps, Denmark, [3]Danvet K/S, Denmark
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Background & Objectives

Within-herd infection dynamics of *Lawsonia intracellularis* (*LI*) and *Brachyspira pilosicoli* (*BP*) can be affected by many factors. Since the last prevalence study in Danish herds from 2019/2020, the use of ZnO at weaning has discontinued and the vaccination rate for *LI* has tripled. The aim of this study was therefore to obtain an updated overview of prevalence, levels and correlation of *LI* and *BP* in Danish nursery farms not vaccinating against *LI*.

Materials & Methods

Between September 2024 and May 2025, pooled fecal samples were collected from pigs at 3-, 5-, and 7-weeks post-weaning from each of the 52 Danish farms. Samples were analyzed for *LI* and *BP* by qPCR at MSD Animal Health R&D Service Laboratory, The Netherlands. Results were reported as $\log_{10}$ DNA copies/µL of fecal solute, and as quantification cycle (Cq) values, respectively.

Results

At 3-, 5-, and 7-weeks post-weaning, the prevalence of *LI* was 11.5%, 44.0%, and 52.0%, while the prevalence of *BP* was 30.7%, 40.0%, and 50.0%, respectively. The mean infection levels in *LI*-positive samples were 2.4 (median and range: 2.2; 1.4-4.4); 2.3 (2.4; 0.5-4.4) and 3.1 (3.2; 0.5-5.3) $\log_{10}$ copies/µL (Figure 1), and for *BP*-positive samples 29.6 (29.1; 34.9-21.9), 27.6 (26.6; 34.7-21.4) and 27.0 (27.0; 34.7-20.9) Cq-values (Figure 2) at the respective time points. In samples positive for both pathogens, Pearson's correlation coefficients between *LI* and *BP* levels were -0,45 (*p=0,066*) and -0.52 (*p=0.028*) at 5-, and 7-weeks post-weaning (Figure 3), respectively, reflecting the inverse relationship between DNA copies and Cq-values. Three weeks post-weaning, only four samples were double positive and evaluation of correlation was therefore not assessed.

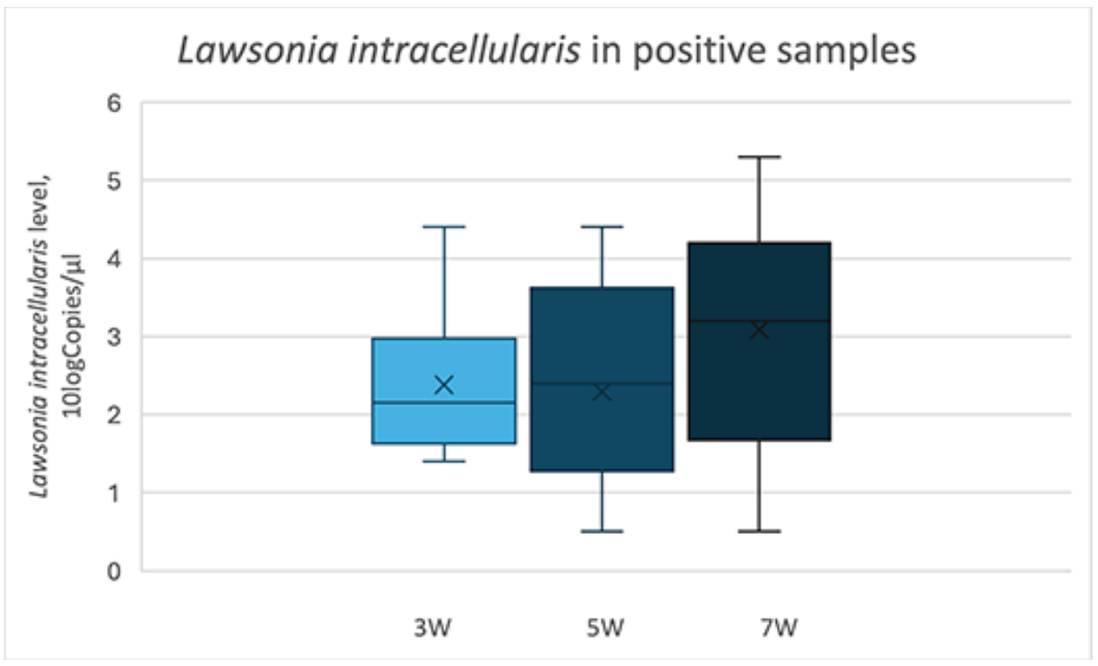

Figure 1: Levels of *Lawsonia intracellularis* positive samples from 52 Danish nursery farms at 3-, 5- and 7-weeks post-weaning

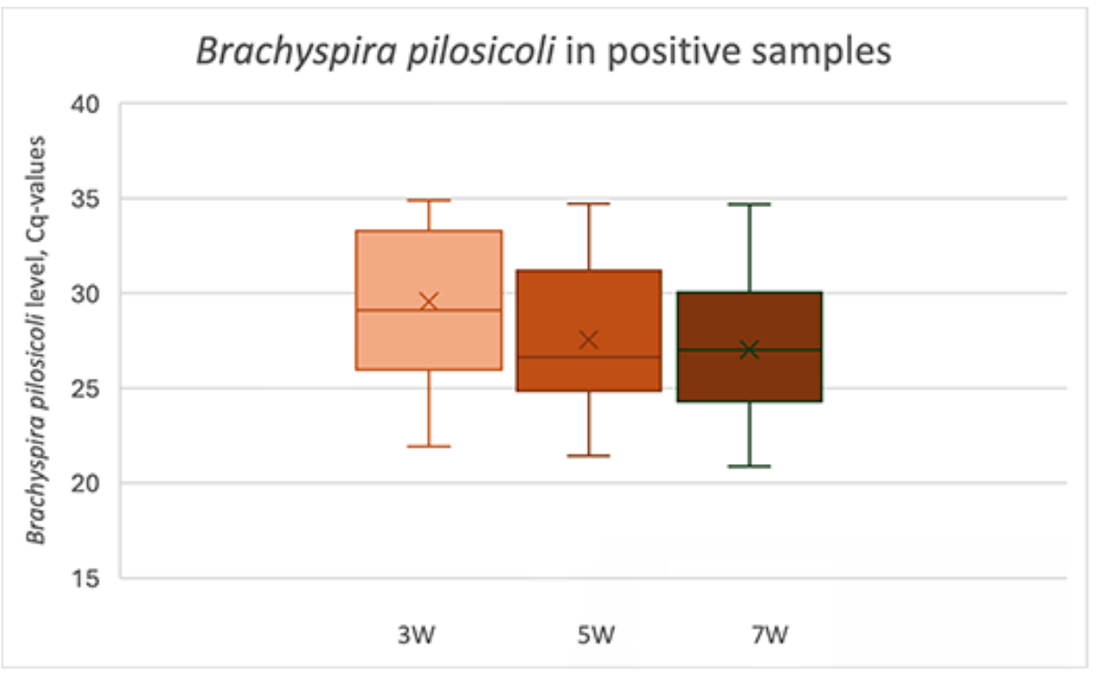

Figure 2: Levels of *Brachyspira pilosicoli* in positive samples from 52 Danish nursery farms at 3-, 5- and 7-weeks post-weaning

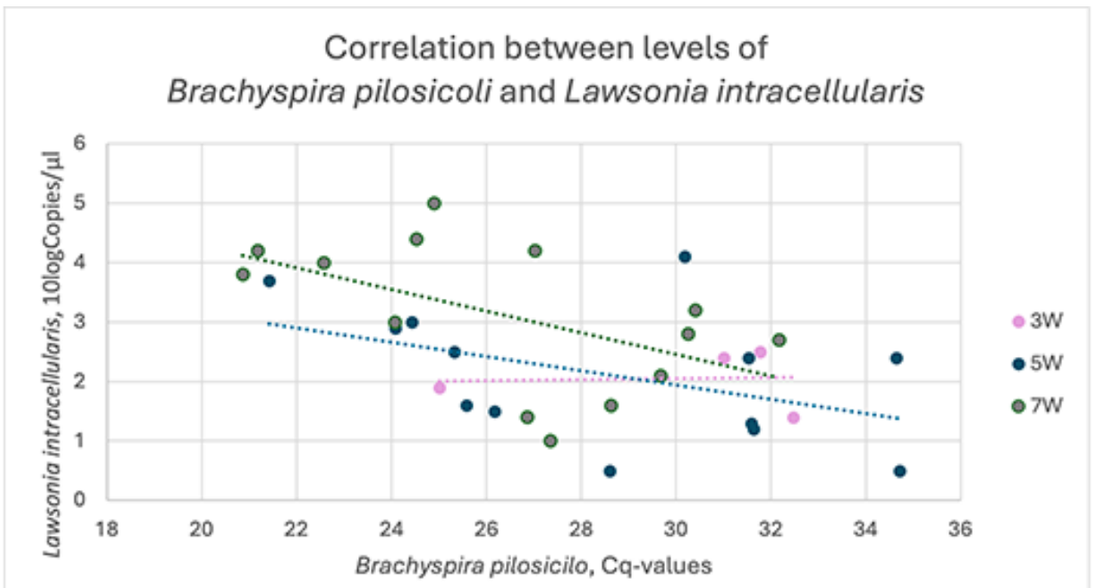

Figure 3: Correlation between levels of *Brachyspira pilosicoli* and *Lawsonia intracellularis* in positive samples from each of the 52 Danish nursery farms at 3-, 5-, and 7-weeks post-weaning

Discussion & Conclusion

Compared to previously published results (2019-2022), the prevalence of *LI* in non-vaccinating nurseries appears reduced, but levels in positive herds continue to be at production-impacting levels. Also, occurrence in finishers remains to be evaluated. Notably, *BP* was detected at relatively high prevalence just 3-weeks post-weaning, indicating early infection onset. Further, this study supports that in case of *LI* and *BP* co-infection, the two pathogens appear to potentiate each other.

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MSD Animal Health

Study on the dynamics of circulation of *Lawsonia intracellularis* in 10 pig farms. Relationship with biosecurity level. Effects on diarrhea and technical performances

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Background & Objectives

Lawsonia intracellularis (*LI*) is present on most of the pig farms [1]. The intensity and the moment of infection are important parameters for technical and economical performances. The aim of this study is to evaluate the dynamics of circulation of *LI* in ten pig farms and the relationship with biosecurity level, presence of diarrhea and technical performances.

Materials & Methods

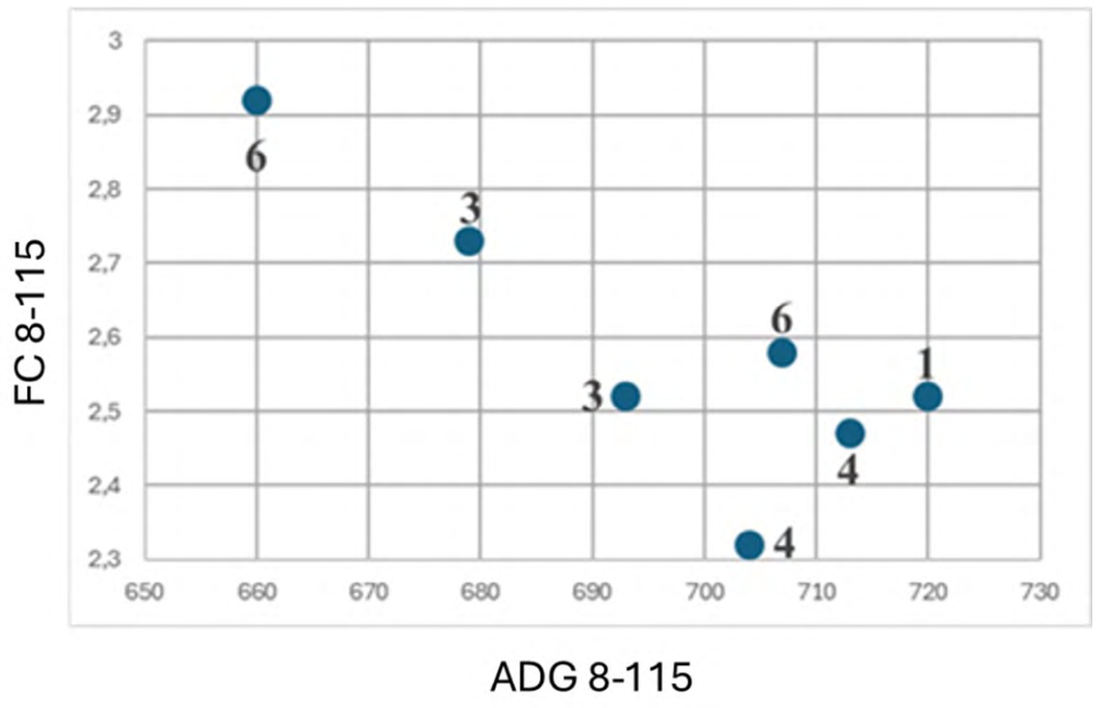
The dynamics of *LI* was analysed in ten pig farms, not suspicious regarding chronic or subclinical ileitis, without hemorrhagic ileitis nor treatment against ileitis. To evaluate these dynamics, ELISA on serology samples and PCR on saliva samples were performed in three different ages of fattening pigs. Age 1: two or four weeks after beginning of fattening period, Age 2 and Age 3: older batches, with an interval of three or five weeks between batches. The combination of ELISA and PCR results light up 6 profiles of dynamics of *LI* circulation during the fattening period as described by Duivon 2023 [2]: profile 1: no circulation; profile 2: low circulation; profile 3: intense circulation at the beginning, profile 4: intense circulation in the middle; profile 5: intense circulation at the end and profile 6: intense circulation during all the fattening period. At the same time, an evaluation of global biosecurity of the farms (good, acceptable or insufficient) and a scoring of diarrhea on fattening period were given to the farms. Diarrhea was evaluated at each age sampled, like: presence = 0; absence =1. The inclusion of the age-based diarrhea score resulted in a fattening-period diarrhea score between 0 and 3 for each farm. Technical results (Feed Conversion: FC and Average Daily Gain: ADG) were available on seven farms.

Results

Three farms had, respectively for each group, a profile 3, a profile 4 and a profile 6. One farm had a profile 1.
No relationship between dynamics of infection and level of biosecurity or between dynamics of infection and scoring of diarrhea were found (Table 1). The comparison of technical results between profile 1 and profile 4 vs profile 3 and profile 6 showed a difference of average daily gain (ADG) = 14 g and of feed conversion (FC) = 0,185 (Graph 1).

Elevage	*LI* profile	Biosecurity level	Diarrhea score in fattening period
E4	1	Good	0
E8 E10 E5	3 3 3	Good Acceptable Insufficient	0 2 1
E6 E9 E3	4 4 4	Good Acceptable Insufficient	0 2 1
E2 E7 E1	6 6 6	Good Acceptable Insufficient	0 2 3

Table 1: Levels of biosecurity level and diarrhea score in fattening period in function of profile of dynamics of *LI*



Graph 1: Technical performances in function of profile of dynamics of *LI*

Discussion & Conclusion

This study confirms that level of biosecurity or presence/absence of diarrhea are not sufficient to provide a display of the dynamics of circulation of *LI* in a farm [1], [2]. Laboratory sample analysis is necessary to evaluate this dynamics and to detect subclinical cases of ileitis, which are the most important manifestation of *LI* [3]. The incidence is particularly important on technical parameters as FC for the farms with profiles 3 and 6. These results confirm the impact of an early circulation of *LI* during fattening period on the degradation of technical parameters [4], [5].

References

1. Vannucci et al. 2019. Diseases of Swine. 11th, 898-911.
2. Duivon et al. 2023. AFMVP Proceeding, 34-35.
2. Pedersen et al. 2012. Acta Veterinaria. 54-58.
3. Voisin et al. 2024. AFMVP Proceeding Congress, 72.
4. Duivon et al. 2024. ESPHM. Proceeding Congress, 579.
5. Del Pozo et al. 2025. Vaccines, 13, 72.

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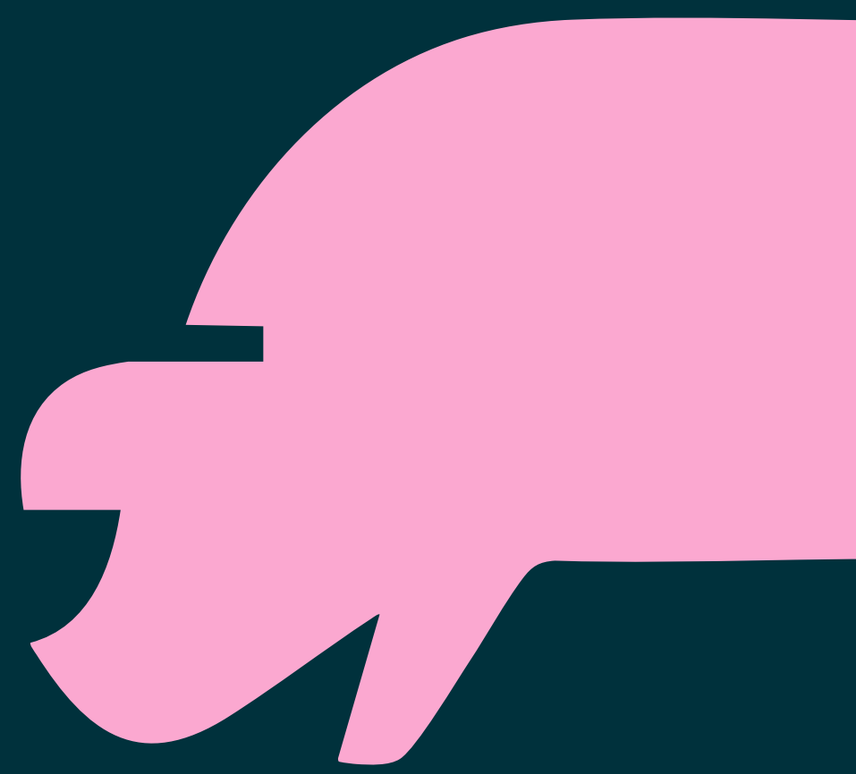
MSD Animal Health



Sowcare

Leptospira diagnostics in a sow herd in Northwestern Germany

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Background & Objectives

Detecting fertility disorders involving *Leptospira (L.)* in pig herds can be challenging due to its often subclinical character and because no sample material is available for direct pathogen detection. Pigs serve as reservoir hosts for certain leptospiral serogroups (Australis, Pomona, Tarassovi), while they can get infected with several others (e.g. Canicola, Grippotyphosa, Icterohaemorrhagiae) (1). The present case highlights infection and detection of most-likely non-host-adapted *Leptospira* in a sow-farm from an epidemiological perspective.

Materials & Methods

A 200-sow-farm in Northwestern Germany reported reproductive disorders in Q1/24 (especially mummies). Vet described massive rodent population on-farm. As part of veterinary herd health management, 19 blood samples from non-pregnant sows were investigated for antibodies against 11 common swine serovars using MAT. Furthermore, aborted fetuses and four rats, which arose during standard rodent control program, were investigated using *Leptospira*-PCR. All investigations were done at IVD GmbH. MAT titers ≥100 were considered positive. Antibiotic treatment and routine vaccination of sows against *Leptospira* (Porcilis® Ery+Parvo+Lepto) was implemented, performance data was obtained.

Results

In total 84,2% (16/19) serum samples yielded positive results for antibodies against *Leptospira*. Overall, median titer was highest for serovars Copenhageni (600), Icterohaemorrhagiae (400) and Bratislava (400) while 3 sows showed titers ≥3200 and 3 sows ≥1600 for one or more of these serovars (Table 1). PCR results from aborted fetuses and rats revealed positive results for *Leptospira* subclade P1. After antibiotic treatment (mid of March 2024) and vaccination (April 2024), performance stabilized (0.45 mummies/litter in Q1/24; 0.16 mummies/litter in Q3/24) (Figure 1).

Sampling date	AUS	BRA	AUT	CAN	GRI	COP	ICT	POM	HARD	SAXK	TAR
07.03.24	<100	<100	200	<100	<100	1600	1600	<100	<100	<100	<100
07.03.24	<100	<100	100	<100	100	3200	3200	<100	<100	<100	<100
07.03.24	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
07.03.24	200	1600	<100	<100	<100	3200	3200	<100	<100	<100	<100
04.04.24	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
04.04.24	100	400	<100	<100	<100	400	400	<100	<100	<100	<100
04.04.24	400	3200	200	<100	<100	1600	1600	<100	<100	<100	<100
04.04.24	400	1600	200	<100	<100	1600	1600	<100	<100	<100	<100
04.04.24	<100	<100	<100	<100	<100	800	200	<100	<100	<100	<100
29.04.24	800	400	<100	<100	400	<100	400	<100	<100	<100	<100
29.04.24	100	200	<100	100	200	<100	100	200	<100	<100	100
29.04.24	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
29.04.24	400	400	<100	<100	<100	400	200	100	<100	<100	<100
29.04.24	200	200	<100	100	100	200	100	<100	<100	<100	<100
29.04.24	200	400	<100	200	100	200	200	<100	<100	<100	<100
29.04.24	400	100	100	<100	200	400	400	400	<100	<100	<100
29.04.24	200	200	<100	<100	<100	100	<100	<100	<100	<100	<100
29.04.24	800	1600	200	<100	800	1600	800	800	<100	<100	<100
29.04.24	100	100	<100	<100	100	100	100	<100	<100	<100	<100

Table 1: *Leptospira* antibody results at three sampling dates from 19 different sows with reproductive disorders using MAT performed by IVD GmbH. According to the OIE Manual 2000, titres of 1:100 (final dilution) are considered significant for an infection with leptospires. (Tested serovars: AUS=Australis; BRA=Bratislava; AUT=Autumnalis; CAN=Canicola; GRI=Grippotyphosa; COP=Copenhageni; ICR=Icterohaemorrhagiae; POM=Pomona; HARD=Hardjo; SAXK=Saxkoebing: TAR=Tarassovi)

Results - continued

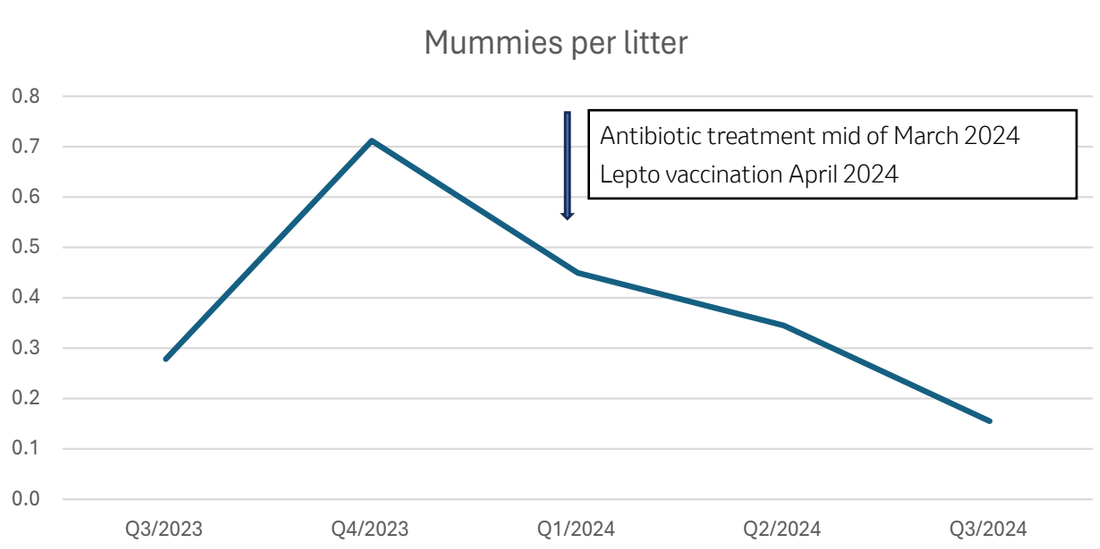

Figure 1 : Mummies per litter in Q3/2023 to Q3/2024

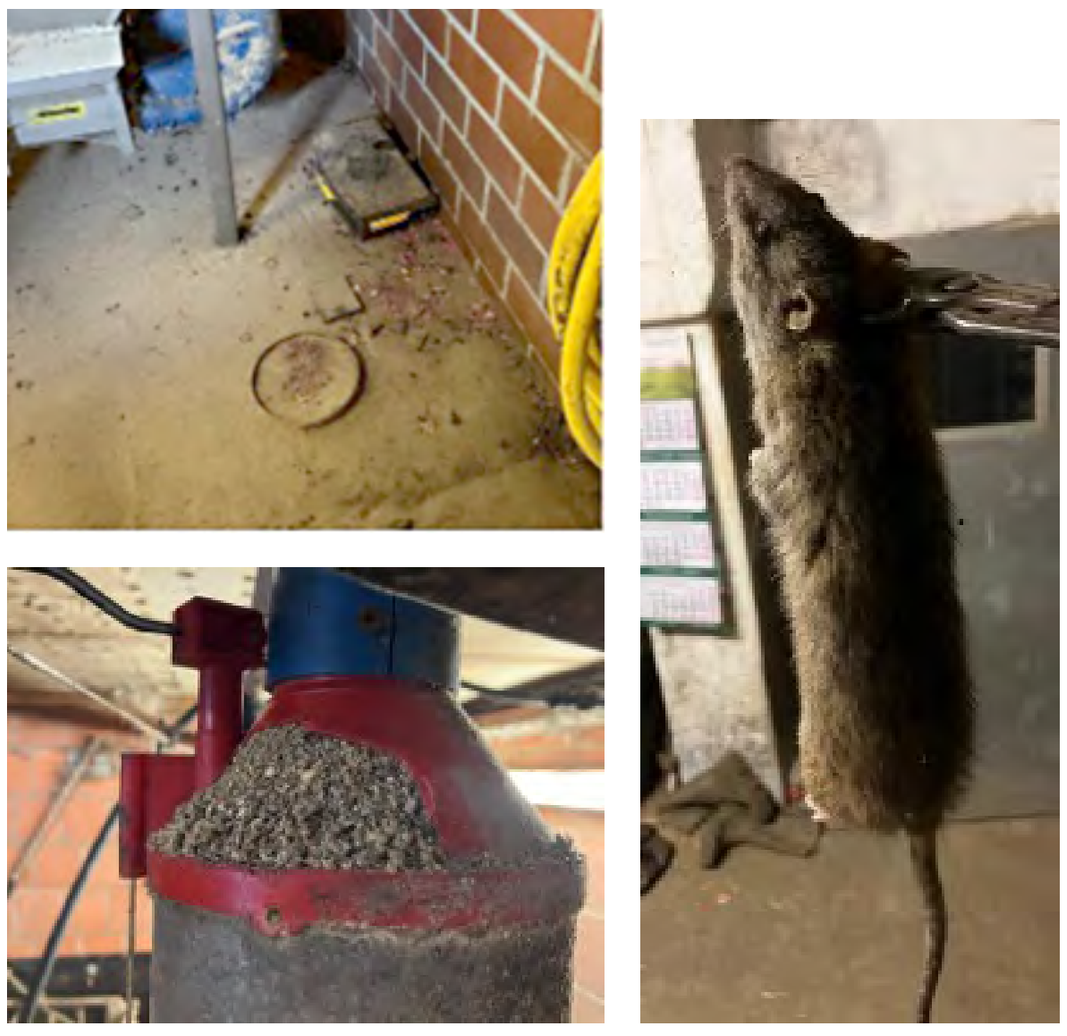

Figure 2 : A severe rodent infestation on the farm was apparent at multiple points, including a destroyed volume doser, inadequately maintained bait boxes and a substantial rat population.
Source: Anton Schulte zu Sundern

Discussion & Conclusion

Leptospira diagnostics can be a puzzle. Besides serological investigation and direct findings in aborted fetuses, investigation of rats helped to understand *Leptospira* epidemiology and infectious pressure in this field case. Especially *Leptospira* serogroup Icterohaemorrhagiae, including serovars Icterohaemorrhagiae and Copenhageni, is related to rats (esp. *Rattus norvegicus*). Rats are usually asymptomatic chronic shedders and contaminate the environment through urine (1,2). Rodent control is an essential, yet often overlooked, biosecurity measure in swine production.

References

1: Strutzberg-Minder und Kreienbrock,2011; Leptospireninfektionen beim Schwein: Epidemiologie, Diagnostik und weltweites Vorkommen; Berliner und Münchener Tierärztliche Wochenschrift 124, Heft 9/10 (2011), Seiten 34–359.

2: Mayer-Scholl et al., 2014; *Leptospira spp*. in Rodents and Shrews in Germany; Int. J. Environ. Res. Public Health 2014, 11, 7562-7574.

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MSD Animal Health

Improvement of reproduction parameters after vaccination against Leptospirosis on 3 Hungarian swine farms. A field study

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Introduction

Leptospirosis is an important zoonotic disease affecting swine worldwide and is recognized as a cause of reproductive failure, including abortions, stillbirths, and the birth of weak piglets – therefore causing economic losses in swine herds. The aim of this study was to evaluate economic impact after introduction of vaccination against the disease.

Materials & Methods

On 3 Hungarian farms (A+B+C), bigger than 1000 sows, breeders have been vaccinated against *Erysipelothrix rhusiopathiae*, *Porcine parvovirus* and PCV2 for decades, and are free from PRRSV. Before starting the vaccination trials, all three farms were suspected of being *Leptospira*-positive, which was confirmed by positive *Leptospira* MAT test from blood in all farms, as well as finding of *Leptospira* (PCR test) in organs (uterus wall, kidney slice) from one farm (Photo 1). In this field case, primary vaccination was done by vaccinating the breeders two times (4 weeks apart) with the combined Porcilis® Ery+Parvo+Lepto vaccine. Gilts got a primary vaccination before insemination. Regular revaccination with the same vaccine was done reproduction-oriented in the 2nd or 3rd week of lactation (breeders). The data for each year (without *Leptospira* vaccination / with *Leptospira* vaccination) were compared with regard to live born, pregnancy rate, mummies and abortions.

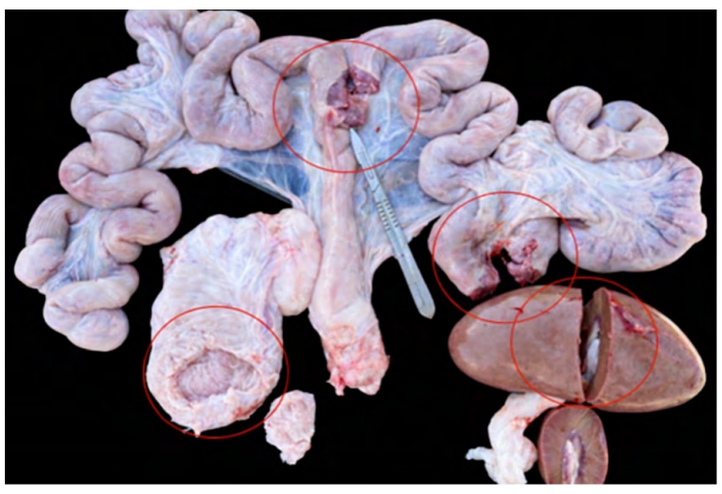


Photo 1: Sow genitals and urinary tract: Red circles show the sampling places for PCR for Leptospirosis (Péter Máté, Hungary)

Results

Results showed an increase of live born/litter (absolute number): A: +1.48, B: +0.9, C: +1.2; increase in pregnancy rate (% on the farms): A: +1.35, B: +2.1, C: +8.1; decrease of mummified embryos/litter on the farms (absolute number): A: -0.08, B: -0.2, C: -0.1; abortions prevalence changed on the farms (%): A: -67.7, B: -20.8, C: -68.4.

"A" farm		
Parameter	Change in numbers after vaccination	Change after vaccination %
Live born piglet/litter	**1.48**	11.5
Mummies/litter	-0.08	-26.7
Pregnancy rate (%)	1.35	**1.5**
Abortions/year	-42	-67.7

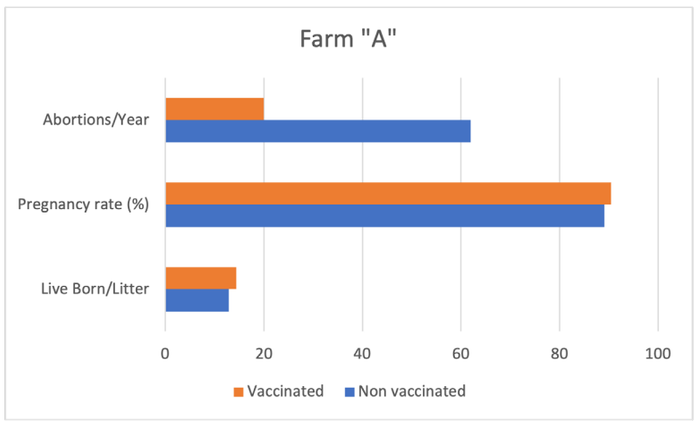
Table 1: Changes regarding reproduction parameters after implementing vaccination – farm "A"

"B" farm		
Parameter	Change in numbers after vaccination	Change after vaccination %
Live born piglet/litter	**0.9**	6.5
Mummies/litter	-0.2	-20
Pregnancy rate (%)	2.1	**2.3**
Abortions/year	-5.0	-20.8

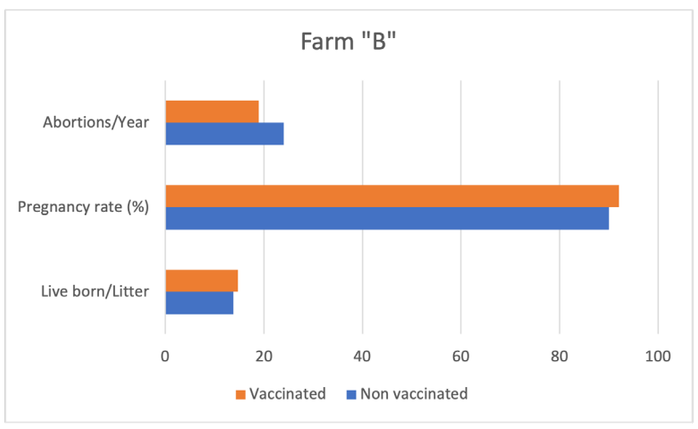
Table 2: Changes regarding reproduction parameters after implementing vaccination – farm "B"

"C" farm		
Parameter	Change in numbers after vaccination	Change after vaccination %
Live born piglet/litter	**1.2**	6.9
Mummies/litter	-0.1	-50.0
Pregnancy rate (%)	8.1	**9.0**
Abortions/year	-39.0	-68.4

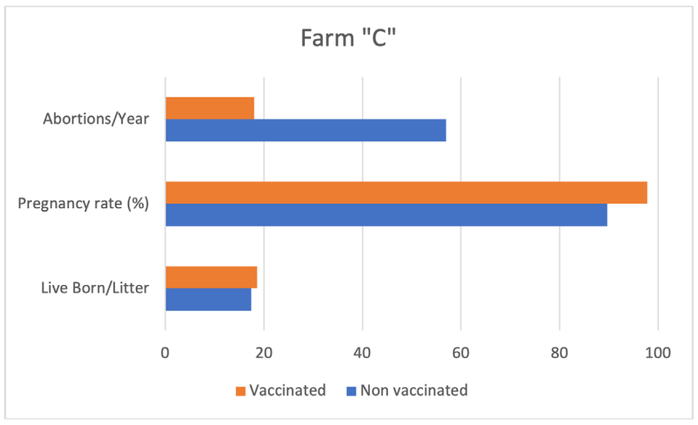
Table 3: Changes regarding reproduction parameters after implementing vaccination – farm "C"



Graph 1: Changes of 3 important parameters after vaccination against leptospirosis on farm "A"



Graph 2: Changes of 3 important parameters after vaccination against Leptospirosis on farm "B"



Graph 3: Changes of 3 important parameters after vaccination against Leptospirosis on farm "C"

Discussion & Conclusion

Published data on *Leptospira* in swine in Hungary are relatively limited but indicate seropositivity at low to moderate rates (frequently in the range of ~5–30%). Results from this field case indicate a visible effect on reproductive parameters by introducing the *Leptospira* antigens in vaccination – assuming there will be an economic benefit for *Leptospira*-positive farms when being vaccinated. This is in accordance with previous studies (1) showing the effects of a chronic uncontrolled leptospirosis infections in a sow herd, with differences in live born piglets, abortion rate, stillborn, weaned piglets and farrowing rate compared to data from a controlled leptospirosis. Further, vaccination against *Leptospira* offers the possibility to control the disease with vaccination, instead of using antibiotics.

References

1. Thomas Stein: Leptospira 7, Production and economic effects; International Pig Topics, Vol 31, Number 7.

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MSD Animal Health

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Two cases of leptospirosis with two different clinical outcomes

1 **Background & Objectives:** Leptospirosis in sows is associated with abortions, SMEDI and stillborns. At the same time, hemolytic icterus has been described in suckling piglets after intrauterine infection. Both outcomes were seen in two Austrian farms. These case reports should emphasize the diagnostic challenges and farm-specific solutions.

2

Leptospira (L.) serovar	1. Serum sample (n=8)	2. Serum sample three weeks later (n=8)
Copenhageni	Negative (5x)	**1:100 (2x)** **1:50 (1x)**
Bataviae	Negative (5x)	**1:100 (1x)**

Table 1: *Leptospira* microscopic agglutination test (MAT) as the reference test method for the serodiagnosis of leptospirosis. Only positive results of case 1 are shown. Three sows showed a serologic reaction on *L. interrogans* serogroup Icterohaemorrhagiae serovar Copenhageni, a rodent-associated serovar. Both serovars are not part of the standard diagnostic panel in Austria, emphasizing the importance of direct pathogen detection.

Liver histopathology revealed severe, acute, multifocal to coalescing, suppurative-necrotizing **hepatitis**.

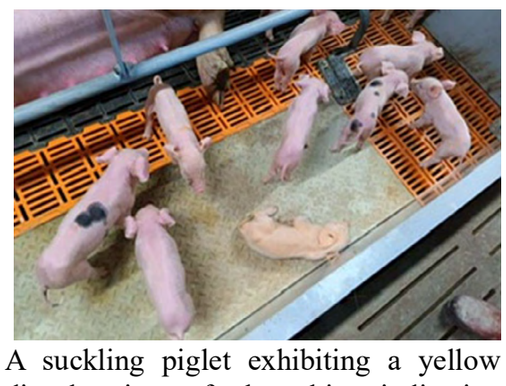
Case 1: A 100-sow herd experienced late-term abortions and stillborn litters in individual sows of one batch following a massive rodent incursion after a major flooding event.

Dead mice as a sign of rodent incursion.

Stillborn litter with no visible signs of SMEDI. Indicative of an acute infectious cause.

A pooled organ sample (kidney, lung, liver) was ***L. interrogans*** **PCR-positive**.

3 **Case 2:** In a 240-sow herd, several gilt litters showed a high proportion of icteric newborn piglets, accompanied by an elevated mortality rate.



A suckling piglet exhibiting a yellow discoloration of the skin, indicating jaundice, with Leptospirosis considered as a differential diagnosis.

In organs of icteric piglets, ***Mycoplasma parvum*** and ***L. interrogans*** were identified via PCR.

L. serovar	1. Serum sample (n=5)	2. Serum sample three weeks later (n=5)
Pomona	Gilt 540: **1:800** Gilt 541: **1:800** Gilt 547: **1:1600**	Gilt 540: **1:800** Gilt 541: **1:400** Gilt 547: **1:3200**
Bratislava	Gilt 540: **1:800**	Gilt 540: **1:400**

MAT test, only positive results are shown. Three out of five sows showed a serologic reaction *on Leptospira interrogans* serogroup Pomona serovar Pomona, a swine-associated serovar.

Liver and kidney histopathology was consistent with **hemolytic jaundice**.

4 **Follow up:** In both cases, clinical signs resolved after **antibiotic treatment**. **Farm 1**: 12.5 mg/kg doxycycline; 14 days, orally, all sows. **Farm 2**: sows and gilts 20 mg/kg Oxytetracycline (OTC) i.m.; additionally 40 mg/kg OTC orally for 10 days.

Herd **vaccination** against *Leptospira* was implemented as a long-term control.
Farm 1: Entire sow herd.
Farm 2: Gilts only.
Clinical signs decreased markedly in the following batches.

5 **Conclusion:** Leptospires are present in the Austrian swine population, posing diagnostic challenges (no seroconversion; detection of co-infections). Vaccination combined with biosecurity (rodent control!) is a valuable prophylactic approach that may reduce antimicrobial use.

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Changes in adaptation of gilts prior to mating influences the enteric virome of their offspring

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Background & Objectives

The porcine enteric virome is the assemblage of eukaryotic viruses residing in the gastrointestinal tract of pigs. A surprisingly consistent pattern of enteric virus infections was identified on seven well-performing farms in the Netherlands (Schyns et al., 2025), whereas a disbalanced virome may be associated with wasting disease (Folgueiras et al., 2021). This study aims to investigate the role of adaptation of gilts prior to mating in relation to the circulation of enteric viruses in their offspring in the first ten weeks of life.

Materials & Methods

A 700-sow farm with post-weaning wasting syndrome, specifically in litters from gilts, was identified. A management change in adaptation of gilts prior to mating was applied. The “old” strategy entailed that the gilts came in contact with feces – mostly from sows and occasionally from piglets – from the farrowing stable during the rearing period. The “new” strategy allowed direct contact between gilts and sows and recently introduced gilts in the insemination unit. To investigate the circulation of enteric viruses, ten rectal swabs per age group (2, 3.5, 5, 7 and 10 weeks of age) were collected from piglets before and after the management change. The composition of the enteric virome was determined by nanopore sequencing and virus-specific qPCRs for Rotavirus type A (RVA) & C (RVC), Porcine Astrovirus (PAstV) 1-5, Porcine Kobuvirus (PKoV), Porcine Sapelovirus (PSV), Enterovirus G (EV-G) & Porcine Sapovirus (PSaV).

Results

No clinical signs from post-weaning wasting syndrome were observed after the management change. In piglets born from gilts in the “old” adaptation strategy, RVC was prominent before weaning (see Figure 2). This contrasts sharply with the detection of RVA before weaning in piglets born from gilts in the “new” adaptation strategy (see Figure 1). For PAstV1-5, PKoV, EV-G & PSaV, no major differences were observed.

Discussion & Conclusion

The change in adaptation strategy of gilts prior to mating resulted in less clinical problems and appeared associated with an altered virome composition in their offspring, without detection of RVC before weaning. RVC wasn’t detected prior to weaning in a virome study on seven well-performing farms in the Netherlands, whereas RVA was found (Schyns et al., 2025). Both viruses are potentially pathogenic but circulate also in clinically healthy piglets. Although the observations may be influenced by sequential sampling, the reduced number of affected piglets may be associated with gilt adaptation.

References

1. Folgueiras-González, A., van den Braak, R., Deijs, M., Kuller, W., Sietsma, S., Thuring, V., van der Hoek, L., & de Groof, A. (2021). Dynamics of the Enteric Virome in a Swine Herd Affected by Non-PCV2/PRRSV Postweaning Wasting Syndrome. Viruses, 13(12), 2538. https://www.mdpi.com/1999-4915/13/12/2538
2. Schyns, M. A. R., van den Braak, R., Peijnenborg, J., Coppens, S., Deijs, M., Burggraaff, M. G. J. M., Kuller, W. I., Theuns, S., van der Hoek, L., & de Groof, A. (2025). Characterization of the enteric virome of clinically healthy pigs around weaning on commercial farms in the Netherlands using next generation sequencing and qPCR. Porcine Health Management, 11(1). https://link.springer.com/article/10.1186/s40813-025-00446-5

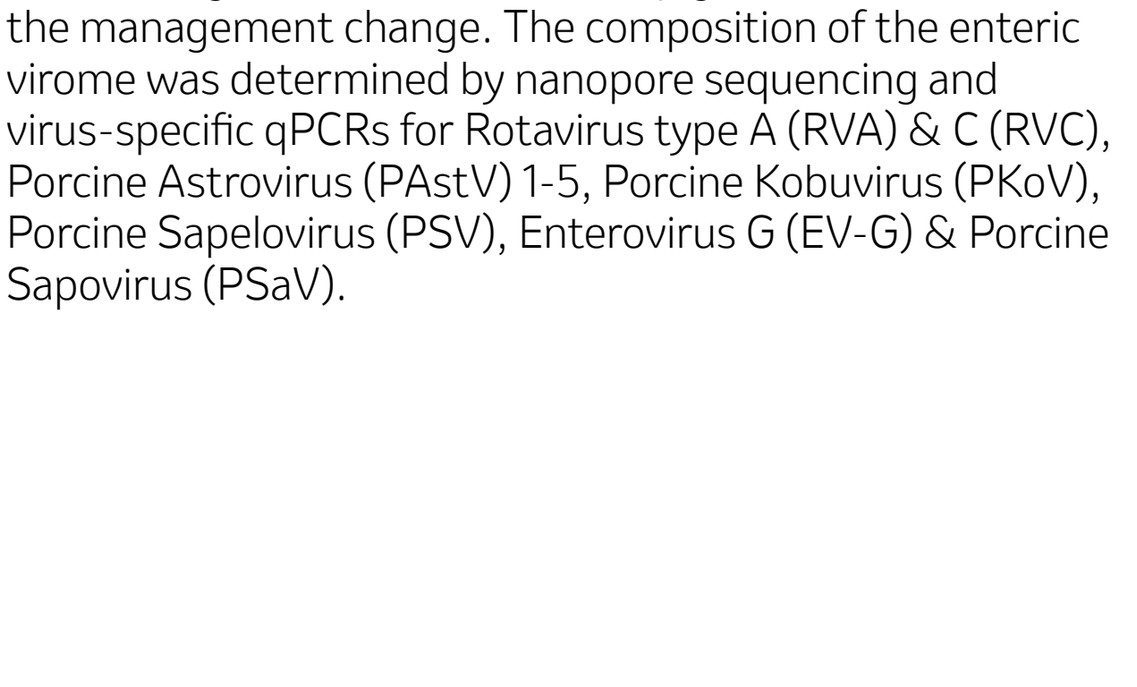

Figure 1: Average semi-quantitative scores of Nanopore sequencing for Rotavirus A (RVA) per age group of piglets (not detected = 0, very low = 1, low = 2, medium = 3, high = 4 and very high = 5)

Figure 2: Average semi-quantitative scores of Nanopore sequencing for Rotavirus C (RVC) per age group of piglets (not detected = 0, very low = 1, low = 2, medium = 3, high = 4 and very high = 5)

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MSD Animal Health

Study of the humoral immune response in sows and piglets after vaccination against Rotavirus A

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Background & Objectives

Rotavirus A (RVA) is the most important rotavirus species in swine production, causing neonatal diarrhea. Vaccination can improve production parameters and reduces antimicrobial use. Because most herds are RVA-positive with baseline antibodies, evaluating the immune response induced by Porcilis® Rota is important to confirm correct vaccination practices. This study aimed to evaluate the dynamics of specific antibodies against rotavirus, induced after sow vaccination, and the passive transfer to piglets via lactogenic immunity, using a commercial ELISA in sera.

Materials & Methods

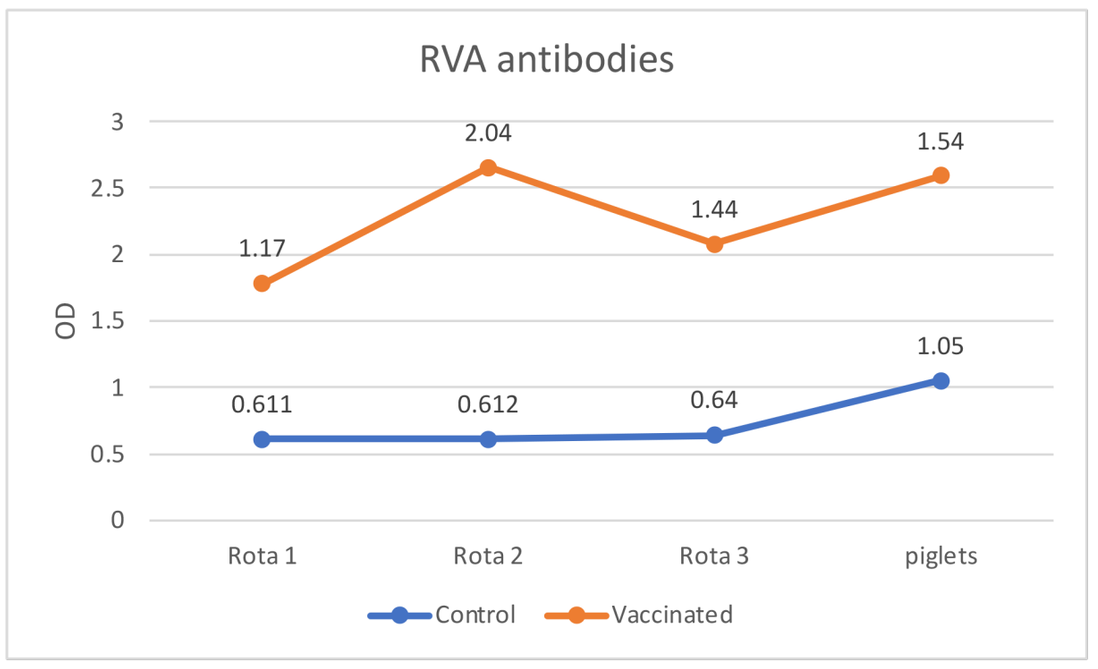
Forty-five parity-one pregnant sows from a single Danbred genetics gestation unit were selected. Control group (GC): unvaccinated, n = 5. Vaccinated group (GV): n = 40, given Porcilis® Rota with a primary schedule of two doses at 5- and 2-weeks pre-farrowing. Thirty-nine piglets were included (three piglets per sow from 2 sows in GC and 11 sows in GV). The farm was RVA-positive. Blood samples were collected from sows before first vaccination and 15 days after re-vaccination; piglets were sampled 24 hours after birth. Specific anti-RVA antibodies were quantified using the Ingezim ROTAVIRUS PORCINO kit (indirect ELISA), which uses a monoclonal antibody specific for porcine IgG and RVA antigen. Statistical analysis was performed (Kolmogorov-Smirnova, Shapiro-Wilk tests).

Image 1: Porcilis® Rota, the vaccine used in this trial

Image 2: Diagram of the study vaccination and blood-sampling protocol

Results

Sow antibody values (optical density / ELISA units): after first vaccine dose — GC: 0.611, GV: 1.17 (p = 0.021); at revaccination — GC: 0.612, GV: 2.04 (p=0.018); 15 days after revaccination — GC: 0.64, GV: 1.44 (p=0.069). Within-group comparisons across time points: GC p = 0.573, GV p=0.006. Piglet antibody values: GC: 1.05, GV: 1.54 (p=0.518).



Graph 1: RVA antibody response in sows during the vaccination protocol and in their piglets, in vaccinated and control group

Discussion & Conclusion

RVA vaccination induced significant seroconversion in RVA-vaccinated sows despite baseline seropositivity, an effect not observed in controls.

These findings confirm effective sow vaccination and colostrum-derived passive protection in piglets, underscoring maternal lactogenic immunity as the primary mechanism controlling RVA in neonates and validating current vaccination practices.

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Genotypic Diversity of Porcine Rotavirus A in Spanish Pig Farms

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Background & Objectives

Porcine Rotavirus A (RVA) causes neonatal diarrhea, mortality and reduced weight gain, resulting in major economic losses for the Spanish pig industry (1). RVA shows high antigenic and genetic variability (2), requiring ongoing genotypic monitoring for accurate epidemiological surveillance. This study aimed to identify and characterize predominant RVA genotypes in Spanish pig farms through VP7 and VP4 gene sequencing and phylogenetic analyses to evaluate genomic diversity.

Materials & Methods

Fecal samples from 116 Spanish pig farms (from a prior study including diarrheic feces from piglets during lactation) were screened by RT-qPCR regarding RVA. Samples with Ct<30 were selected for partial sequencing of the VP7 and VP4 genes using previously published primers (3)(4)(5) and primers designed in this study. RVA genotypes were assigned using BLAST following Rotavirus Classification Working Group (RCWG) guidelines (6). Phylogenetic analyses were performed using MEGA X (7) and the Maximum Likelihood method.

Results

In total, 55 fragments from VP7 and 54 fragments from VP4 coding region were genotyped. Among the G genotypes, G9 was the most prevalent (42.0%), followed by G4 (25.8%), while G3 and G5 were less frequent (16.1% each). Regarding P genotypes, P[7] was the most common (34.3%), followed by P[13] (25.3%) and P[23] (22.4%), with P[6] (14.9%) and P[19] and P[32] (1.5% each) being less frequent. The most prevalent G–P genotype combinations in Spain were G9P[7], G9P[23], G4P[7], G4P[6], and G3P[7].

Regional patterns showed predominance of G9P[23] and G9P[7] in some areas, but no single combination was exclusive to any region due to considerable local variability.

Discussion & Conclusion

The results of this study align with previous findings that indicate a progressive reduction in RVA genotype diversity compared with earlier years, reflecting displacement of older genotypes by G9-associated strains - likely due to their higher fitness, virulence, and zoonotic potential. Continuous molecular surveillance is essential to monitor viral evolution and detect emerging or zoonotically relevant variants in Spanish pig populations.

References

1. Shepherd FK, Freeman MJ, Culhane MR, Marthaler DG. Reoviruses (rotaviruses and reoviruses). In: Zimmerman JJ, Karriker LA, Ramirez A, Schwartz KJ, Stevenson GW, Zhang J, editors. Diseases of swine. Eleventh Edition: John Wiley & Sons, Inc.; 2019. pp. 715–27.
2. Vlasova AN, Amimo JO, Saif LJ. Porcine rotaviruses: Epidemiology, immune responses and control strategies. Viruses. 2017;9(3):1–27.
3. Fujii, Y.; Shimoike, T.; Takagi, H.; Murakami, K.; Todaka-Takai, R.; Park, Y.; Katayama, K. Amplification of all 11 RNA segments of group A rotaviruses based on reverse transcription polymerase chain reaction. Microbiol. Immunol. 2012, 56, 630–638.
4. Isegawa, Y.; Nakagomi, O.; Nakagomi, T.; Ishida, S.; Uesugi, S.; Ueda, S. Determination of bovine rotavirus G and P serotypes by polymerase chain reaction. Mol. Cell. Probes 1993, 7, 277–284.
5. Gentsch, J.R.; Glass, R.I.; Woods, P.; Gouvea, V.; Gorziglia, M.; Flores, J.; Das, B.K.; Bhan, M.K. Identification of group a rotavirus gene 4 types by polymerase chain reaction. J. Clin. Microbiol. 1992, 30, 1365–1373.
6. Matthijnssens J *et al*. Recommendations for the classification of group A rotaviruses using all 11 genomic RNA segments. Arch Virol (2008) 153:1621–1629.
7. Kumar S, Stecher G, Li M, Knyaz C, & Tamura K (2018). MEGA X: Molecular Evolutionary Genetics Analysis across computing platforms. Molecular Biology and Evolution, 35(6), 1547–1549.

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MSD Animal Health

Infection dynamics of Rotavirus A and C in suckling pigs

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Background & Objectives

The neonatal period (birth to weaning) is a critical window for piglet survival and growth. Immature immunity makes piglets highly susceptible to enteric pathogens, among which rotaviruses (RVs) remain major causes of neonatal diarrhea (1). Characterizing Rotavirus A (RVA) and Rotavirus C (RVC) infection helps clarify infection dynamics and supports prevention and control. Thus, the objective of the study was to determine RVA and RVC infection dynamics in neonatal piglets by ascertaining their shedding patterns under field conditions.

Materials & Methods

The study was conducted on a farm endemically infected with both viruses. Fifty-two litters in two rooms from RV non-vaccinated sows were included. Piglets were individually identified at farrowing and monitored daily for diarrhea. From the first ten litters showing clinical signs, fecal samples from five piglets per litter were randomly collected (including all piglets with diarrhea and completing to five with litter mates) and followed longitudinally for the first three weeks of life. Fecal samples were collected daily from the onset of diarrhea (samples 1–8), every other day during the second week (samples 9–11), and every three days in the third week (samples 12–14), thereby covering the entire lactation period. The presence of RVA and RVC was determined and quantified by commercial RT-qPCR (INgene q Rotavirus A and INgene q Rotavirus C (Gold Standard Diagnostics™, Madrid)) (2). Ct values were compared using Dunn's test and the proportion of positive samples was evaluated using Fisher's exact test (significance $p < 0.05$).

Results

The onset of diarrhea was recorded during the first week of life in all ten litters followed in this study. During the first ten days after the onset of diarrhea, the percentage of positive RVC samples ranged from 40 to 50%, decreasing thereafter and nearly disappearing by day 14. Correspondingly, Ct values increased over time, indicating an early and transient infection pattern characterized by high viral loads at onset and gradual clearance thereafter. On the contrary, RVA exhibited lower initial positivity (~20%), peaked at day 14 (>70%) and persisted (with positivity ranging from 20 to 50%) thereafter. Consistently, RVA Ct values remained relatively stable (30–40), indicating moderate, yet sustained replication and circulation than RVC.

Discussion & Conclusion

Under the conditions of this study, RVA and RVC displayed clearly different infection dynamics in suckling piglets. This temporal divergence suggests that both viruses occupy distinct epidemiological niches in neonatal diarrhea. The early predominance of RVC may be associated with lower maternal immunity or competitive interference between co-infecting viruses, potentially mediated by innate antiviral responses limiting subsequent viral replication.

References

1. Shepherd FK, Freeman MJ, Culhane MR, Marthaler DG. Reoviruses (rotaviruses and reoviruses). In: Zimmerman JJ, Karriker LA, Ramirez A, Schwartz KJ, Stevenson GW, Zhang J, editors. Diseases of swine. Eleventh Edition: John Wiley & Sons, Inc.; 2019. pp. 715–27.
2. Marcos-Cienfuegos M, Jiménez M, Menjon R, Castillo-Pérez JJ, Martinez-Lobo J, Prieto C. Evaluation of different RT-qPCR tests to detect Rotavirus A and Rotavirus C in fecal samples. In: Proceedings 27th International Pig Veterinary Society Congress and 15th European Symposium of Porcine Health Management. 2024; p.259.

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MSD Animal Health

Urine progesterone kit validation test

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Background & Objectives

Staging of the estrous cycle via progesterone (P4) measurement is essential for identifying reproductive issues in gilts and sows. Conventional serum testing entails multiday laboratory turnaround, whereas a rapid on-farm blood P4 kit enables immediate decision-making. Because venipuncture can be difficult, urine sampling may be an alternative. This study assessed whether a rapid serum-based P4 kit can be applied to urine, assuming urine-excreted progesterone reflects serum progesterone and that the serum progesterone cutoff (10 ng/mL) applies to urine for binary classification.

Materials & Methods

Serum samples from 40 commercial DanBred sows were divided into two aliquots: one analyzed in the laboratory via PNT-HOR-30409 (ELFA; ng/mL), the other tested on-farm with the MSD AH progesterone kit (five serum drops per test). Urine from the same sows was tested in parallel with the MSD AH kit (five urine drops per test). Kit results were read at 15 minutes and classified as positive (P4 > 10 ng/mL) or negative (P4 < 10 ng/mL). Method agreement was evaluated with bilateral Fisher's exact test. Samples showing macroscopic or analytical evidence of autolysis at the reference laboratory were excluded from agreement analyses to avoid misclassification.

Photo 1: Urine sample prepared to start with the progesterone kit (MSD AH internal)

Results

Agreement between the MSD AH kit applied to serum and to urine was observed in 35 concordant positives and 3 concordant negatives (n = 38; Fisher's exact p < 0.001).

Between the MSD AH kit (serum) and ELFA serum, concordance was significant
(MSD AH 18+/3– vs ELFA 19+/2–; n = 21; p = 0.014).

Between the MSD AH kit (urine) and ELFA serum, concordance was likewise significant
(MSD AH 19+/3– vs ELFA 20+/2–; n = 22; p = 0.013).

The calculation of sensitivity (S), specificity (E), and positive (PPV) and negative (NPV) predictive values. Total positives (TP), total negatives (TN), false negatives (FN), false Positives (FP) was also done.

Photo 2: Results of the progesterone kit with the urine sample (MSD AH internal)

Serum P4 kit	ELFA = 1	ELFA = 0
1	18 (TP)	0 (FP)
0	1 (FN)	2 (TN)

Sensitivity 0.95, Specificity 1.00, PPV 1.00, NPV 0.67.

Table 1: Serum kit vs. ELFA

Urine P4 kit	ELFA = 1	ELFA = 0
1	19 (TP)	0 (FP)
0	1 (FN)	2 (TN)

Sensitivity 0.95, Specificity 1.00, PPV 1.00, NPV 0.67.

Table 2: Urine kit vs. ELFA

Both matrices showed high agreement with the ELFA reference, with identical diagnostic performance.

A subset of samples shipped to the reference laboratory exhibited autolysis; although assays were performed, those results were excluded a priori to prevent degradation-driven misclassification.

Discussion & Conclusion

The rapid P4 kit concordance supports urine testing for binary classification around the 10 ng/mL threshold. Kit-derived serum values correlated well with ELFA, while urine results aligned closely with kit serum and ELFA results. Using urine as an alternative sample could reduce invasiveness, improve sampling practicality, and accelerate on-farm decisions for estrous-cycle staging and reproductive troubleshooting.

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Technology

Individual traceability as a decision-making tool on farms

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Background & Objectives

Individual swine productivity data is key for optimizing performance, detecting potential early health issues and enabling precise veterinary interventions. LeeO is a traceability system, integrating RFID technology and cloud-based data management for individual animal monitoring from birth to harvest. The objective of the study was to evaluate productive parameters on a commercial farm assisted by LeeO data capture, traceability and analysis, to gauge impact beyond the company's objectives.

Materials & Methods

650 piglets were selected at birth from a 2,500-sow DanBred herd and randomized within same farrowing batches by sex, sow parity, viability and birth weight. Piglets received ultra-high-frequency (UHF) ear tags, and data were recorded in LeeO. Individual weights were taken at birth (BW), weaning (WW) (27 days), and pre-slaughter at 26 weeks (FW) using the LeeO scale. Collected data underwent production performance and statistical analysis.

Photo 1: Tags & weight process at birth. MSD Animal Health Internal

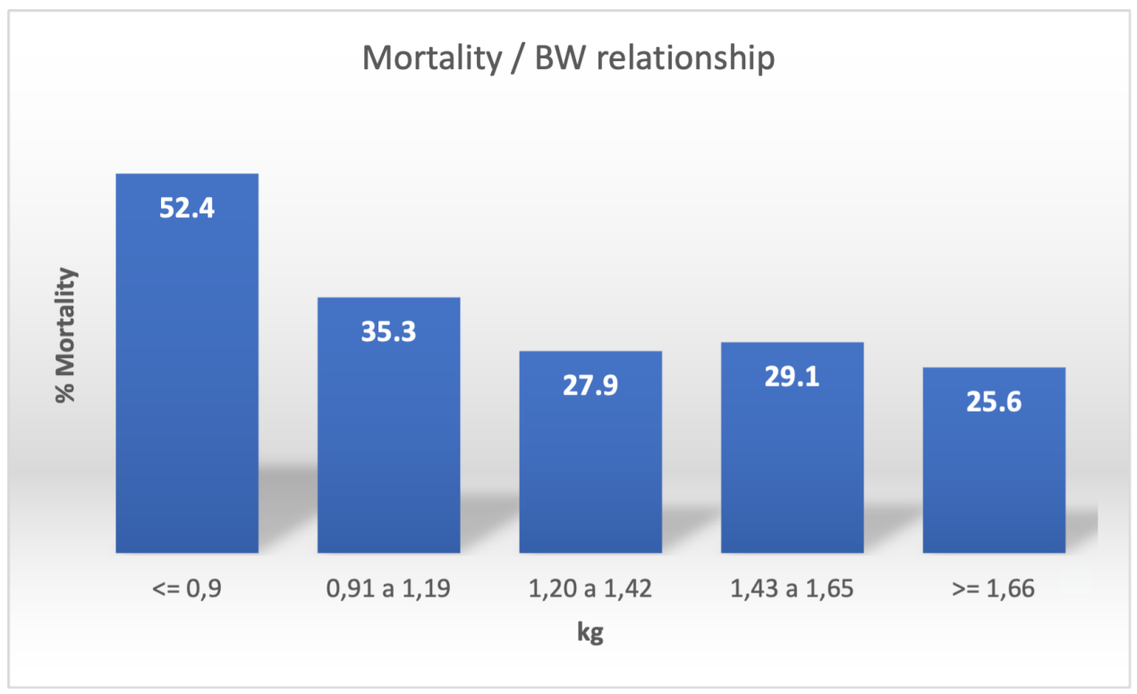
Results

Weight study

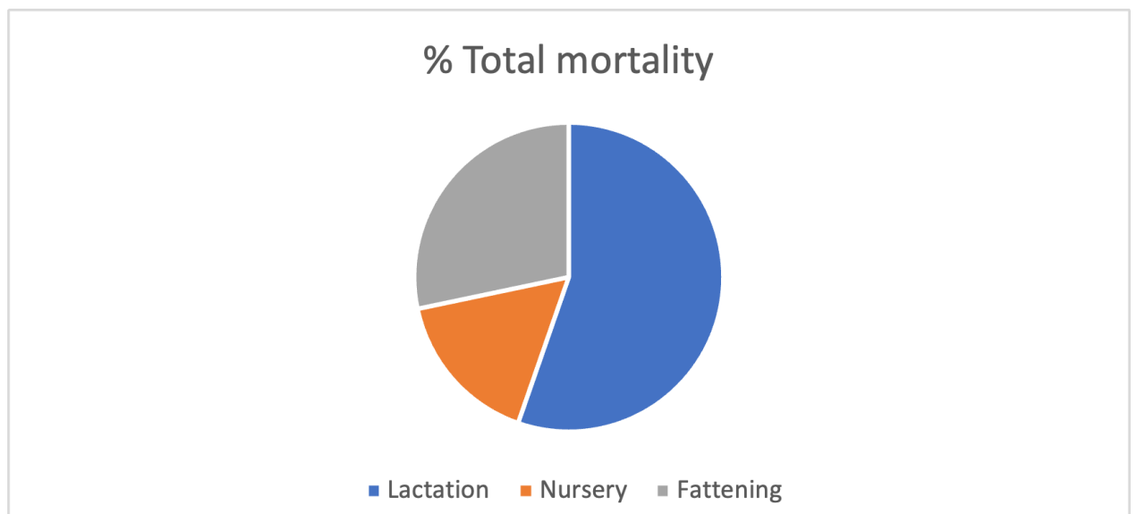
- BW correlates moderately with WW (r=0.44) and weakly with FW (r=0.33); WW best predicts FW (r=0.49). Weaning <6 kg often leads to lower FW.
- No sex differences in BW/WW, but males heavier at FW (111.5 vs. 106.9 kg; p=0.009).
- Relation with parity: Higher BW and WW were associated with higher sow parity (p < 0.001). Piglets from parity 1 sows had lower FW than those from higher parities (110,22 kg vs. 111,7 kg) (p < 0.001).

Mortality study

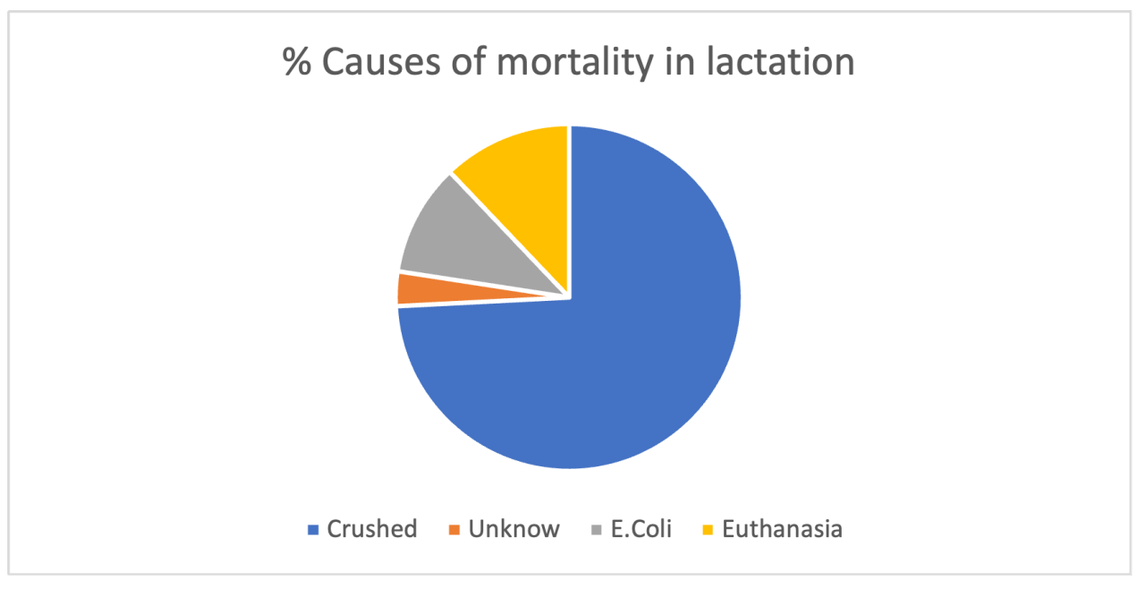
- > % mortality in BW ≤ 0.9 kg (p = 0.025); represent 52.4% of total mortality.
- Mortality by phase: 18% during lactation, 5% in the nursery, and 9% during the growing-finishing period. Causes of death were 74% crushing, 10% neonatal diarrhea, 12% euthanasia, and 4% other causes.
- No association between BW and cause of death during lactation. Statistically significant difference by parity, > in parity 1 (p = 0.046).



Graph 1: Relationship between total mortality and body weight in the piglets



Graph 2: % mortality in the different production phases



Graph 3: Different causes of piglet mortality in lactation

		Birth weight (Average ± SEM)	Litters
First Parity	Female	1,25 ± 0,08	16
	Male	1,15 ± 0,06	17
Second Parity	Female	1,05 ± 0,06	6
	Male	1,13 ± 0,07	2
Multiparous	Female	1,35 ± 0,07	34
	Male	1,5 ± 0,09	49

Table 1: Birth weight results in relationship with the parity of the sows

Discussion & Conclusion

Based on data from this study, WW emerges as a stronger predictor of FW than BW. The findings also suggest that individual electronic identification can inform specific adjustments in nutrition, management, and housing; under the conditions evaluated, such adjustments could be associated with improvements in production metrics.

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Miscellaneous

Workflow for PCV3 ORF2 sequence homology analysis between farm isolates and vaccine antigen

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Background & Objectives

Porcine circovirus type 3 (PCV3) has been detected globally, and continuous genomic surveillance is essential to identify emerging divergence that could impact disease expression or vaccine performance.
The objective of this study was to evaluate PCV3 sequences from Canadian field samples (2021–2025) and to assess their similarity among each other and to the ORF2 (PCV3 capsid gene) antigen included in the Sequivity® PCV3 vaccine.

Materials & Methods

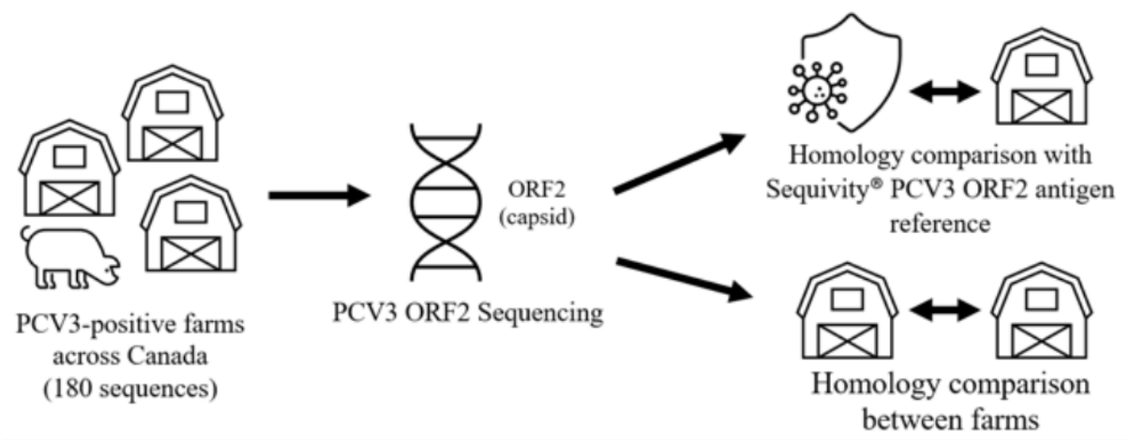

Figure 1: Workflow for PCV3 ORF2 farm and vaccine sequence comparison

Results

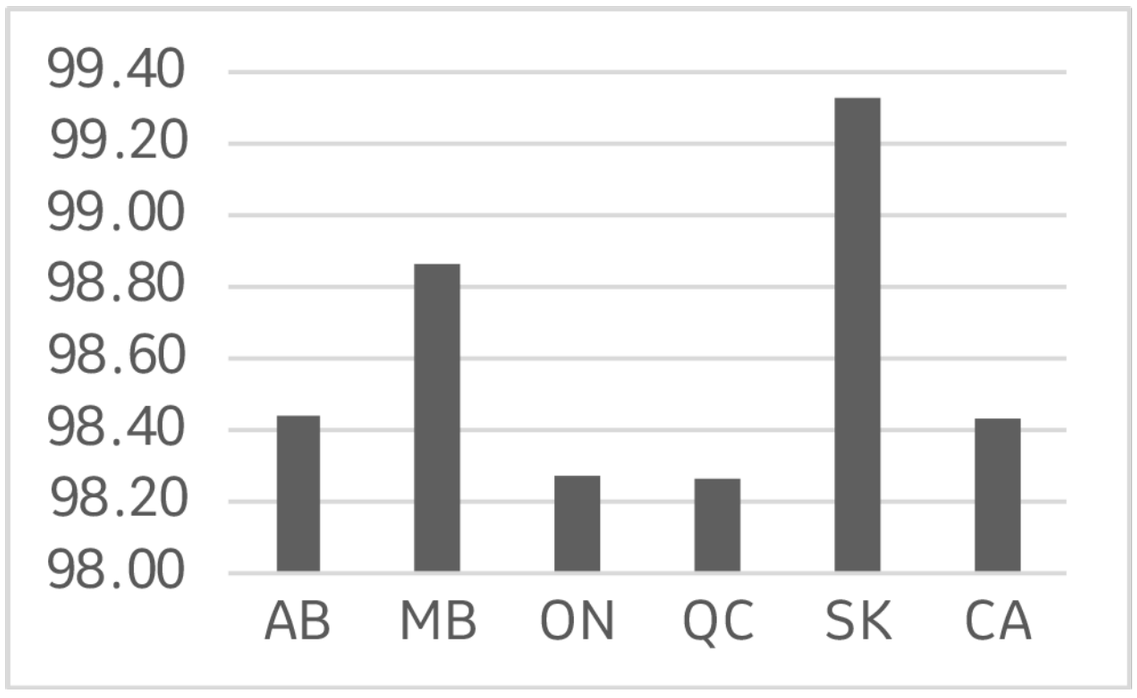

Figure 2: PCV3 ORF2 homology by province and Canadian average

Results - continued

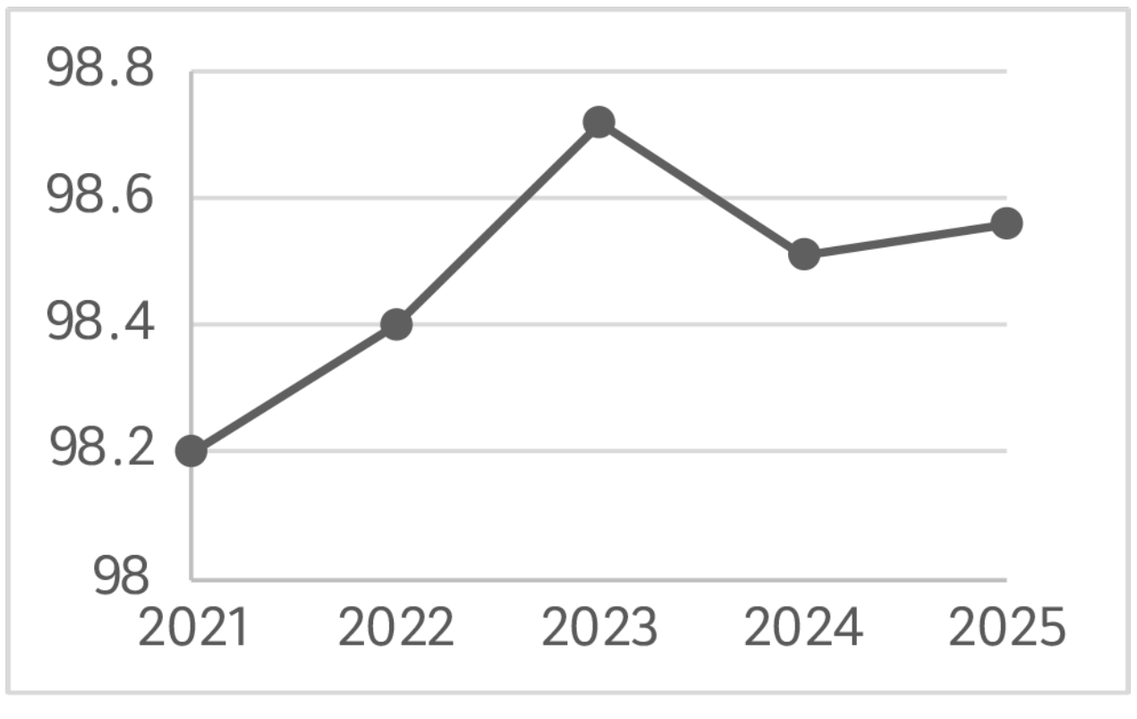

Figure 3: Annual average PCV3 ORF2 homology from farm submissions

Discussion & Conclusion

From 2021 to 2025, Canadian PCV3 ORF2 sequences showed high genetic stability and close alignment with the vaccine antigen, supporting its continued relevance. Continued genomic surveillance, including whole-genome analyses and field-level vaccine performance monitoring, remains important.

References

Klaumann, F., et al. 2018. DOI: 10.3389/fvets.2018.00315.

Zhang, M., et al. 2022. DOI: 10.1002/vms3.851

De Grau, F. & Malgarin, C. 2023. Allen D. Leman Swine Conference Research Abstracts, pg 28.

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MSD Animal Health

Timing and intensity of serum cortisol response following needle-free intradermal vs. conventional intramuscular vaccination in weaned piglets

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Background & Objectives

Extensive research has been done to understand the benefits of intradermal vaccination vs. intramuscular vaccination with a needle. While cortisol levels have been used to quantify stress responses in animals following vaccination, most publications have focused on behavior assessments to determine stress. Those that measured cortisol typically sampled from saliva, with few studies sampling serum. It has been hypothesized that the cortisol in these studies was sampled either too soon or too late after vaccination to provide meaningful results. The objective of this study was to assess if there would be a significant difference between serum cortisol levels in weaned piglets one hour post-vaccination using an intradermal needle-free injection device vs. a traditional intramuscular livestock injector syringe and needle.

Materials & Methods

1123 freshly weaned piglets were separated into groups: vaccinated intradermally with one combined dose of 0.2 mL Porcilis® PCV ID and Porcilis® Lawsonia ID vaccines using the MSD Animal Health's needle-free IDAL® device, intramuscularly with one 2 mL dose of Circumvent® C-M-L vaccine using a livestock injector syringe and needle, or not vaccinated as a control group but subject to the same environment and handling. Piglets from each group were randomly selected for blood sampling one hour post-vaccination. Serum was separated from the blood and cortisol levels were determined using chemiluminescence.

Results

Statistical analysis of the data (Figure 1) determined that there was a significant difference between serum cortisol levels (nmol/L) in piglets vaccinated intradermally (min = <28.0, max = 268.0, mean = 94.8) vs. intramuscularly (min = 30.6, max = 579.0, mean = 185.9) ($p<0.001$). Interestingly, there was no significant difference between serum cortisol in piglets vaccinated intradermally vs. not vaccinated at all in the control group (min = <28.0, max = 189.0, mean = 91.8) ($p = 0.473$).

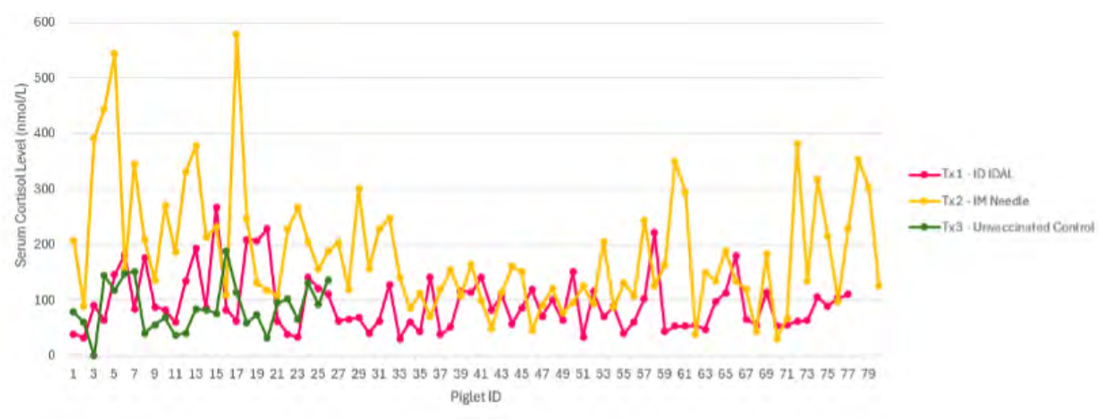

Figure 1: Treatment Group vs. Serum Cortisol Level (nmol/L) One Hour Post-Vaccination

Discussion & Conclusion

Overall, vaccinating intradermally with a needle-free device greatly reduced the serum cortisol present one hour post-vaccination compared to using an intramuscular injector with a needle. These results have implications for improving the welfare of pigs during vaccination.

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MSD Animal Health

Systematic bacterial investigation of on-farm piglet vaccination equipment

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Background & Objectives

Various prophylactic procedures, including vaccinations and iron applications, are administered to young piglets via intramuscular or subcutaneous injections. These procedures are often performed by rotating farm staff using multi-use equipment. Repeated use of syringes and needles creates a risk of cross-contamination and pathogen transmission between animals. To mitigate this risk, veterinary best practices recommend systematic needle replacement, such as between individual litters (1). This study describes the hygienic conditions of on-farm vaccination equipment through bacteriological analysis.

Materials & Methods

During single-herd inspections at 10 piglet-producing farms, vaccination equipment was systematically sampled and bacteriologically examined. Samples included: flush solutions from syringes prior to vaccination, needles after 25 and 50 injections respectively, and post-vaccination samples collected in sterile NaCl (n=46). Residual fluids of varying quantities were collected from syringes when available (n=7). Aerobic and anaerobic bacterial contamination was quantified using serial dilutions and cultivation on Columbia blood agar plates. *C. perfringens* was assessed qualitatively under anaerobic conditions (n=38). Suspected swine pathogens were identified phenotypically using classical bacteriological methods and MALDI-TOF chromatography.

Results

Overall, 98.8% (45/46) of samples with known initial volumes showed positive bacterial counts, averaging 8.95E+06 CFU/ml (range: <10 to 1.40E+08, SD 2.36E+07). Category I results (≤10 CFU/ml) were obtained in 6.5% (3/46), Category II (>10-1000 CFU/ml) in 10.9% (5/46), and Category III (>1000 CFU/ml) in 82.6% (38/46) of samples (Figure 1). *Clostridium* spp. were found in 89.5% (34/38), primary pathogens (*S. suis*, *S. hyicus*, *S. aureus*, hemolytic *E. coli*) in 15.2% (7/46), and *Pseudomonas* spp. in 32.6% (15/46) of samples (Figure 2). Residual fluids (n=7) yielded CFU/ml ranging from <10 to 7.80E+07.

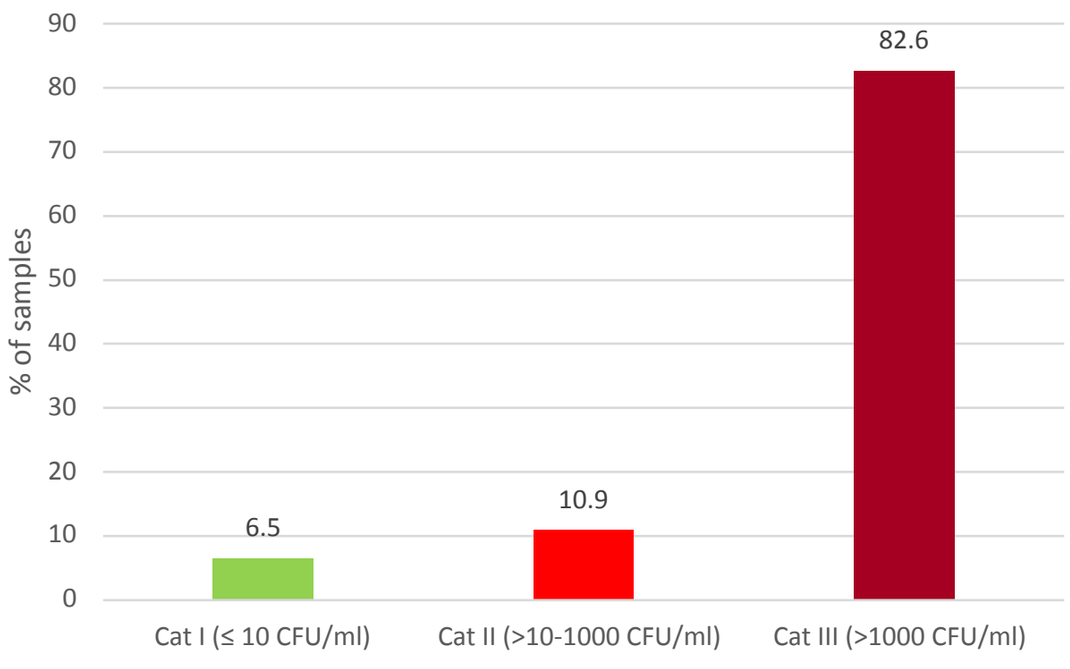

Figure 1: Bacterial contamination of vaccination equipment from samples with known initial volumes (n=46)

Results - continued

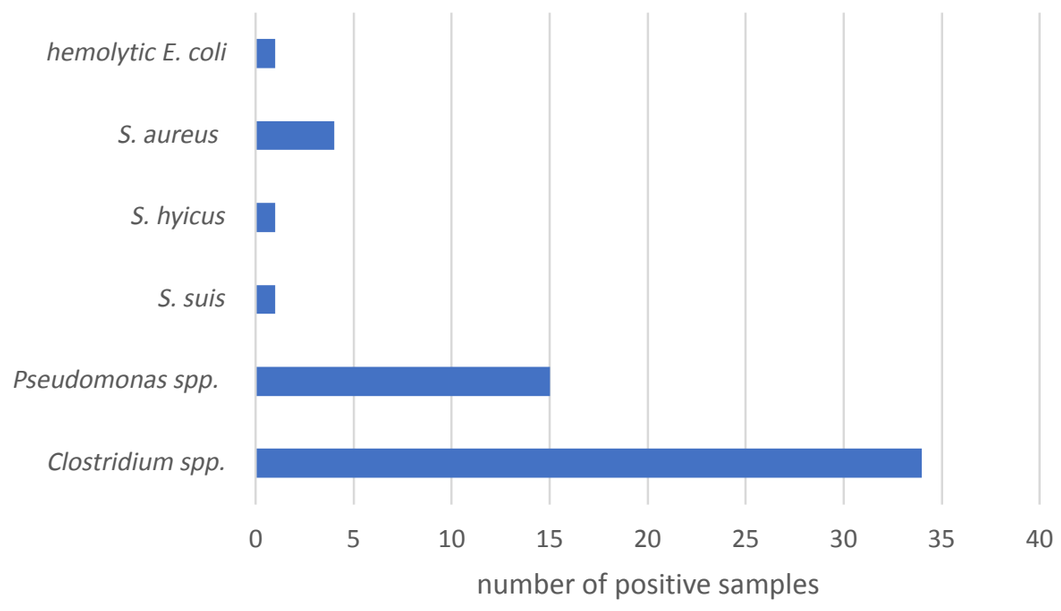

Figure 2: Number of samples tested positive for different bacteria (n=46; except for *Clostridium* spp. n=38)

Figure 3: Exemplary storage of vaccination equipment on an investigated farm

Figure 4: Macroscopically visible contamination of vaccination equipment prior to vaccination

Discussion & Conclusion

According to European Pharmacopoeia standards, Water for Injections should contain <10 CFU/100ml (2). These findings reveal extensive bacterial contamination of on-farm vaccination equipment, emphasizing the need for systematic cleaning and regular needle replacement. The detected pathogens may pose significant health risks, particularly to young or immunocompromised animals.

References

1. Vetsuisse-Fakultät & Gesellschaft Schweizer Tierärztinnen und Tierärzte (GST) & BLV, 2024; Impfleitfaden für Tierärztinnen und Tierärzte.
2. Ph. Eur. monograph “Water for Injections” (0169).

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MSD Animal Health

Hygienic aspects of intramuscular injections of sows on German farms

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Background & Objectives

Intramuscular injections are a standard procedure in sow farms with increasing frequency (1). In veterinary practice, the hygienic aspects of drug administration are often considered secondary to efficacy and side effects (2). Given the demand for antibiotic reduction, individual treatment of animals will become more important in contrast to oral treatment of groups. To minimize the transmission of pathogens by intramuscular application and to prevent potential subsequent infections, hygiene aspects will become more important in future. This study was conducted to obtain data on hygienic parameters of intramuscular injection practices on sow farms.

Materials & Methods

On 9 German sow farms (100-1500 sows, farm staff: 2-7 persons), standardized bacteriological sampling of needles and syringes was performed. Residual needles from syringes, flush solution collected prior to vaccination, as well as needles used for 25 resp. 50 injections, were collected at two time points per farm (n=56). Sampling intervals ranged from 1 to 12 weeks, depending on the farm-specific vaccination protocol. Quantification of aerobic and anaerobic bacterial contamination was performed using serial dilutions and cultivation on Columbia blood agar plates (Figure 1). Results were categorized in Cat I (<10 CFU/ml), indicating a low bacterial count; Cat II (11-1000 CFU/ml), indicating relevant bacterial contamination; and Cat III (> 1000 CFU/ml), indicating high bacterial contamination to allow a simplified quantitative assessment. *Clostridium perfringens* was assessed qualitatively (n=42). Suspected swine pathogens were identified phenotypically and by classical bacteriological differentiation methods. For further characterizations, MALDI-TOF spectrometry was used.

Figure 1: Bacterial colonies on Columbia blood agar plate.
Source: Stiftung Tierärztliche Hochschule Hannover

Results

In total, 56 samples were collected (28 per time point) with 91.07% (51/56) positive samples in bacteriological examination. Summarizing findings of all samples resulted in total colony forming units (CFU) per ml of 1.58E+08 (min <10; max 5.80 E+09; SD 8.05 E+08), while Cat I results were obtained in 10.71% (9/56), Cat II in 33.93% (19/56) and Cat III in 55.36% (31/56) of all samples (Figure 2). Similar results were obtained at both time points. *Clostridium perfringens* was detected in 95.24% of samples investigated (40/42) (Figure 3), *Pseudomonas spp*. were found in 35.71% (20/56) of the samples (Figure 4).

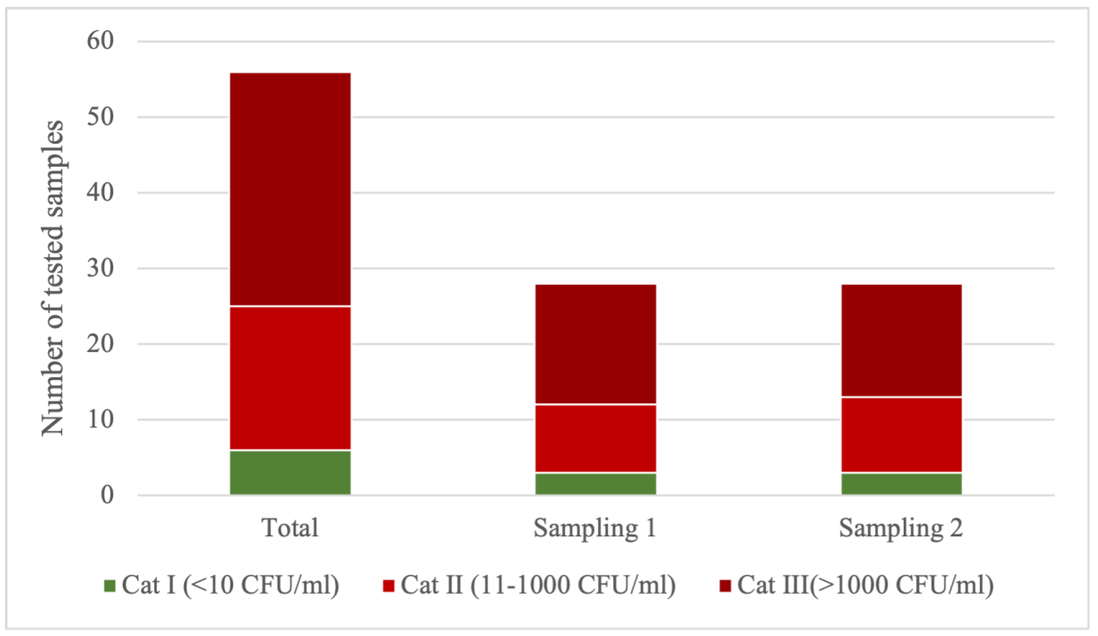

Figure 2: Number of samples in different hygiene categories according to CFU/ml (n = 56)

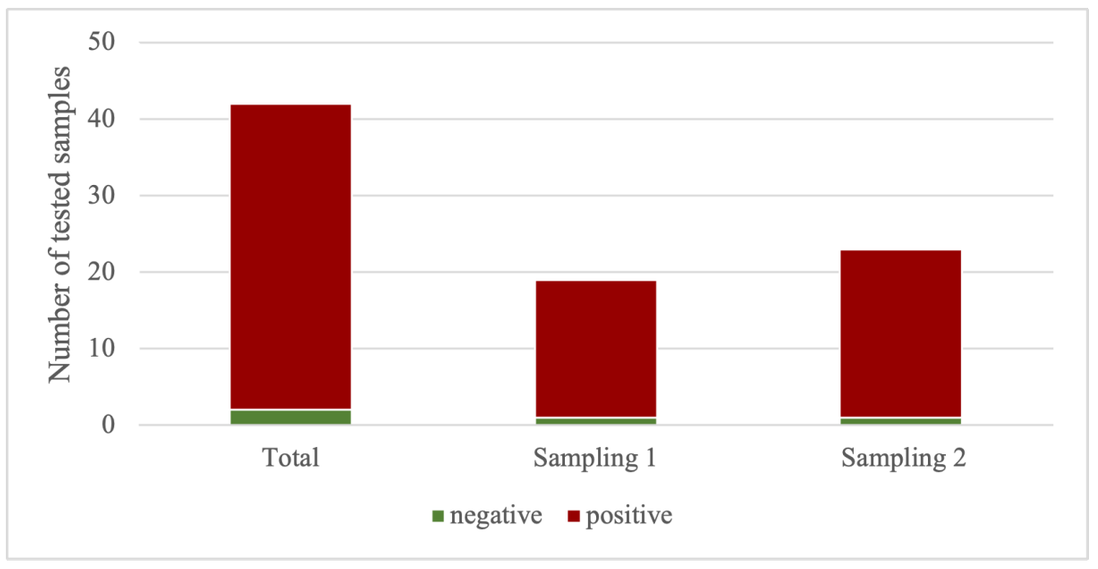

Figure 3: Number of samples tested positive and negative for *Clostridium perfringens* (n = 42)

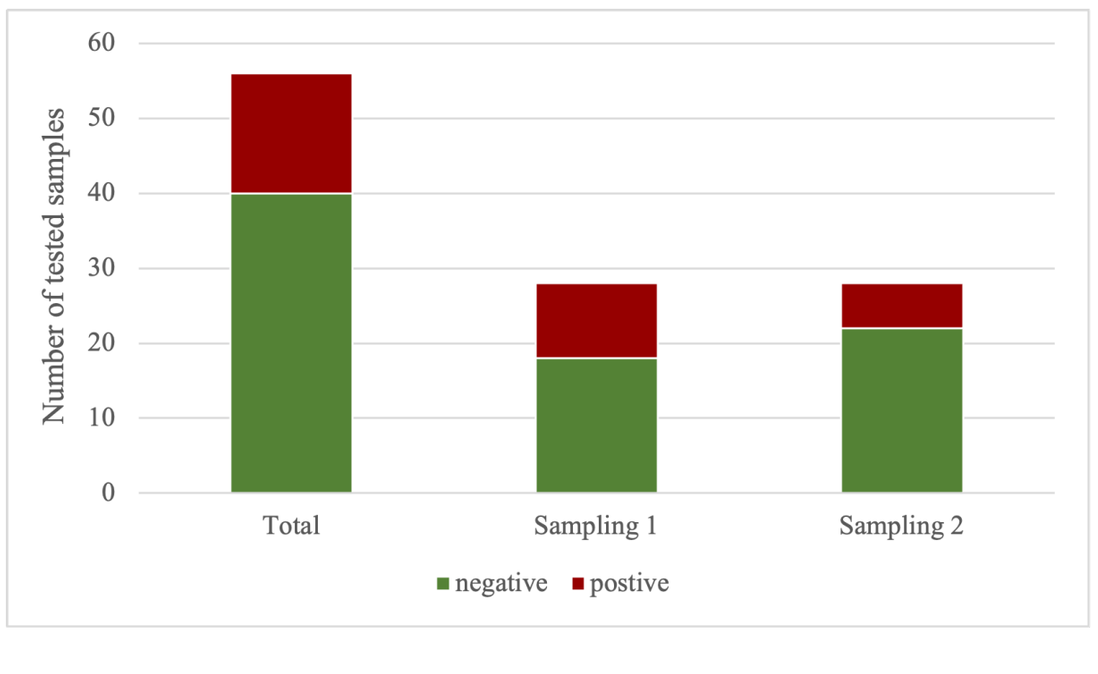

Figure 4: Number of samples tested positive or negative for *Pseudomonas spp*. (n = 56)

Discussion & Conclusion

This study highlights the importance of a systematic review of hygiene practices on farms. The results indicate that these findings are unlikely to be incidental but instead point to a consistent and significant bacterial burden, involving various pathogens. Findings indicate a risk for both local and systemic inflammation caused by bacterial factors and an unintentional transmission of pathogens.

References

1. Nienhoff, H., Impfungen 2.0, TopAgrar 9/2016.
2. Langhoff, R., Freymüller, G., Voglmayr, T., Beim Impfen sauber arbeiten, Landwirt 6/15, 32-35.

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MSD Animal Health

Systematic on-farm assessment of injection sites in piglets

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Background & Objectives

Needle injections in pigs are part of daily practice on pig farms. Most piglets receive various vaccinations and treatments (i.e. iron) at an early age, carried out by often frequently changing farm staff. These procedures form the basis for good health prophylaxis. But injections, when done wrong, also possess the risk of negatively impacting animal health and well-being. Therefore, good veterinary practice guidelines have been established, on how to best perform injections in pigs. The presented data serves as a systematic on-farm assessment of injection sites during intramuscular vaccination procedures in German pig farms.

Materials & Methods

In 10 German piglet-producing farms, supervised by the same Vet, during a one-time farm visit, vaccination procedures were assessed. Injection sites in piglets (n total=1548; 50-134 per farm) were systematically scored by a scheme developed according to good veterinary practice in 5 categories ("acceptable", "too far cranial/ caudal, ventral/ dorsal") (examples see Figures 1 and 2).

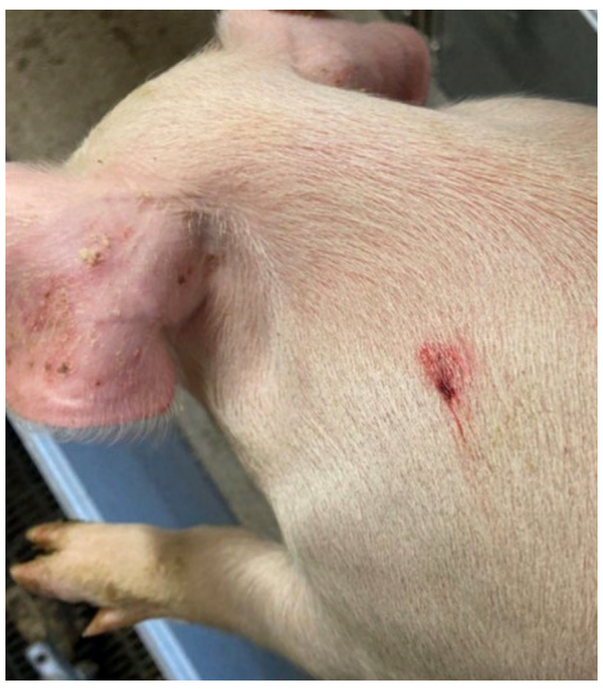

Figure 1: Injection too far caudal

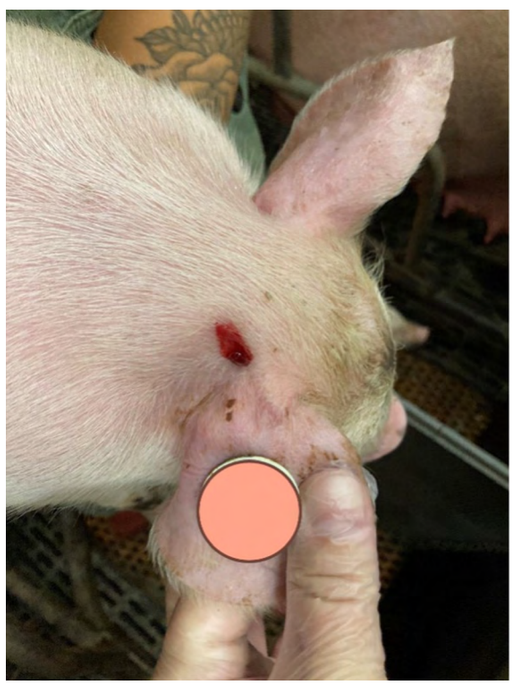

Figure 2: Injection too far cranial

Results

Overall, more than half of the injection sites were assessed "acceptable" (57.4%; n=888/1548). The greatest deviations occurred caudally (29.2%; n=452), followed by deviations dorsally (6.9%; n=107), cranially (3.7%; n=58) and ventrally (2.8%; n=43) (Figure 3). Immense variations were observed between farms ("acceptable": min:32.9%, max:57.4%; "too caudal": min:3.0%, max:82.0%; "too dorsal": min:1.0%, max:23.0%, "too cranial": min:1.5%, max:53.9%; "too ventral": min 0%, max:24.0%) (Figure 4).

Results - continued

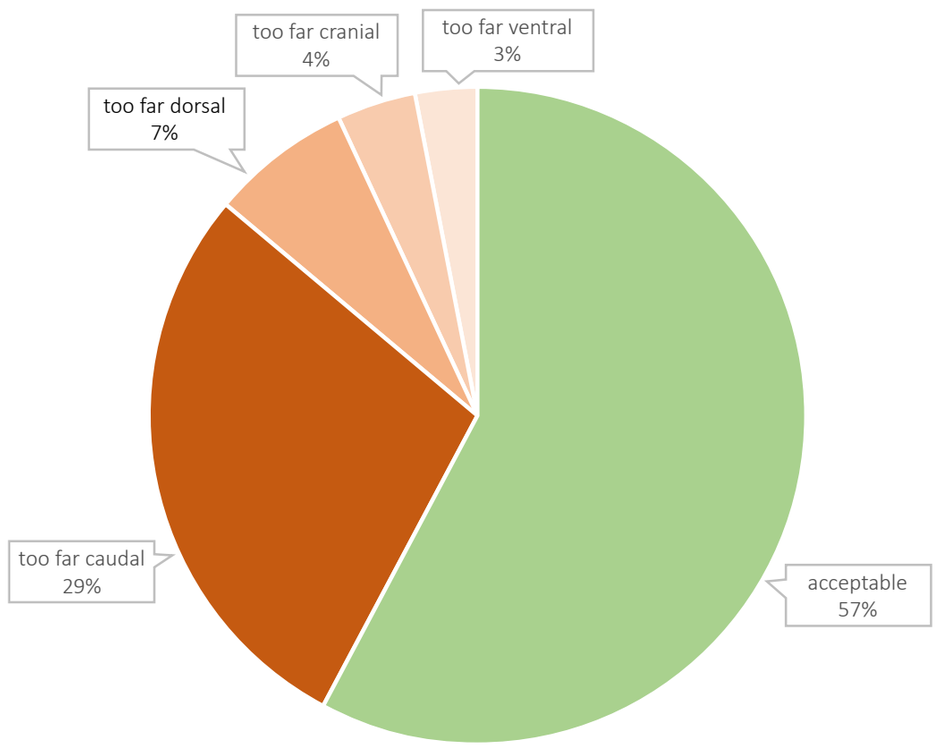

Figure 3: Position of intramuscular injection site during vaccination practice in piglets (n=1548) in 10 investigated farms

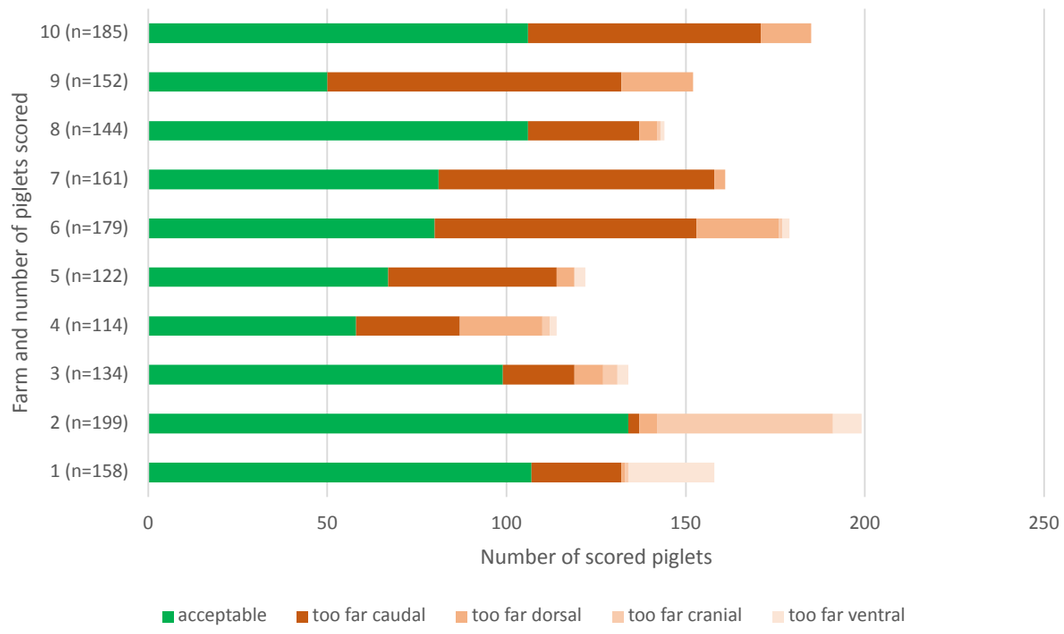

Figure 4: Detailed overview of injection sites in piglets during vaccination practice (10 farms; piglets n =1548)

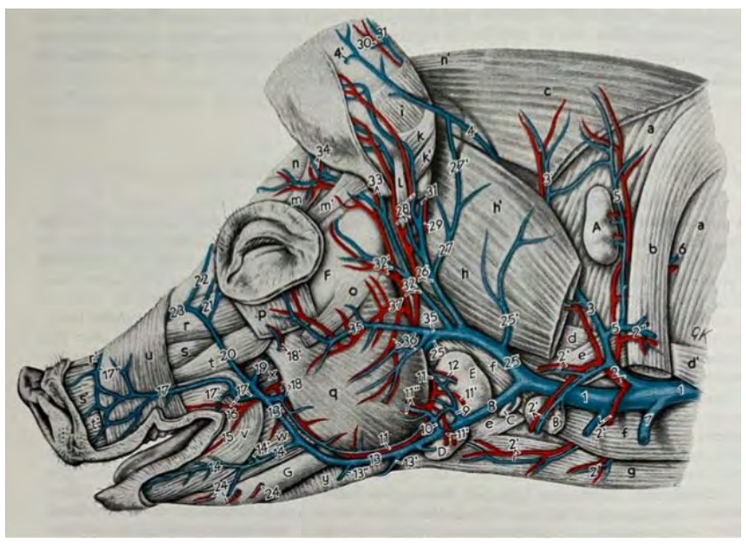

Figure 5: Representative illustration of the superficial veins and arteries on the left side of the pig's head. Source: Nickel et al., Lehrbuch der Anatomie der Haustiere; page 234

Discussion & Conclusion

Various anatomical structures can be hurt by injections when not done correctly. Especially, injections too caudal can lead to trauma of the forelimb. Further structures which can be harmed are e.g. salivary glands, various vessels and nerves (Figure 5). Besides direct trauma, the repeated use of needles can possibly lead to local inflammation or systemic transmission of pathogens. Data shows that consequent live-evaluation of on-farm management procedures is the basis for sustainable consultancy. Systematic and repeated training of farm employees and usage of intradermal injection tools can reduce the risk of injection trauma and consequently improve animal health and well-being.

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Thank you for reading