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Description of low and high pathogenic diarrheic outbreaks in nursery pigs

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Introduction

Mean bacterial load determined by qPCR testing of a pooled faecal sample for *Escherichia coli* F4 and F18, *Lawsonia intracellularis* and *Brachyspira pilosicoli* from a group of nursery pigs can be used to determine the prevalence of bacterial enteritis/colitis. This has made it possible to classify outbreaks as high or low pathogenic diarrhoea.

Objectives

The objective of this study was to describe diarrhoea prevalence in pens with nursery pigs classified as high and low pathogenic diarrhoeic outbreaks.

Definition of high pathogenic diarrhoeic outbreak

Bacterial excretion levels ≥ 35.000 total bacteria/g faeces

+

≥ 1.5 diarrhoeic droppings on the pen floor

Conclusions

- Diarrhoea prevalence significantly higher in high pathogenic outbreaks
- Analysing faecal pen floor samples by qPCR and counting diarrheic droppings can be used to identify pens with diarrhoeic pigs
- The established definitions of high pathogenic diarrhoea relates well to clinical disease severity

Results

In 66 pens (39.1%) classified as high pathogenic outbreaks, the average diarrhoea prevalence was 0.292 (CI95%: 0.247-0.337) which was significantly higher (t-test, $p < 0.001$) compared to pens classified as low pathogenic outbreaks with an average diarrhoea prevalence of 0.145 (CI95%: 0.118-0.172).

Description of 169 pens with nursery pigs classified as high or low pathogenic

Pen classification	Low pathogenic (n =103)		High pathogenic (n=66)		p-value ^b
		CI95%		CI95%	
Diarrhoea prevalence ^a	0.145	0.027	0.292	0.045	<0.001
qPCR positive pens	57		66		
Mean excretion level positive pens	$10^{6.31}$		$10^{7.60}$		0.005
Mean diarrhoeic pools per pen	1.57	0.43	4.60	0.53	<0.001

Notes. ^aFaecal consistency scoring of 15 randomly selected pigs per pen, ^bStudent's t-test



Diarrhoeic dropping on pen floor



Collection of pen floor sample

Materials and Methods

- A pen floor faecal sample was collected at day 14, 21 or 28 post weaning from 169 pens in three nursery facilities in Denmark
- Diarrhoea status of 15 randomly selected pigs per pen was determined by visual inspection of rectal samples
- The pen floor samples were analysed for *Escherichia coli* F4 and F18, *Lawsonia intracellularis* and *Brachyspira pilosicoli* gens by qPCR and the total excretion level per gram faeces was calculated
- Diarrheic faecal droppings in the pen floor were counted
- Difference in pen level diarrhoea prevalence between pens classified as high or low pathogenic tested by student's t-test