

# Validation of a POCT for post weaning diarrhoea

CPH Pig 2<sup>nd</sup> of February 2023

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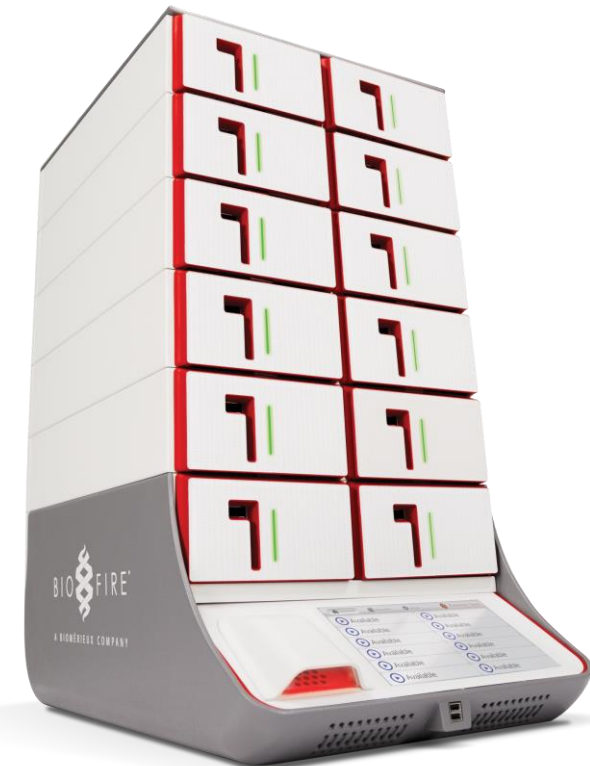


# What is a point-of-care test?

*"a medical testing at or near the point of care"*



- Portable
- Fast
- No laboratory equipment required



# point-of-care test for post-weaning diarrhoea



# The test – Rainbow piglets scours BIO K 374

- The test: (~125 DKK/test)
- Antibody based assay
- qualitative/semi-quantitative
- This trial:
  - **Rotavirus**
  - **ETEC F4**
  - ETEC F5
  - **ETEC F18**
  - ETEC F41
  - C. difficile
  - C. perfringens

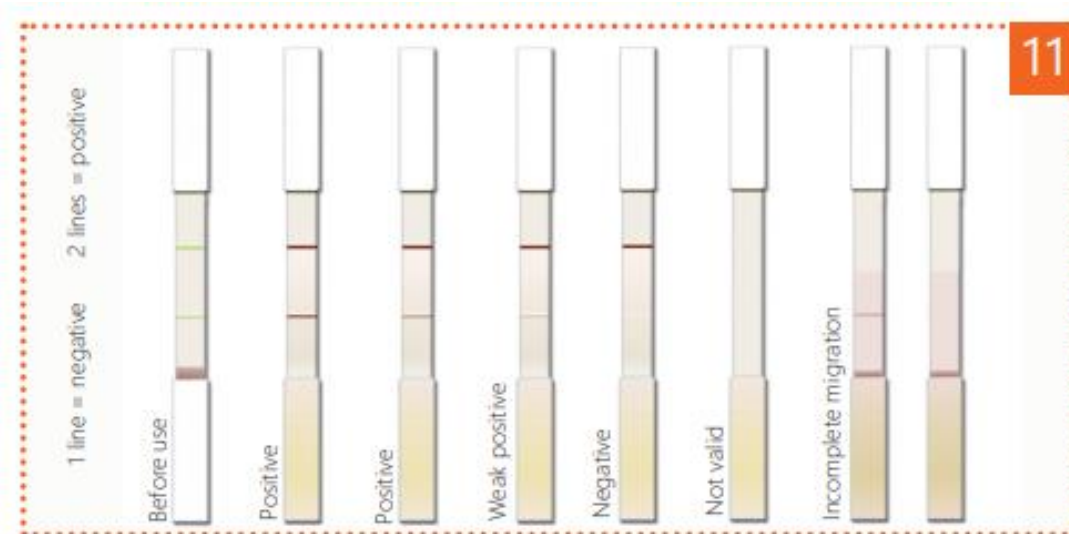


## Study design

- 2 herd – 1 batch per herd
- Faecal samples and POCT on the day that they would normally treat with antibiotics
- Herd A: 324 samples -> 150 were diarrhoea
- Herd B: 364 samples -> 55 were diarrhoea



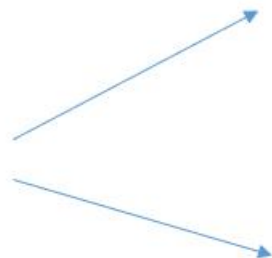
# How we performed the test



# Reference standard



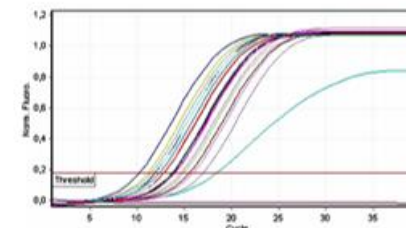
Rectal swab sample



QIAcube HT  
Extraction robot

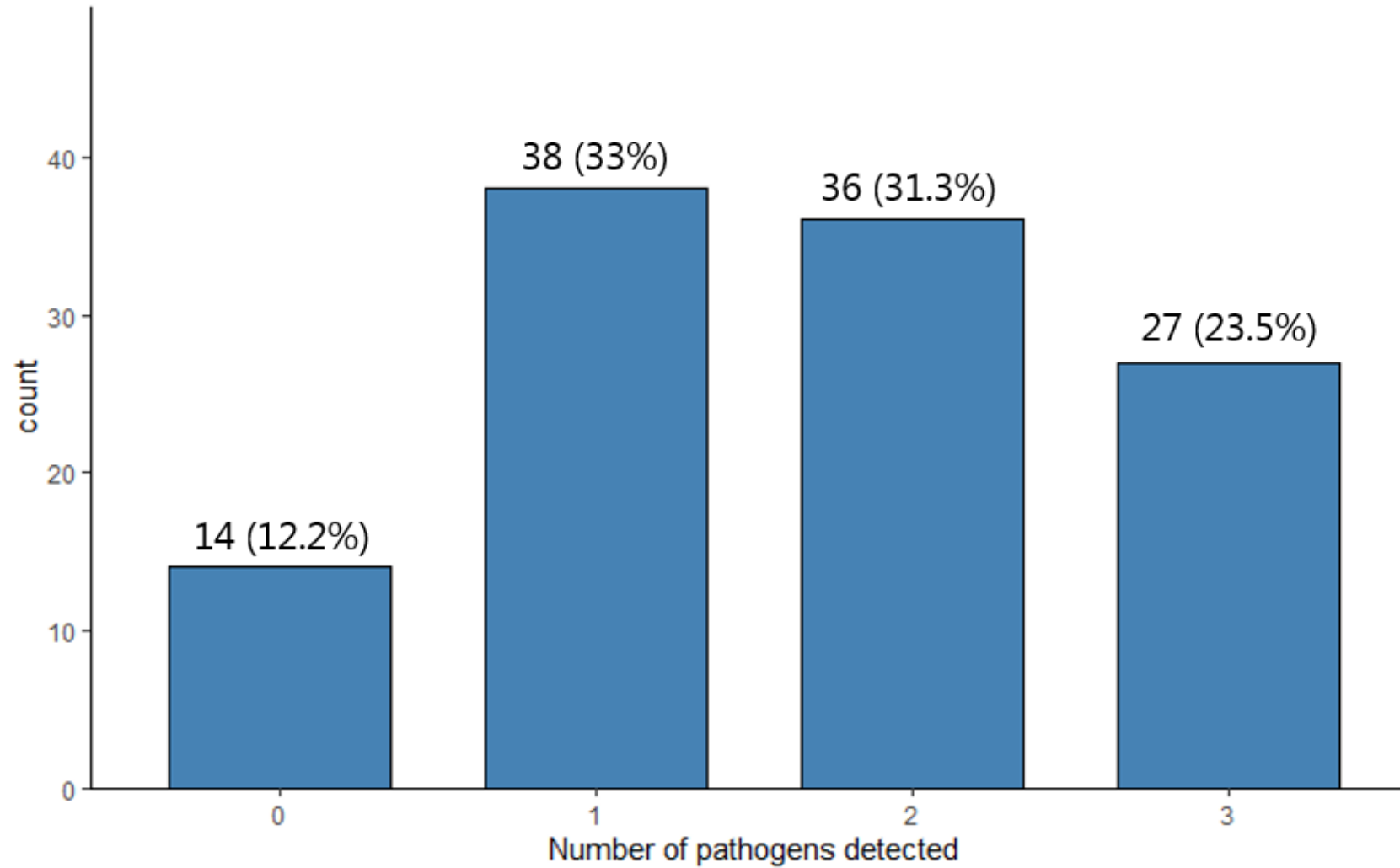


Rotor-Gene Q  
Real-time PCR analysis



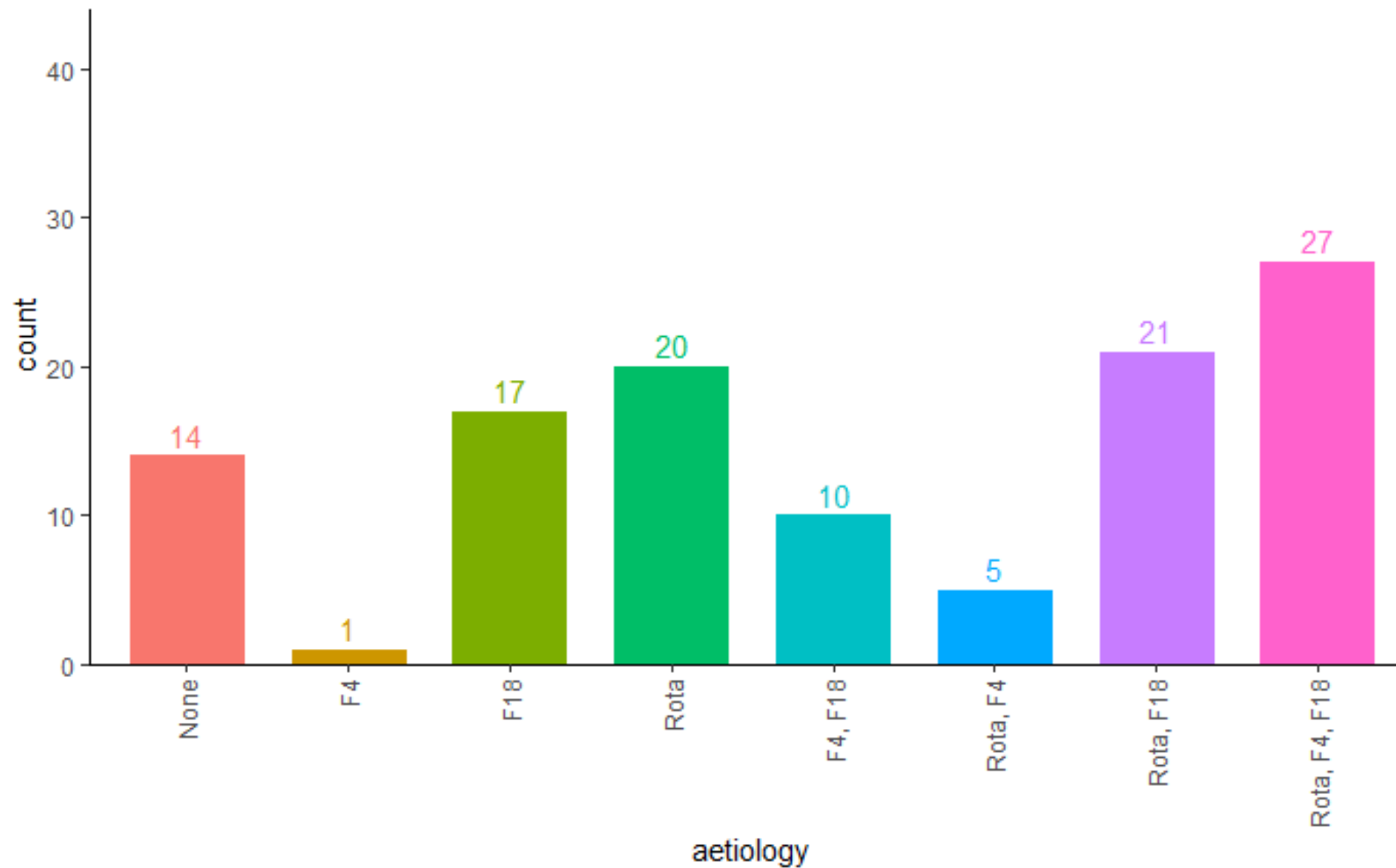
PCR result

## Results – aetiology (PCR results)





# Results – aetiology (PCR results)



# Results – diagnostic performance

- POCT compared to real-time PCR

ETEC F4 (n= 110)		Real-time PCR	
		+	-
POCT	+	11	1
	-	29	69

ETEC F18 (n=112)		Real-time PCR	
		+	-
POCT	+	29	3
	-	44	36

Rotavirus (n=115)		Real-time PCR	
		+	-
POCT	+	49	5
	-	24	37

## Results – diagnostic performance

	Sensitivity	Specificity	PPV	NPV	Kappa
ETEC F4	<b>0.28 (0.15-0.44)</b>	<b>0.99 (0.92-1.00)</b>	0.92 (0.62-1.00)	0.70 (0.60-0.79)	0.31
ETEC F18	<b>0.40 (0.28-0.52)</b>	<b>0.92 (0.79-0.98)</b>	0.91 (0.75-0.98)	0.45 (0.34-0.56)	0.26
Rotavirus	<b>0.67 (0.55-0.78)</b>	<b>0.88 (0.74-0.96)</b>	0.91 (0.80-0.97)	0.61 (0.47-0.73)	0.50

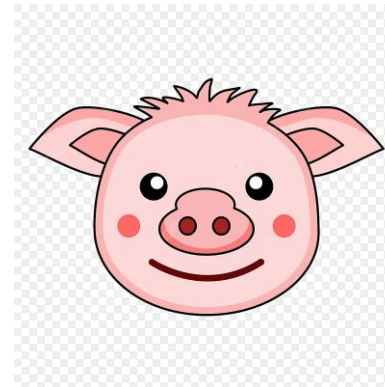
- Reason for high number of false negatives was the low analytical sensitivity
- Improve diagnostic sensitivity by decreasing the detection limit

# Conclusions

- The Rainbow Piglet Scours test lack sensitivity
  - underestimation of pigs with infectious diarrhoea
    - If used to decide treatment plan -> undertreatment of pigs

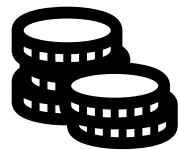
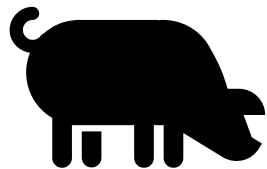
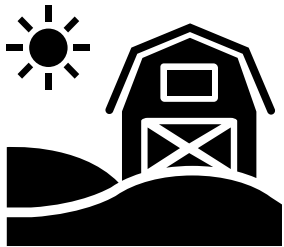


- The POCT has a good specificity
  - we can trust a positive results



- We do not recommend using the Rainbow Piglet Scours test for individual diagnostics and treatment decisions
- Can be used to determine pathogens present in a group of pigs

# Acknowledgements and thank you



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Thank you for your attention!

RESEARCH

Open Access

Evaluation of the diagnostic performance  
of a commercially available point-of-care test  
for post weaning diarrhoea in pigs-a pilot study



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