

IPVS Proceedings: Understanding PEDV timeline of exposure based on clinical findings

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In this study, twelve farrow to wean farms were identified and classified either as low or high risk based on farm traffic and were environmentally sampled daily for 30 days during the winter months. During this time, five farms were diagnosed with PEDV.

Materials & Methods

Environmental samples were collected from 12 farms over a period of 30 days using the Swiffer collection method. In brief, a Swiffer was placed in a Ziploc bag with 30 mL of PBS. The farm manager put on latex gloves, squeezed the excess fluid from the Swiffer and then swiped the designated area. The Swiffer was then placed back into the Ziploc bag and squeezed three times with the PBS in the bag. The bag was then turned upside down and the liquid was squeezed out of the cloth. The liquid was then dispensed into a sterile tube and frozen. When a farm was diagnosed with PEDV, the samples were submitted to ISU Diagnostic Laboratory for PEDV testing via PCR. The findings of the samples were reported as the percentage of the samples positive based on a Ct value of <37 or suspect (Ct 37-39.9)

The areas tested on each farm were:

- Shoe change area
- Lunch bag change table and UV window
- Dirty side of shower
- Lunch table and fridge handle
- Inside the fridge

Results

Three of the five farms that contracted PEDV were originally classified as low risk. Two of the 5 farms were filtered farms. Of the 5 farms that developed PEDV, 4 of the 5 farms were found to have either suspect or positive samples 3 days prior to the onset of clinical signs. The other farm did not have positive findings until the day of clinical symptoms (Table 1).

Table 1. Findings of environmental swabs prior to clinical symptoms

		Days Pre-Clinical Signs				
		-3+	-3	-2	-1	0
Boot Room Floor	Negative	5	4	2	3	3
	Suspect			1	1	
	Positive					1
Lunch Exchange Table/UV Light	Negative	5	4	2	1	2
	Suspect			1	2	1
	Positive				1	1
Shower Room Floor	Negative	5	3	1	2	2
	Suspect	1	1	2	1	
	Positive				1	2
Lunch Table/Door Handle	Negative	5	4	2	2	2
	Suspect			1	1	1
	Positive				1	1
Inside Refrigerator	Negative	5	4	1	1	2
	Suspect			1	2	
	Positive			1	1	2

Conclusions & Discussion

The findings of the survey demonstrate that in this case, the fomites/food belonging to the animal caretakers do not appear to be the source of contamination in these cases. The fact that multiple testing areas within a farm are testing positive/suspect prior to actual clinical symptoms indicate that the virus is present on-site at low levels approximately 48 hours prior to identification of clinical symptoms and appears to be moving throughout the facility before it reaches a threshold for clinical disease presentation.

Even though the virus can cause clinical signs 12-24 hours post-exposure, these findings demonstrate the challenge in identifying the source source of contamination in farrow to wean farms as it appears to be a delay of 24-48 hours post-introduction before clinical signs are detected by animal caretakers.