

Principles of PED control



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- The disease
 - Acute & chronic
- The virus
 - How it is shed and survival in the environment
- Key components of PED control
 - Immunity and biosecurity



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Porcine epidemic diarrhea (PED)



Clinical signs in suckling pigs



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Clinical signs in the nursery



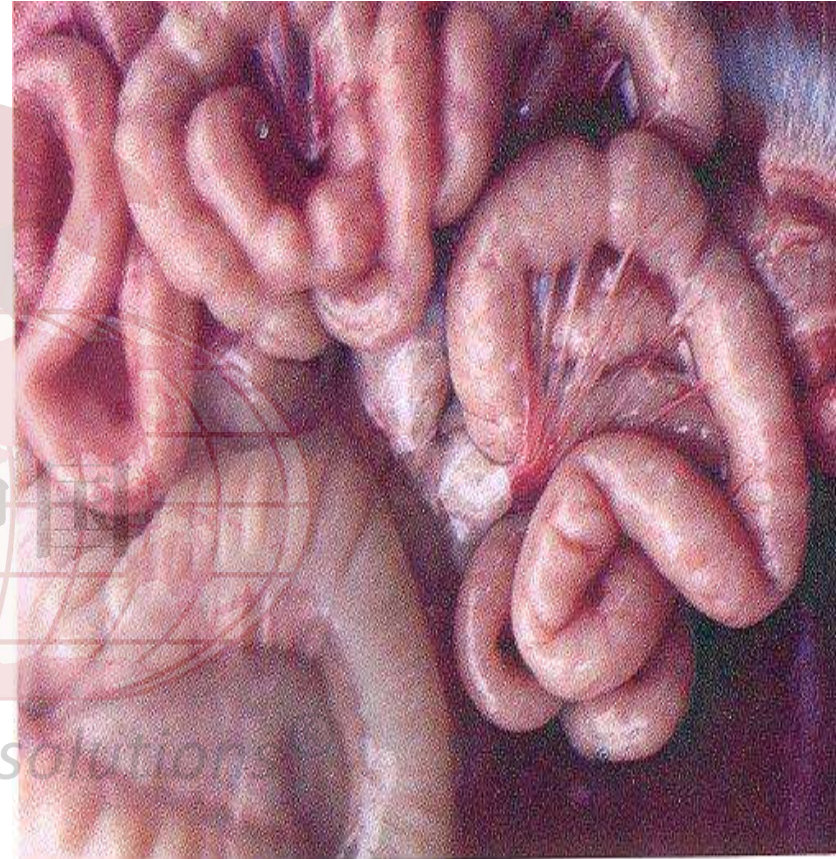
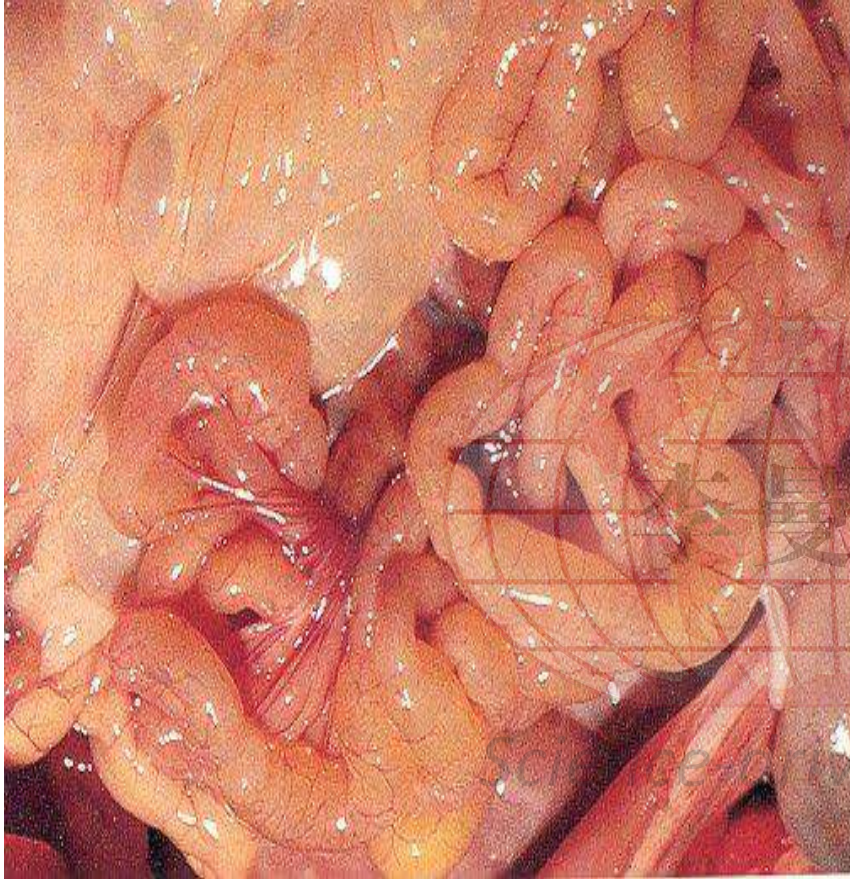
Clinical signs in grow-finishing



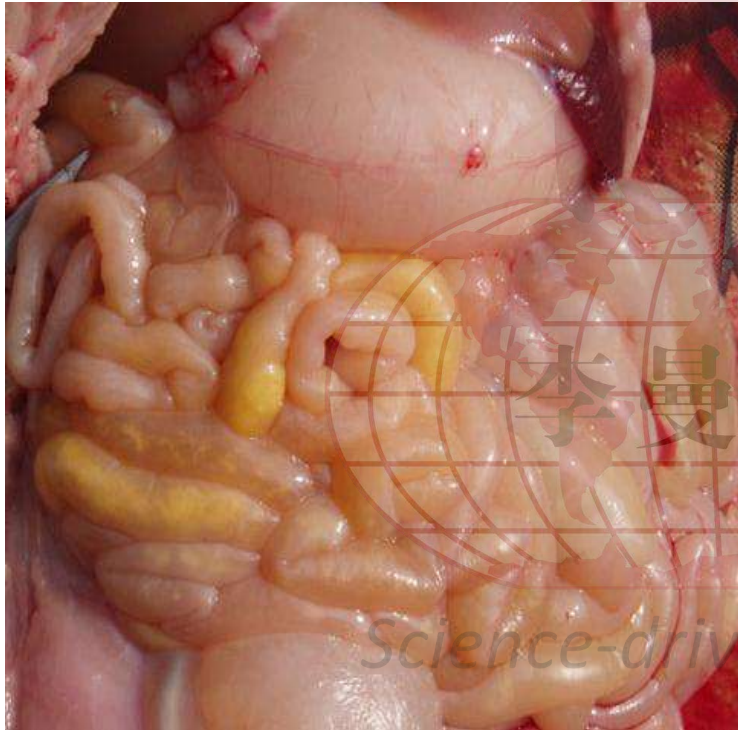
Clinical signs in sows



Intestinal walls: thin vs normal



PED lesions: Small intestine



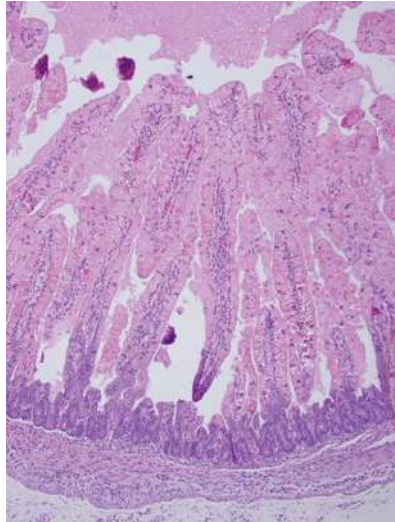
- Small intestine with fluid, distended and yellow curdled & undigested milk

- Thin intestinal wall with atrophic villi

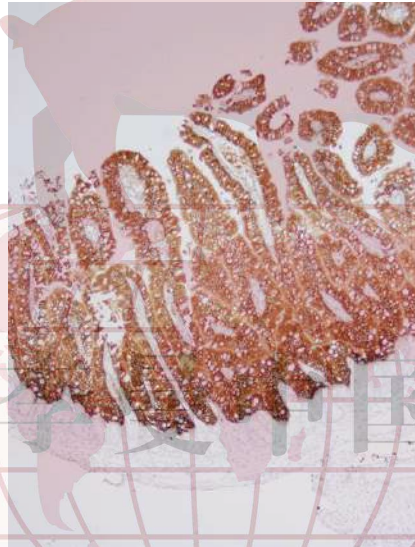
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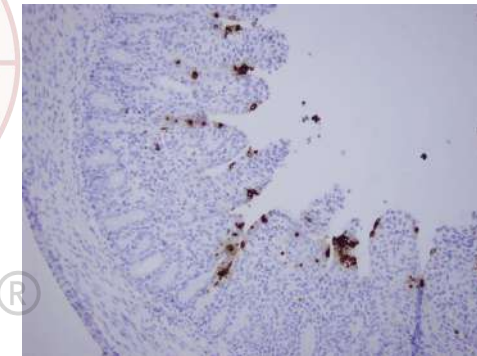
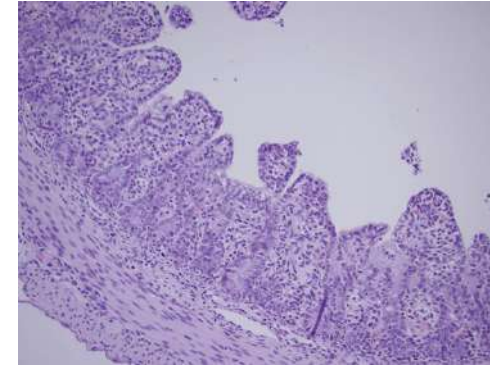
PEDV infection lesion evolution



Normal Gut



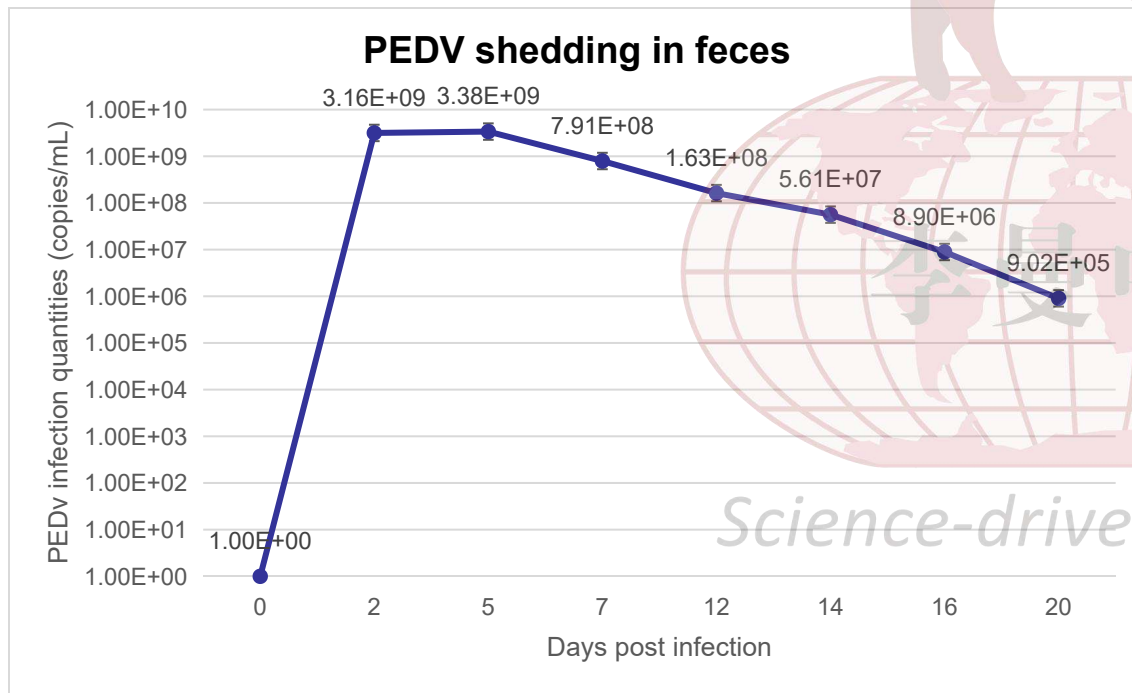
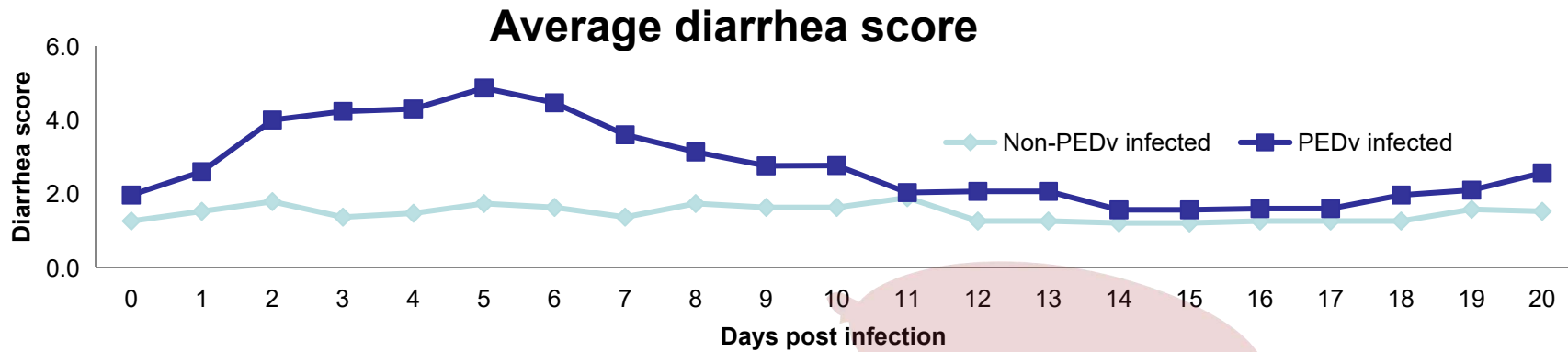
8 h after infection



36 h after infection



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- Diarrhea is acute in naïve populations
- Short incubation period (1-2 days)
- Differences among strains
- Large quantities of virus is excreted in feces
- **Pigs can shed PEDV after diarrhea has resolved**
- **Risk of PEDV transmission in asymptomatic pigs**

PEDV immunity

- **Colostrum & milk IgG** can protect piglets up to 13 days of age
- **Effective lactogenic immunity – “gut-mammary” IgA immunologic axis**
- Following an infection, levels of antibody secreting cells in the gut were similar to those of TGEV or rotavirus
- Protective immunity lasts, **at least, one year** following a natural infection

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Transmission 101

- *Oro-fecal transmission*
- Survival in fresh feces:
 - Room temperature 7 days
 - Hot (71C or 165F) < 10 min
- Survival in slurry:
 - 14 days @ 25C
 - 28 days @ 4C
 - 1 of 4 lagoons still infectious > 5 wks after shedding stopped

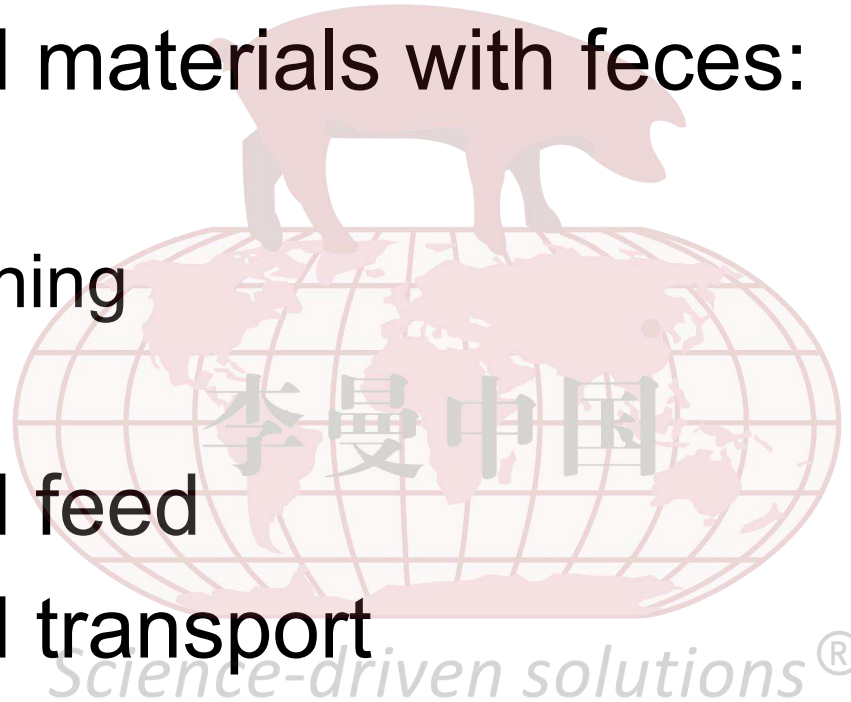


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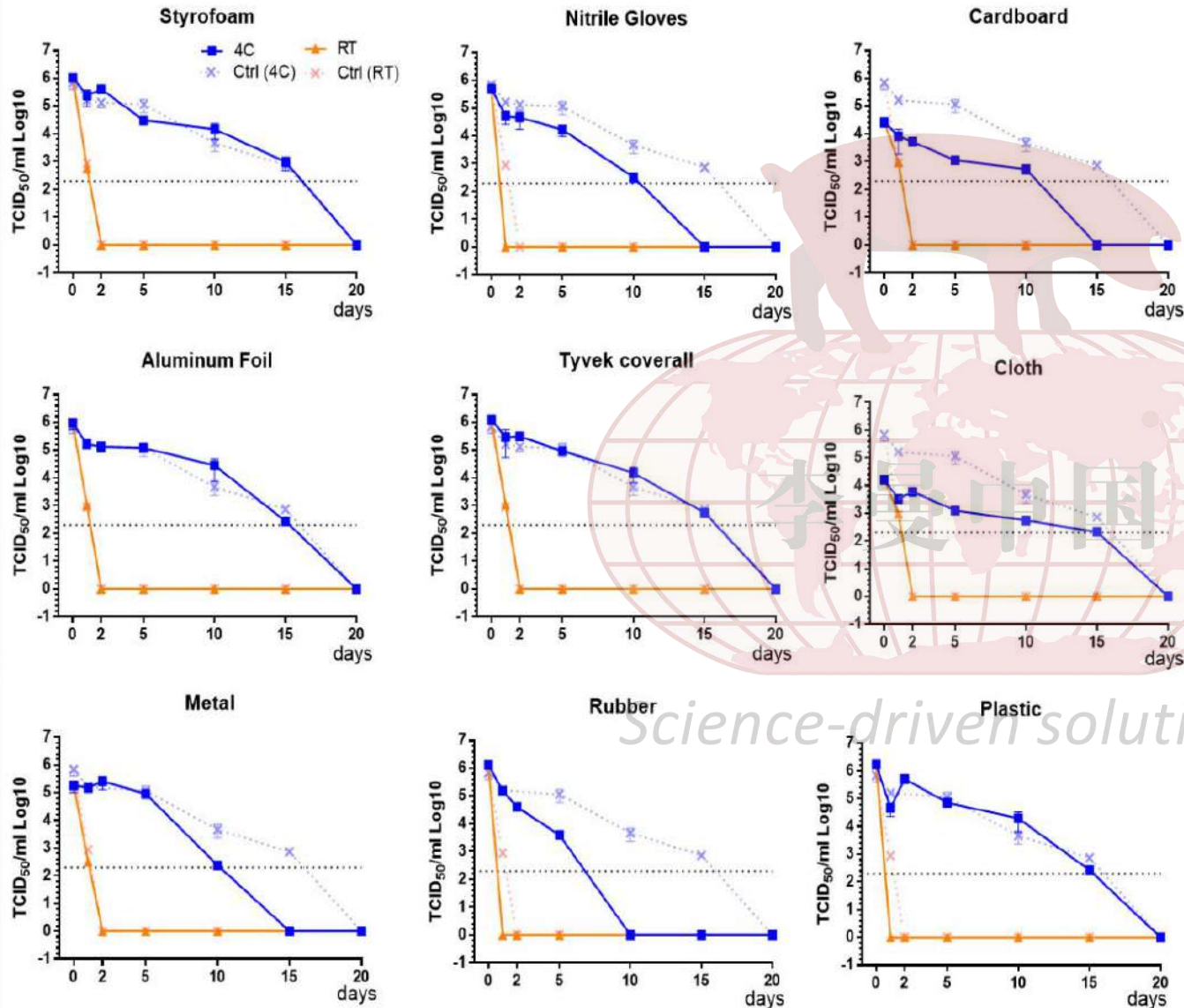


Transmission

- Contaminated materials with feces:
 - Materials
 - Hands & clothing
 - Carts
- Contaminated feed
- Contaminated transport

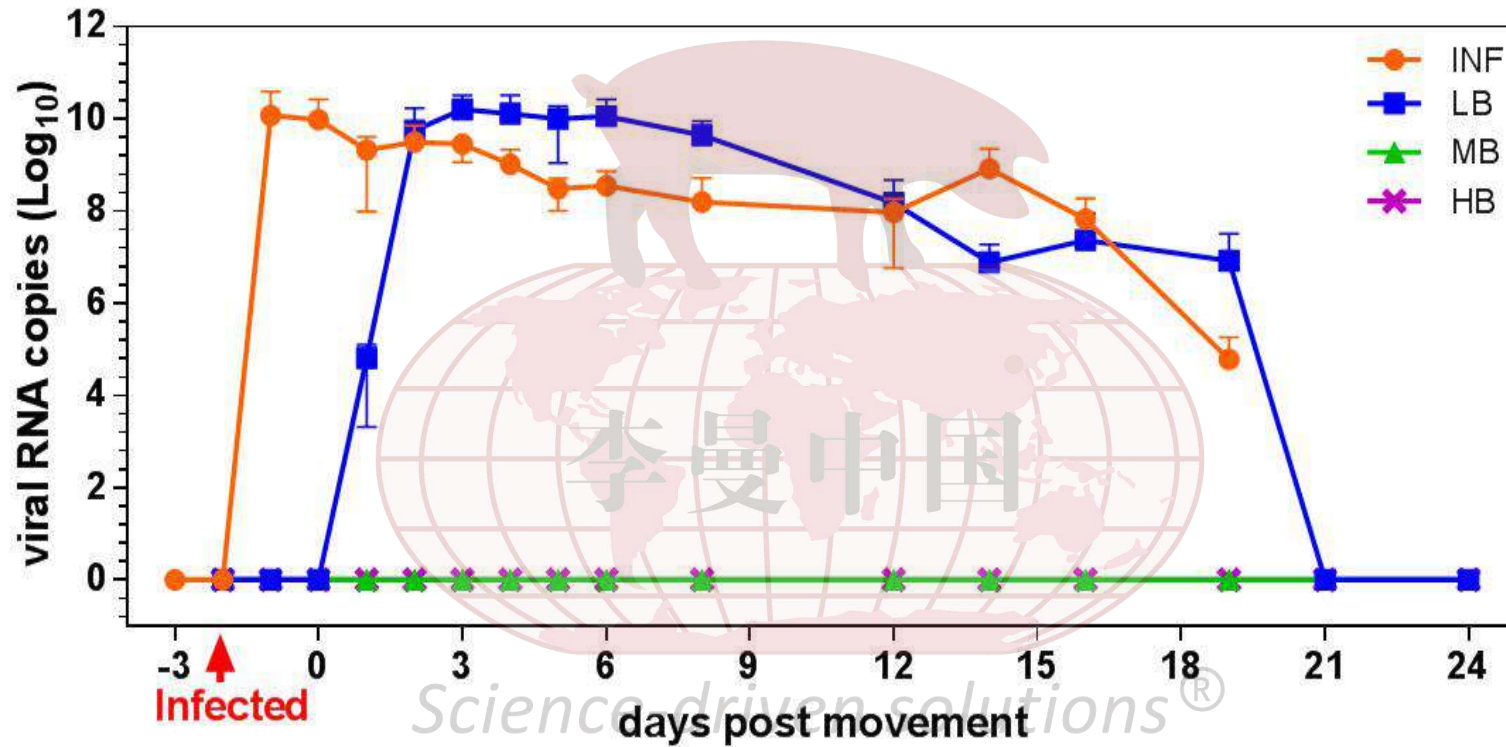


Survival of PED in materials is temperature dependent



Decrease in viral infectivity on fomites at room temperature and at 4°C.

Pigs can become easily infected when in contact with contaminated materials.



Viral shedding of pigs – Biosecurity levels



Keep virus out of farms



If virus enters farm

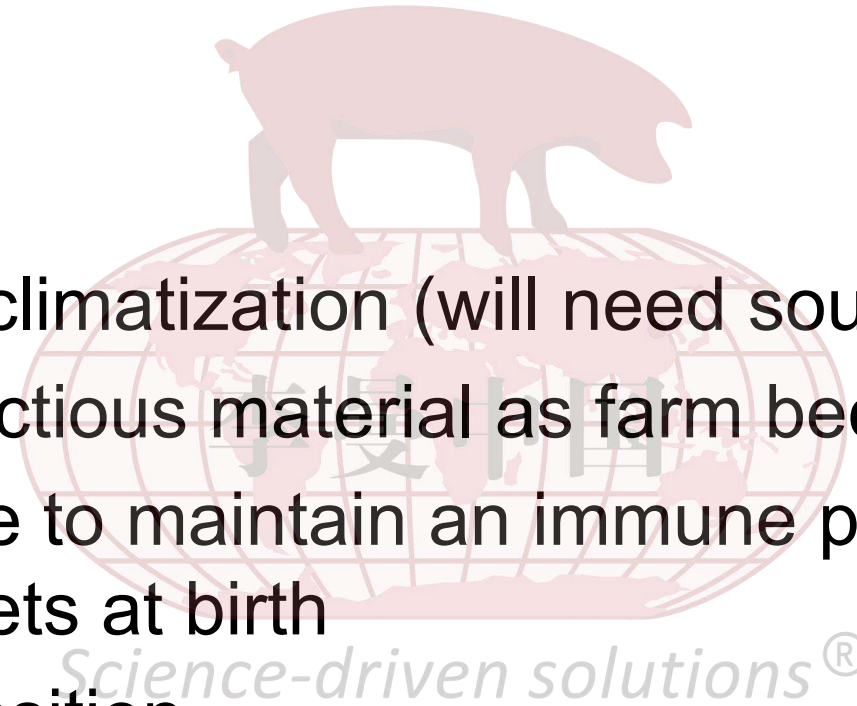
- New infection in negative (naïve) farm – acute infection
 - Feed-back of all sows and gilts
 - Fecal material of acutely infected piglets
 - Plan for gap in production – piglets
 - Cleaning and disinfection is a must
 - ~6-8 weeks

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If virus is on-farm

- Chronic infection but interested in weaning negative pigs
- “Stable farm”
 - Focus on gilt acclimatization (will need source of exposure)
 - May run out infectious material as farm becomes stable
 - Challenge will be to maintain an immune population with no shedding to piglets at birth
 - Temporary / transition
 - Biosecurity (feed, water, people)



Challenge of PED control

- Populations with variable immunity
- Lack of reliable source of virus to conduct acclimatization
- Large populations – difficult cleaning and creating breaks in production
- Pockets of infection and silent spreaders (immune animals that may still be shedding)



Ideally...PED elimination

- Doable
- Know where the virus is
- Herd closure
 - Exposure
 - Testing
 - Cleaning disinfection



Focus on prevention

- Biosecurity
 - People
 - Feed
 - Transport
 - Water



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Questions?

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Thank you!

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