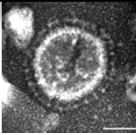


**PED:**  
**การระบาดในอเมริกาและข้อมูลอัปเดต**  
**Glo-cal situations**

**ผศ.น.สพ.ดร.ปวิวรรต พูลเพิ่ม**  
**คณะสัตวแพทยศาสตร์ ม.เกษตรศาสตร์**

VETERINARY MEDICINE, KASETSART UNIVERSITY




---

---

---

---

---

---


---

---

**ประวัติศาสตร์ของพีอีดี**

• 1970s – 1980s      1990s–2000

Figure 1. Emergence of PEDV. Since the disease was first discovered in Europe 1971, antibodies for PED have been detected in following countries.



**EUROPE:**  
 Belgium, Bulgaria, Czech Republic, France, Germany, Hungary, Italy, the Netherlands, Switzerland, UK

**ASIA:**  
 China, Japan, the Philippines, South Korea, Taiwan, Thailand, Vietnam

---

---

---

---

---

---

---

---

**ในประเทศไทย**

- พย. 2550 เริ่มพบการระบาดอย่างรุนแรง
- พบระบาดทั่วไปในปี 2551–52
- พบระบาดประปราย กระจาย มาตลอดจนปัจจุบัน

- พบงายในสุกรสาว
- พบงายกรณีแม่หม่ำ
- ลูกติดเชื้อซ้ำและการตายไม่สูง

VETERINARY MEDICINE, KASETSART UNIVERSITY

---

---

---

---

---

---

---

---



สิ่งที่พบเห็นได้บ่อยๆ.....

---

---

---

---

---

---

---

---

หัวใจของการสู้กับพีอีดี

- เข้าใจถึงปัจจัยเสี่ยง
- วินิจฉัย รวดเร็ว ถูกต้อง
- ตัดสินใจในการ “ป้อนเชื้อ” เร็วและถูกวิธี
- ดูแลนมหน้าเหลืองแม่ ให้ดีที่สุด

VETERINARY MEDICINE, KASETSART UNIVERSITY

---

---

---

---

---

---

---

---

นมหน้าเหลืองสำคัญไฉน....

- นมเต้าหน้า VS นมเต้าหลัง....
  - IgG 0.695 VS. 0.901
  - IgA 1.201 VS. 0.741
- นำนมแม่ IgG 1.011 IgA 0.723
- ซีรัมลูก IgG 1.146 IgA 0.937 (30 นาที)

VETERINARY MEDICINE, KASETSART UNIVERSITY

---

---

---

---

---

---

---

---



**การแพร่กระจายของโรค**

### Effect of density for aerosol transmission of PED

- $\leq 5$  sites / 25  $\text{mi}^2$  – OR 1.19 / mile closer to +ve starting at 15 miles away.
- 6-10 sites / 25  $\text{mi}^2$  – OR 1.10 / mile closer

a. The odds of PEDv infection increased by 19% for every mile closer to an infected farm (OR=1.19; table 6).  
 B. For farms in a medium farm-density area (6-10 farms per 25 sq mi), the odds of PEDv infection increased by 10% for every mile closer to an infected farm (OR=1.10).

Courtesy of Dr. R. Morrison, 2014

---

---

---

---

---

---

---

---

---

---

**เวลานั้นสำคัญไฉน!!!!**

- การสับไล่ ต้องใช้ไล่ที่ใหญ่ๆ.....

	12 hpi	24 hpi	>36 hpi
Shedding:	<10%	100%	100%
Diarrhea:	~30%	100%	100%

---

---

---

---

---

---

---

---

---

---

**การดำเนินของเชื้อในลำไส้**

**1** Normal neonatal pig: Healthy, long intestinal villi

**2** Early PEDv infection (~8 hrs PI): Infected cells (brown stain) line the villi

**3** Late PEDv infection (~36 hrs PI): Severe villus atrophy & loss of absorptive epithelium

**4** Late PEDv infection (~36 hrs PI): Few infected cells remain (brown stain) & absorptive cells destroyed

---

---

---

---

---

---

---

---

---

---



## Weaned pigs

- Depression/Anorexia
- No fever
- Diarrhea 2-3 days post inoculation
- Little vomiting @ 3-4 days
- Extensive diarrhea @ 4-6 days post inoculation
- Recovery @ 8 days; no depression with scant diarrhea (dried up @10 dpi)




---

---

---

---

---

---

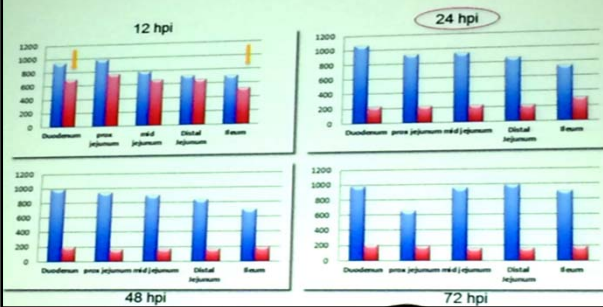
---

---



## เชื้อทำงานรวดเร็ว ว่องไว....

### Villous mean height by location




---

---

---

---

---

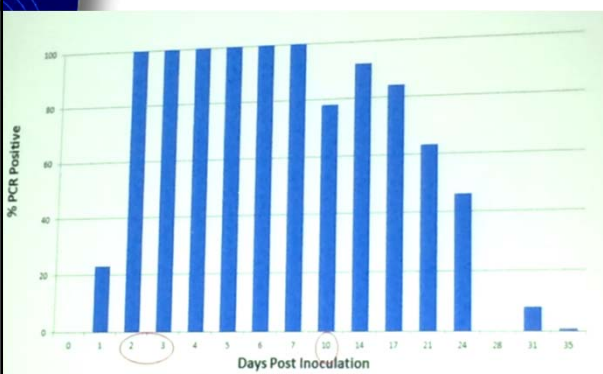
---

---

---



## การตรวจพบเชื้อโดย PCR




---

---

---

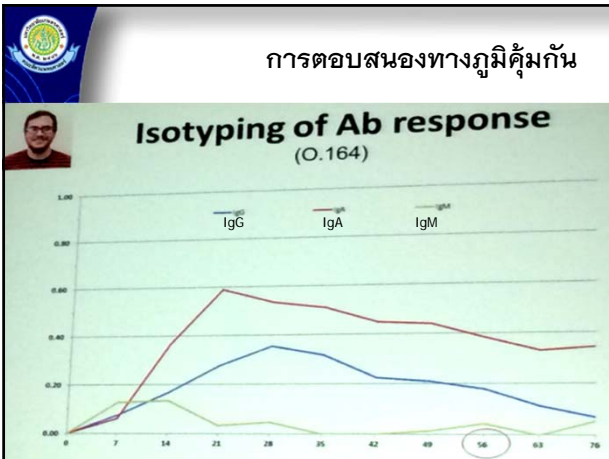
---

---

---

---

---




---

---

---

---

---

---

---

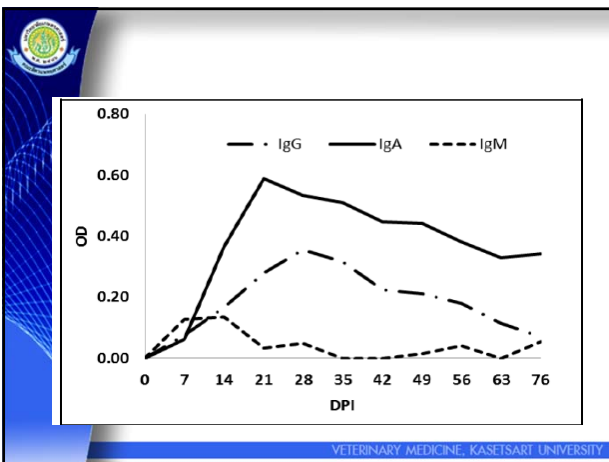
---

---

---

---

---




---

---

---

---

---

---

---

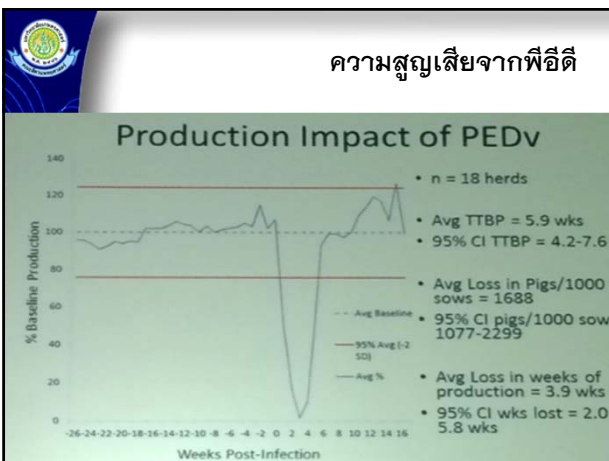
---

---

---

---

---




---

---

---

---

---

---

---

---

---

---

---

---



**การถ่ายทอด IgA ทางนมแม่เหลือง**

- ประมาณ 40% จากซีรัม -> นมแม่เหลือง

SPECIFIC ACTIVITY OF IgA (COUNTS/MG) PREPARED FROM THE SERUM AND COLOSTRUM OR MILK OF SOWS INJECTED WITH IgA LABELLED WITH <sup>125</sup>IODINE

Stage of lactation	Specific activity of IgA (c/mg)		Ratio of c/mg serum IgA:c/mg col./milk IgA	IgA in colostrum or milk derived from serum (per cent)
	Serum	Colostrum/milk		
Colostrum 0 hours	38	9	1:0.24	24
Colostrum 0 hours	82	44	1:0.54	54
Colostrum 0 hours	650	255	1:0.39	39
Colostrum 6 hours	46	5	1:0.11	11
Milk 4 days	44	7.5	1:0.17	17
Milk 4 days	24	2	1:0.08	8
Milk 3 weeks	30	3	1:0.10	10
Milk 5 weeks	96	2	1:0.02	2

VETERINARY MEDICINE, KASETSART UNIVERSITY

---

---

---

---

---

---

---

---

---

---

---

---

- Passively-acquired colostrum immunity appears to protect suckling pigs for up to 4-14 days of age (Arriba et al., 1995)
- Only one per-reviewed paper addressing colostrum immunity in PEDV infections (Ha et al., 2010)
  - High titers of **secretory IgA antibodies** in colostrum correlate with protection of 3-day-old PEDV infected pigs
  - **Neutralizing antibodies** in sow serum do not correlate with protection

**Future questions:**

- Is a high amount of IgA in colostrum correlated with protection?
- How long is IgA present in milk?
- Can we predict IgA levels in colostrum by determining IgA levels on other mucosal surfaces?

---

---

---

---

---

---

---

---

---

---

---

---

**บทเรียนที่อเมริกาพอจะสรุปได้....**

**Lessons learned**

- "Non-clinical" and "immune" pigs sign can shed PEDV for a long time after infection.
- Environmental contamination of PEDV is a risk to manage
- Care should be taken when obtaining "feedback" material.
- Protective immunity from prior challenge may not be long.
- Serum antibody may not be the best indicator of protective immunity

---

---

---

---

---

---

---

---

---

---

---

---