For the last year, veterinarians in swine production and mixed practices have been facing a disease new to American agriculture causing severe losses, porcine epidemic diarrhea virus (PEDv). An enveloped single-stranded RNA coronavirus first discovered in England in 1971, PEDv was initially found in much of Europe; however since the 1980’s, epidemics are rare. In Asia epidemics continue and the strain found in the United States is 99% homologous to the Asian strain. PEDv was first detected in swine herds in Ohio, Indiana, and Iowa with positive results confirmed by the National Veterinary Services Laboratories (NVSL) on May 16, 2013. As of the writing of this article in April 2014, more than 5,500 cases have been confirmed in 29 states. According to April 2013 – April 2014 data compiled by the National Animal Health Laboratory Network (NAHLN), of which the Michigan State University Diagnostic Center for Population and Animal Health (MSU DCPAH) is a member, the states with the highest numbers of PEDv positive accessions are (in order): Iowa, Minnesota, North Carolina, Illinois, and Oklahoma. To date, there have been 121 positive accessions in Michigan. On April 18, 2014, Agriculture Secretary Tom Vilsack announced that both PEDv and swine delta coronavirus will be reportable diseases in the United States. This action is being taken in an effort to slow the spread of the disease and enhance biosafety while maintaining movement of pigs.

While PEDv is only infectious to swine and does not play a role in public health and/or food safety, it is of substantial concern to veterinarians and producers because of high levels of morbidity and mortality. In herds with no previous exposure to PEDv, morbidity can be 100%. Mortality can also approach 100% in suckling pigs; mortality decreases as age increases (“Technical Note: Porcine Epidemic Diarrhea”).

Why should all veterinarians care about this outbreak?
DCPAH has been working with Dr. Madonna Gemus-Benjamin, assistant professor in the MSU College of Veterinary Medicine’s department of Large Animal Clinical Sciences. Gemus-Benjamin works in swine extension and has handled Michigan cases of PEDv. She notes three things that veterinarians should know about PEDv: “It’s highly infectious among young swine. We don’t fully understand the transfer of the virus. It’s certainly shifted veterinarians’ perspective on biosecurity and biocontainment.” She goes on to say, “We can talk about biosecurity and biocontainment among pig producers and poultry producers because they were at the top of the curve. But it didn’t work. If a virus like this hit highly commingled industries such as the equine or beef cattle industry, it would be quite an eye-opener.”

As PEDv challenges the veterinary community, the virus is also of interest to the general public as it affects the cost of meat, not just pork, but also chicken as an alternative source of protein. In particular, as the summer barbecue season arrives, the prices of ribs are expected to increase substantially. Gemus-Benjamin says, “This is really going to niggle at people from a food supply perspective… The ‘foodie’ movement has been a quality discussion but now I think perhaps we’ll hear more discussion about quantity of food.”

Clinical Signs & Transmission
Closely related to transmissible gastroenteritis virus (TGEV), clinical signs and lesions of PEDv infection (now referred to as swine enteric coronavirus disease, SECoV) are indistinguishable from TGEV infection (Stevenson et al.). In research performed in China, PEDv was found to be “a major
diarrheal pathogen... either alone or in conjunction with TGEV, GAR [Group A rotaviruses], or PCV2 [porcine circovirus 2].” Because of the difficulty in making a diagnosis based solely on clinical signs, it was important to develop a diagnostic assay (Zhao et al). The most common clinical sign is watery feces that may be flocculent and fetid. Vomiting, dehydration, and metabolic acidosis are also common (“Technical Note: Porcine Epidemic Diarrhea”).

The mode of transmission appears to be only fecal-oral. The disease quickly spreads through herds and can be spread via environmental contamination (feed, clothing, boots, or equipment). Even if biosecurity measures have not prevented the current outbreak, continued efforts are needed and producers are strongly advised to take increased precautions.

According to Gemus-Benjamin, research underway at the University of Minnesota hopes to answer important questions about how infected herds recover after an outbreak. The results of that research, which includes a survey of clusters where there have been outbreaks, will be available in the fall. Based on preliminary data, principal investigator Dr. Dane Goede has said he suspects that the research will show three scenarios: 1) herds that have 100% clinical signs in the adults and within 60 days, the herd returns to normal production; 2) herds where not all the adults show clinical signs and endemic diarrhea persists in piglets; 3) herds with 100% of adult animals showing clinical signs and then 60-90 days later re-breaking.

While exposure to some pathogens can help herds to develop immunity, Gemus-Benjamin cautions that intentionally introducing PEDv to naive herds is not recommended. “Some producers are thinking they would like to expose their herds now and get it over with, develop immunity. That worked with TGEV at least in part because PRCV (porcine respiratory coronavirus), which has cross-protective antibodies against TGEV, has been relatively endemic in swine herds in the last few years. For those who were not aware of the effect of PRCV, their assumption is, ‘We had a dose of TGEV and now we’re protected.’ PEDv is not TGEV. Nor do we have a virus that provides cross-protective antibodies.”

Imagine having a kennel full of unvaccinated dogs and puppies infected with parvovirus and another kennel of unvaccinated, healthy animals. Would anyone want to co-mingle the two groups so that all the dogs get parvovirus? No.

Diagnostic Testing
At DCPAH, staff in the virology laboratory have worked in collaboration with diagnosticians at the University of Minnesota to offer a PEDv PCR assay. To request testing for PEDv, write in PEDv on the general submittal form under “Other Requests.” Acceptable specimens are the same as those for TGE (test code 80110). Please call the laboratory at 517.353.1683 with any questions about PEDv testing.
How will I get my packages picked up?

It’s easy to get your samples to the lab via UPS. Once your package is ready, you can give it to any UPS driver making a delivery or already scheduled pick-up. You can actually give it to any driver—next door, across the street, anywhere! You can also drop off your package at any UPS location. We recommend using a staffed facility rather than a drop-box. Search for the site closest to you at https://www.ups.com/dropoff.

You may also schedule a pick up by calling UPS at 800.377.4877. There is no charge to DCPAH clients for scheduled pick-up. To schedule your pick-up:

- Provide shipper number V33195.
- Stay on the line for the Preferred Customer Team. When your call is answered, state that:
  - You are returning a shipment to DCPAH and would like to schedule a pick-up from an alternate location.
  - You have air shipping documents and the tracking number.
  - DCPAH will be paying for the pick-up fees.

Provide additional information requested, such as package weight and pick-up information (address, contact) for your package as well as the time it will be ready. Same day pick-up times vary by location—it’s best to plan ahead and call early.

Why the change?

Last year, clients responding to our 2013 client survey told us that getting samples to the lab is challenging and that they wanted better shipping solutions. This spring, we surveyed clients specifically to find out more about their shipping challenges and preferences. In particular, we wanted to know if a change in our preferred commercial delivery provider from FedEx to UPS would be helpful. The vast majority of clients, 92%, responded that a change to UPS would be neutral or beneficial.

In addition, UPS deliveries will arrive at the lab earlier than FedEx and we expect that this change will help to expedite sample processing and improve lab efficiency.

What if FedEx is really a better delivery service for me?

Because we know there are clients who wish to continue using FedEx for sample submission, we have also added a FedEx Billable Stamp to our list of shipping solutions. This discounted shipping label does not include additional packaging material.

Don’t throw out your FedEx mailers! Clients who have our FedEx mailers currently in stock can continue to use them. FedEx billable stamps do have an expiration date printed on them, but we will continue to replace expired FedEx billable stamps for clients who contact us, just as we do currently. UPS billable stamps do not expire, so when you re-stock with our mailers that include UPS delivery, you’ll no longer need to worry about expired stamps.

Although the transition for some clients has not been as seamless as we hoped, we believe these changes in our preferred commercial delivery service will be a positive change for DCPAH clients. Please tell us how it’s working for you the next time you call the lab.
Visit DCPAH at the American Association of Feline Practitioners 2014 Conference

This year, the AAFP Conference is dedicated to Feline Gastroenterology and Endocrinology and will be held September 18-21 in Indianapolis, IN. DCPAH will be at booth #36 in the exhibit hall. Registration is available to AAFP members and non-members.

DCPAH’s Full Service Capabilities for Felines Include:
- Biopsy and Cytology
- Feline Calicivirus, Coronavirus, Herpesvirus
- Feline Blood Donor Panel
- Feline Intestinal Lymphoma Panel
- Feline Vaccine Screen
- Giardia
- Margin Evaluation
- Mycoplasma (blood-borne & respiratory)
- Toxoplasma gondii (IgG & IgM)
- Tritrichomonas foetus

Feline Endocrinology at DCPAH Includes:
- 24-Hydroxyvitamin D
- Aldosterone
- Insulin Like Growth Factor-1
- Ionized Calcium
- Parathyroid Hormone
- Parathyroid Hormone Related Protein (PTHrP)
- Thyroid Profile + TSH

Both Dr. Kent Refsal, endocrinology section chief, and Dr. Barbara Steficek, DACVP will be attending. If you will be at the conference, please stop by booth #36 to say hello, ask questions, get information, and pick up some fun giveaways.

We’ll be at several conferences in 2015 too, so look for more information about connecting with DCPAH at NAVC in Orlando, MVC in Lansing, and CVC in Washington, D.C. as those dates get closer. We love meeting clients face-to-face so we hope to see you!