What is porcine epidemic diarrhea virus?
Porcine epidemic diarrhea virus is a member of the family *Coronaviridae*, which also includes other swine viruses such as transmissible gastroenteritis virus, porcine respiratory coronavirus, and porcine hemagglutinating encephalomyelitis virus.

What do we know about PEDV (incubation, clinical signs, and treatment)?
The incubation period may be as short as 22-36 hours in individual pigs or two to four days at the herd level. It is characterized by acute outbreaks of severe diarrhea and vomiting that can affect up to 100 percent of the herd when previously unexposed. In herds that have become endemic, diarrhea and vomiting are typically limited to suckling and recently weaned pigs. Treatment is normally limited to supportive therapy to address dehydration.

How is PEDV diagnosed?
A clinical history of diarrhea in more than 50 percent of pigs on a site over a short period of time is characteristic. Diagnosis is by microscopic evaluation, where unique lesions are demonstrated in the small intestine. Confirmation of the virus is by a laboratory test known as a polymerase chain reaction test (PCR).

What has been the impact in Minnesota?
Several hundred farms in Minnesota have been affected. The National Animal Health Laboratory Network has reported weekly diagnostic submissions for PEDV since June 16, 2013. Minnesota has the second-highest number of positive cases in the country. Our epidemic started in early fall, and the incidence continues to increase.

Dr. Liz Wagstrom, chief veterinarian at the National Pork Producers organization in Washington, D.C., and a former faculty member at the University of Minnesota, spoke about the issue at the recently concluded USDA Outlook Forum, reporting that at least 4 million hogs have died in the U.S. at this point. And since the mortality rate can easily be 50-100 percent in a swine herd, producers are at risk of going out of business.
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How is PEDV transmitted and what biosecurity measures are recommended?
The virus can be transmitted directly or indirectly by ingestion of fecal-contaminated material. While the direct route would involve animal-to-animal contact, the indirect route may include contaminated objects such as footwear, clothing, farm supplies, and vehicles.

Recently, it was determined that PEDV had entered animal feed distribution channels and is now spreading in that manner. Confirmed cases were reported last week in Canada, and U.S. feed sources were implicated.

How has the University of Minnesota been involved?
In May, when the virus was first confirmed in the U.S., the College of Veterinary Medicine and Veterinary Diagnostic Laboratory (VDL) began efforts to research the disease. In seven weeks, the college had developed a PCR diagnostic test that could detect the presence of the virus. A second test, developed at the college weeks ago, detects the presence of antibodies to the virus, and is a very precise tool to detect previous infection with the virus, even if pigs show no clinical signs of the disease. These tests were made immediately available to the public. As of February 27, the VDL had administered 28,540 PCR tests and 3,495 antibody tests. These tests are a vital tool for the region’s producers and veterinarians as they work to control this disease and its impact on the animal health and the agricultural economy.

The VDL has also recently tested 396 feed or feed ingredient samples, and 68 were PCR-positive. In one case, a producer tested 14 palettes of starter pig feed and found 13 to test positive. We are conducting research to understand the implications of these recent findings.
What are the critical steps for the prevention of PEDV?
It is critical to ensure the introduction of negative animals and that biosecurity protocols be in place that include measures addressing personnel, transportation, supplies, equipment entering the farm, and now, feed. Feed biosecurity includes assuring that feed ingredients are not contaminated with virus and that the finished feed is not contaminated during preparation, storage, or delivery. We have determined that the virus can survive in contaminated feed for at least 28 days if frozen and at least a week at room temperature. While we now know that feed is suspected to be a source, we know little about frequency of contamination, accurate detection, or prevention.

Are there public health concerns?
No, this disease is only infectious to swine and, as such, it is not a food safety concern.

Additional information
Visit the University of Minnesota Veterinary Diagnostic Laboratory website at www.cvm.umn.edu/vdl or call 612-625-8787.