BLOG: PEDV – A disaster waiting to happen in the EU

David Burch

Function: Blog: Pig health
David Burch is a veterinarian with over 40 years experience in practice, industry and consultancy. He is a director of his own consultancy company Octagon Services Ltd and the past president of the UK's Pig Veterinary Society.

Although we have African Swine Fever (ASF) knocking on our Eastern door, Europe needs to wake up to the devastation Porcine Epidemic Diarrhoea Virus (PEDV) is causing in North America and to prepare itself.

Having just come back from the American Association of Swine Veterinarians meeting in Dallas, where there was a multitude of lectures on PEDV, it really has brought our present situation into perspective. We have all been waiting for the next big virus attack on our industry after PRRSV and PCV2 and it is now there facing us.

It has spread from China west to Thailand and Vietnam and east to Korea, Japan and Taiwan. It has jumped into the US and is now penetrating Canada and Mexico. It has spread from State to State involving over 20 of them and if it gets into Europe I can see it spreading from one Member State to another in the same way.

The old strains of PEDV were relatively mild causing diarrhoea in growing pigs, in comparison with Transmissible Gastro-Enteritis (TGE) virus, which would wipe out litters of baby piglets before Porcine Respiratory Corona virus (PRCV) came along and cross-immunised most herds. This new highly pathogenic strain of PEDV is equal to, if not worse than TGE ever was and there does not appear to be any cross-protection from PRCV. Although also a coronavirus, it is about 40% different genetically from PEDV.

PEDV in a 1000 sow herd caused **2501** piglets not to be weaned in a large survey of 89 farms. It took 7.4 weeks for a herd to return to baseline production after the initial acute attack, in spite of feedback of piglets' gut contents to all breeding stock. Some herds also had secondary, chronic attacks possibly due to inadequate feedback. For a 1000 sow herd the cost was put at $200,000 or €146,000 **or on an EU basis of 250 million pigs this could cost €1.659 billion to our industry. Approximately, 28 million piglets could die.**

How did it get into the US is the question still unanswered. Was it via feed ingredients? Apparently, there were 53 feed ingredients imported from China, such as rice hulls and porcine plasma that might have been contaminated and may have been incorporated into feed and given to pigs. Retrospectively, it has been found that many of these products have been contaminated with PEDV and could be potential sources.
Was it brought over by people? There are increasing links with China with regard to business/trade, technical services and education, could that be a possibility?
The virus seems to be quite resilient and resistant to many cleaning and disinfection procedures. Lime washes (pH 12.0) seem the best way for farrowing rooms etc. PEDV is produced in the billions in the early stages of infection and quickly contaminates pens, tools, personnel and whole farms, as it is easily spread. It is excreted for over 35 days in recovering pigs so may contaminate haulage trucks, feed trucks and especially renderers that come to pick up the hundreds of dead bodies. With a cold winter, it is likely that it has spread easily in lorries etc, which are difficult to clean and dry in freezing temperatures and go from farm to farm.

The university laboratories in Iowa State and Minnesota have done a spectacular amount of work in under a year to come to grips with this problem, regarding differential diagnosis, its epidemiology and pathogenesis. One laboratory has seen its submissions increase 7 fold in less than a year. Their expertise is exceptional and they have been able to grow the virus and differentiate it from early lower pathogenic strains, TGE etc. They have identified it so they can trace it from Anhui Province in China (99.4% similarity). They have discovered new variants and also a new delta-coronavirus. Attempts at vaccine have been made but they were not effective so far in preventing disease, as they are injectables and do not stimulate immunity in the gut. They have proved helpful in reducing the chronic phases of the disease, however.

So what are the lessons to learn for us in the EU: -
1. Liaise with the US laboratories and build a similar diagnostic capability in the EU in a number of key MS laboratories, so they can make a rapid accurate diagnosis, as soon as there is a suspected case.

2. PEDV is not a notifiable disease unlike ASF, so in theory it is not up to Member States to cull out herds. Somehow, this needs to be rectified and any early cases should be treated as a notifiable disease with all the necessary precautions, biosecurity and the herds culled before further contamination takes place and neighbouring herds are infected. PEDV is not one of the OIE listed diseases even though this strain is worse than TGE. It should be included and monitored.

3. There should be a **contingency fund** made available by the European Commission of **€25-50 million** to compensate the farmers etc for their lost herds, especially if there is an initial multi-entry situation with several herds infected at a similar time, as appears to be the case in Canada. The cost of a fund of this size is negligible in relation to the potential cost of the disease spreading across the EU at €1.67 billion.

4. In the meantime review the agricultural products that come into the EU from China and other infected countries and carry out a proper risk assessment to see if any of these products could be contaminated and fed to pigs. Currently, plasma is not permitted but what else comes in that we don't know about. These products must be tested for PEDV.

5. Any breeding stock that comes into the EU from potentially contaminated countries should be tested and certified as free.
We have slept-walked into PCV2 and PRRSV infection of our EU herds and have had to live with these diseases the best way we can over the last 15 and 25 years. Is it not time for the EU to wake up and prepare itself against the next pestilence, PEDV, which could hit our producers and could be much more damaging than the notifiable ASF?

What do you think?

by David Burch Mar 10, 2014