

## PEDv in the Literature

### Scientific Opinion on porcine epidemic diarrhoea and emerging porcine deltacoronavirus

European Food Safety Authority (EFSA) Panel on Animal Health and Welfare

#### Abstract

In the last decade, many porcine epidemic diarrhoea (PED) outbreaks have been reported by several countries in Asia whereas only a few Member States of the European Union (EU) have reported PED clinical cases and/or PED virus (PEDV)-seropositive animals. This alphacoronavirus was first reported in the USA in May 2013, followed by rapid spread throughout the country and outbreaks reported by several countries in the Americas. The recent PEDV-EU isolates have high level of sequence identity to PEDV-Am isolates. Based on nucleotide sequencing, multiple variants of PEDV are circulating in Europe, the Americas and Asia but any difference in virulence and antigenicity is currently unknown. Serological cross-reactivity has been reported between PEDV isolated in Europe and in the Americas; however no data regarding cross-protection are available. The impact of different PEDV strains is difficult to compare between one country and another, since impact is dependent not only on pathogenicity but also on factors such as biosecurity, farm management, sanitary status or herd immune status. However, the clinical signs of PEDV infections in naive pigs are similar in different countries with mortalities up to 100% in naive newborn piglets. The impact of recently reported PED outbreaks in Asia and the USA seems to be more severe than what has been described in Europe. Infected animals, faeces, feed and objects contaminated with faeces are matrices that have been reported to transmit PEDV between farms. Infectious PEDV has been detected in spray-dried porcine plasma (SDPP) in one study but the origin of the infectious PEDV in SDPP is not clear. Detection of porcine deltacoronavirus (PDCoV) has been reported in a few countries but only limited testing has been done. Based on the currently available information, it seems that PDCoV would have a lower impact than PEDV.

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*Editor's comments: This article is a well-explained chronicle of what we have learned about PEDv and the less commonly-seen PDCoV. It also compiles current assumptions by experienced field veterinarians. We have chosen to highlight a few sections below.*

*The authors offer a very complete international perspective on recent outbreaks:*

- There have been sporadic European outbreaks from 2004 until 2014, which are likely under-representing the true incidence as many countries do not have ideal sampling procedures.
- There were many PEDv outbreaks reported in several Asian countries over the last 10 years. The article brings to light that even in countries where PEDv is reportable, there is no active monitoring being conducted like the Swine Health Monitoring Project's PRRS and PED incidence studies which accurately represent a large portion of the US swine industry.
- PEDv in the wake of the well-documented US epidemic of 2013/2014 has been detected in other American countries including Mexico, Peru, Dominican Republic, Canada, Colombia, and Ecuador. Documented isolates in these countries are all closely related to US strains.
- Little is known about cross-protection between PEDv isolates to date, but outbreaks in Italy and Germany of viruses similar to US PEDv may suggest that this cross-protective immunity is present in European pig populations and may also mitigate impact of American strains introduced in Europe. A manuscript recently accepted for publishing also indicates that the clinically mild S-INDEL variant PEDv cross-protects against more severe US strains 7 months after infection. A citation for this manuscript can be found below.

*The authors point out that the evidence is not clear whether PDCoV infection causes significant impact to animal health similar in severity to PEDv, especially since many infections detected in the US are found to be in the presence of other gastrointestinal viruses like PEDv and Rotavirus strains*

*Also browse this manuscript for comprehensive information on PEDv and PDCoV survival characteristics and transmission risk factors.*

Goede D, Murtaugh M, Dvorak C, Nerem J, Yeske P, Morrison RB, Previous infection of sows with a "mild" strain of Porcine Epidemic Diarrhea Virus confers protection against infection with a "severe" strain, Veterinary Microbiology (2015), 10.1016/j.vetmic.2014.12.019.