

PIG INDUSTRY PED CONTINGENCY PLAN



Contingency Plan for the Control and Elimination of Porcine Epidemic Diarrhoea

1. Introduction

1.1. The objective of the Pig Health and Welfare Council Contingency Plan for the Control and Elimination of Porcine Epidemic Diarrhoea virus is to identify, contain and eliminate any new strains of the virus from Great Britain as quickly as possible.

1.2. The Contingency Plan focuses on the control and elimination of Porcine Epidemic Diarrhoea virus but a broadly similar approach could be used to tackle other significant new and emerging diseases, eg. Highly-pathogenic strains of PRRS from the US or Asia.

1.3. The approach taken to the control and elimination of PEDv will be cascaded as follows:

- Strategic
- Operational
- Tactical

1.4. This document outlines the strategic and operational elements of the Contingency Plan. It does not include tactical activity as this will be contingent on the specifics of the unit, timings and emerging knowledge and will be determined by the PEDv Core Group and the PEDv Control Centre.

1.5. The Contingency Plan contains a primary and secondary strategy.

- **Strategy 1: Pig Unit Specific Containment and Elimination.** This will be the initial strategy based on an outbreak infecting up to a maximum of 5 individual pig units with targeted intensive epidemiological investigation, interventions and monitoring
- **Strategy 2: Industry Containment and Elimination.** This emergent strategy will be adopted following confirmation that an outbreak has occurred on more than 5 individual pig units. It is considered that at this point a broader approach to PEDv control and elimination will be required as it is highly likely infections will become more widespread.

2. Delivery of the Contingency Plan

2.1. This is reliant on the following actions/activity being established. Each of these activities is outlined at a strategic and operational level.

1. Early identification of infected site or site(s)
2. Mapping of positive sites and tracings of contacts
3. Identification of source of infection and risk assessment
4. Enhanced surveillance to detect any wider spread
5. Enhanced general industry biosecurity
6. Development of a tailored virus elimination strategy for each case
 - a. Controlled exposure of herd to virus
 - b. Partial depopulation:repopulation
 - c. Depopulation:repopulation
 - d. Return of herd to virus negative status
7. Monitoring of virus circulation within herd

8. Controlled movements from infected sites
9. Intensive cleaning and disinfection
10. Manure management and fallen stock disposal
11. Confirmation of 'free' status

2.2. The effectiveness of the PEDv Contingency Plan is reliant on the support and commitment from the industry and supply chain. Since December 2015 and March 2016, England and Scotland respectively have made PEDv a Notifiable Disease. Unlike other notifiable disease in pigs, there is no legislative requirement for official testing, culling, movement controls or other restrictions and control of disease will be industry-led. PEDv is not yet notifiable in Wales. The voluntary commitment made by producers and the industry to control the spread of *Brachyspira hyodysenteriae* has ensured the success of the Swine Dysentery Producer Charter particularly in East Anglia, with much emphasis on:

- Open sharing of information from the outset
- Responsible attitude of affected units both to containing the infection and minimising the risk to others

2.3. Porcine Epidemic Diarrhoea virus can spread very easily by direct contact with infected pigs or indirect contact with faeces from infected pigs or material contaminated with faeces from infected pigs. With robust national and farmgate biosecurity there is no reason why Porcine Epidemic Diarrhoea virus should ever come in contact with pigs on British farms.

2.4. The UK has remained free of the US and Asian highly pathogenic strains of PRRS for over 20 years. But if PEDv does get on a farm or farms in the UK there would be considerable value to the industry from containing the infection and eliminating the virus from the UK – c.500,000 piglets per year in years 1 and 2 and up to a further 1 million piglets in the following 5 years. A concerted government-industry effort eliminated Aujeszky's disease in the 1980s and freedom from the virus has been maintained.

3. Industry support

3.1. Delivery of the proposed contingency plan will require considerable investment in manpower, testing and diagnostic resources and data collection and analysis.

3.2. On confirmation of a positive case a government/industry Disease Outbreak Steering Group would be established comprising the following organisations:

- Defra
- APHA
- AHDB Pork
- PVS
- NPA
- BPA
- BMPA
- AIMS
- Red Tractor

3.3. The Disease Outbreak Steering Group would implement the initial disease containment and elimination strategy focused on the first 3 to 5 herds infected. The group would, at that point, review

the risk of onward spread. If the risk is high that the disease had spread more widely there may need to be a change in emphasis to general support for containment, control and elimination. Specific supports would include:

- Porcine Epidemic Diarrhoea Control Centre set up and running costs
- Mapping of infected units
- Tracing of movements and risk assessment of contacts
- PED Strategic Operations Team (previously referred to as Rapid Response Team) set up and running costs – team would try to identify source of infection and advise on control options
- Additional testing and monitoring to establish infected sites
- Intensive support for additional costs of containment and elimination of the PED virus on initial (up to 5) outbreak units
- Intensive cleaning and disinfection on farm to eliminate virus
- Monitoring of progress in eliminating PED virus on farm
- Wider industry advice for improving standards of biosecurity
- Temporary suspension of assurance assessments in the infected area

3.4. It is estimated that the cost for effectively and rapidly implementing the initial control and elimination strategy may be up to c. £1m covering administration, industry communication and general advice; additional testing and monitoring to detect spread; detailed investigations and advice on controls.

3.5. If the outbreak spread beyond 5 herds then monitoring and providing the industry with general support would be estimated at a further £1 per annum.

3.6. AHDB Pork has already invested levy funds to provide producers with free testing of samples at APHA laboratories as well as developing more advance diagnostic capabilities within APHA to type strains of PEDv. AHDB Pork levy funds will also be invested to support the delivery of this wider contingency plan.

4. Contingency Plan

1. Early identification of infected site or site(s)

Strategic:

Early identification of pigs affected (or suspected to be) by Porcine Epidemic Diarrhoea virus (PEDv) is critical to the success of any strategy to contain and eliminate the virus from GB. Delays in diagnosis increase the risk of undetected spread of the virus.

Actions at farm level and at industry level flow from the identification of the infected unit. Essential that producers report any suspicion of PED as well as confirmed cases as reporting is critical to the strategy to contain, control and eliminate PEDv.

As of December 2015 PEDv has been given Notifiable Disease status in England, and in Scotland from March 2016. There is a legal obligation for any producer or vet who suspects PEDv to inform APHA immediately

Diagnostic samples submitted to APHA from outbreaks of diarrhoea are being tested for PEDv by PCR on a weekly batch basis under the Defra-funded scanning surveillance project.

In addition, AHDB Pork has agreed with APHA that samples can be submitted from pigs with unexplained diarrhoea at no cost to farmers if the only test required is to check for PED virus.

AHDB Pork has invested in a project to enhance PEDv diagnostics at APHA. This will enable rapid determination between UK, EU and US variants of PEDv. Key aim is to develop and validate PED virus tests

- PCR on faeces, oral fluids and swabs
- Serology – ELISA, IFA, neutralisation assay
- Gross and histopathology (Immunohistochemistry).

Operational:

Stockworkers will be on the frontline for detection and it is important that farm staff are aware of the signs of the disease and the importance of contacting their vet as soon as possible to get unusual clinical signs checked out. Rapidly spreading diarrhoea with high mortality in young piglets is less likely to be missed than the more transient scour seen in growers and finishers.

Farmers must take responsible approach and report any suspicions immediately to their farm vet who will contact APHA without delay.

Assuming the farm vet is the first port of call, they must be aware of the symptoms of PED and act quickly to deliver samples to APHA or SACCVS. It is a legal obligation to contact APHA as soon as possible if there is suspicion of PEDv to organise rapid PCR testing. Ideal samples in a suspected outbreak are pooled freshly voided diarrhoeic faeces from affected pigs, packaged and sent according to usual APHA guidelines, with a completed submission form to APHA Weybridge as detailed in **SOP 2.1**, and also to be found on the AHDB Pork website.

APHA would report the PEDv PCR result to the submitting farm vet in the usual manner to pass to the farmer. At present, APHA could only share information of a positive case, the geographical region, clinical signs and type of unit. More specific information cannot be given due to client confidentiality.

In response to this data sharing issue, AHDB Pork has launched the Significant Diseases Charter. This is an extension of the original successful Swine Dysentery Charter, where producers can voluntarily sign up to share information about suspect and positive disease outbreaks. Initially this covers PEDv and Swine Dysentery, but there is scope in the future to extend this to other exotic and emerging diseases.

Resources:

1. Significant Diseases Charter
2. Documents - Flow Charts: suspect case PED and positive case PED

2. Mapping of positive sites and tracings of contacts

Strategic:

Once there is a confirmed positive, data from the electronic Animal Movement Licensing system will be used for tracings and management of the containment strategy.

Information on location of infected units, neighbouring units and recent contacts will be mapped and used to identify farms at high risk of lateral spread. Following risk assessment more intensive monitoring for signs of disease and more intensive containment biosecurity could also be put in place on any higher-risk farms.

Operational:

PED Control Centre set up within AHDB Pork. Responsibilities would broadly include:

1. Utilising the eAML2 database and mapping programs to collect:
 - a. Farm location
 - b. All pig movements on and off farm in last 21 days
 - Details of supplying farms or markets
 - Details of destination farms, markets, collection centres or abattoirs
 - Details of hauliers
 - c. Details of all pig holdings within 3 miles of affected farm (including markets, abattoirs, collection centres).
2. Provide immediate support and advice to:
 - a. Positive farm and it's vet
 - b. Any pig holdings within 3 miles of positive farm (including their vets)
 - c. Hauliers involved with any movements on/off farm
 - d. Any pig holdings associated with movements of any species on/off positive farm (including their vets)
 - e. Feed company supplying the farm.
3. Communicate key information to industry
 - a. Knowledge of PEDv breakdown
 - b. Further information regarding farm location and details only as permitted legally.
4. Provide protocols/guidance on approaches to PEDv prevention, containment, control and elimination.
5. Assist farmers in developing tailored control and elimination plans for their farm.
6. Assist with organising movements of infected pigs.
7. Provide advice to abattoirs, hauliers, feed companies and fallen stock collectors on preventing spread of PEDv.
8. Liaise with Red Tractor to discuss possible temporary suspension of assurance visits in infected areas.
9. Record all farms being declared PEDv free after an outbreak.

Resources:

1. AHDB Pork PED Control Centre
2. eAML2
3. Mapping program

<p>3. Identification of source of infection and risk assessment</p> <p>Strategic: Identifying the probable source of infection will be critical to identifying other farms at potential risk. There will be a particular focus on all movements of animals, animal products, animal by-products, people, feed, bedding, equipment and anything else which may have been in contact with pig faeces.</p> <p>Operational: Strategic Operations Team (previously referred to as Rapid Response Team) forms and works alongside PED Control Centre to begin rapid epidemiological investigation. Time is of the essence as virus in potential source materials may lose infectiousness and memories fade over time.</p> <p>Strategic Operations Team consists of;</p> <ol style="list-style-type: none"> a. Farm vet b. Control Centre representative c. APHA expert (VIO or Field Epi VO as available) d. Defra representative e. PVS expert member if appropriate f. PHWC representative g. NPA representative. <p>Standardised Investigation Questionnaire (SOP 1) to be used on all positive farms. Canadians found much merit in verbally conducting the questionnaire as enabled different routes of conversation to be followed. Suggest completed by farm vet as has background knowledge of farmer and the farm.</p> <p>Must also include record of movements of other animal species on or off farm if associated with other pig holdings (AHDB Pork obviously cannot access this through eAML2).</p> <p>Database already written in conjunction with APHA and AHDB Pork.</p> <p>Essential that standardised answers from questionnaire are entered in same format onto a database to enable searches and trend analysis. PED Control Centre would be responsible for entering the answers from the Investigation Questionnaire.</p> <p>Samples of material suspected as potential sources of infection should be taken and refrigerated pending decisions on testing (eg. feed sampling, covered in SOP 2.3).</p> <p>Resources:</p> <ol style="list-style-type: none"> 1. Strategic Operations Team 2. PED Control Centre 3. PED database <p>SOP 1: Investigation of a Porcine Epidemic Diarrhoea breakdown</p> <p>SOP 2: Sampling strategy and collection, handling and storage of samples for use in investigation of a Porcine Epidemic Diarrhoea breakdown</p> <ol style="list-style-type: none"> 2.1 - Sampling for PED - suspect clinical outbreaks 2.2 - Sampling to establish herd status for PEDv 2.3 - Testing for PEDv - feed or feed ingredient samples
--

4. Enhanced surveillance to detect any wider spread

Strategic:

On confirmation of the identification of PEDv in the UK all producers and wider industry will need to increase their surveillance for clinical signs of PEDv. This is highlighted in **SOP 1**. See **SOP 2.2**: Sampling to establish herd status for PEDv.

Operational:

Industry media will be responsible for disseminating disease information.

Sampling will only be indicated where there are suspicious clinical signs or a history of exposure to known positive pigs. See **SOP 2**.

Resources:

SOP 2: Sampling strategy and collection, handling and storage of samples for use in investigation of a Porcine Epidemic Diarrhoea breakdown

2.1 - Sampling for PED - suspect clinical outbreaks

2.2 - Sampling to establish herd status for PEDv

2.3 - Testing for PEDv - feed or feed ingredient samples

5. Enhanced general industry biosecurity

Strategic:

On confirmation of the identification of PEDv in the UK general industry biosecurity should move to the highest alert status. Standards of biosecurity at farmgate and quality of cleaning and disinfection of pig lorries would have to be stepped up.

Operational:

Farm level (ref **SOPs 4, 5 and 6**):

- All farms should enforce a clear line of separation at all farm entrances.
- Restrict all unnecessary visitors.
- Visitors should only cross the line of separation if they follow Danish entry protocols (see **SOP 4**).
- Farm staff who inadvertently cross the line of separation e.g. step on to a lorry should also follow Danish entry protocols before re-entering the unit.
- Vehicles onto farm pose particular risk (knackerman, feed lorries, visitors etc).
- Consider a cleanliness audit and seal on lorries.

Abattoir/collection centre/market level (ref **SOP 3**):

- Standard of lorry washing of particular note.
- Correct detergents and disinfectants must be used.
- No water recycling permitted.
- Consider auditing cleanliness of lorries before leaving abattoir/collection centre.

Resources:

- SOP 3:** General industry biosecurity standard
- SOP 4:** Farmgate biosecurity – people
- SOP 5:** Farmgate biosecurity – vehicles
- SOP 6:** Farmgate biosecurity – line of separation, loading
- SOP 7:** Cleaning and disinfection of vehicles

6. Development of a tailored virus elimination strategy**Strategic:**

The overall goals of the strategy for affected units should be to:

1. Contain infection within the unit
2. Reduce any risk of spread to other units
3. Eliminate PEDv from affected farm
4. In order to return the unit to producing virus-free weaners as quickly as possible.

Options include:

- a. Controlled exposure of herd to virus
- b. Partial depopulation:repopulation
- c. Depopulation:repopulation.

Depopulation of a unit would be assessed upon the circumstances of the first outbreaks and is only likely to be economically realistic if there is reasonable certainty that only 1-5 units have been affected at the time of first identification of the virus.

Operational:

The Strategic Operations Team should make an initial assessment of the options for containment, control and elimination of PEDv from an affected farm. International consultants with previous experience of managing the disease may also prove useful.

A decision on whether to use controlled exposure of the herd to the virus should be taken without delay. As it is improbable that viral spread within the unit could be contained controlled exposure is preferable to natural exposure. The only realistic alternative is depopulation of the site, and this is only likely to be economically realistic if there is reasonable certainty that only 1-5 units have been affected at the initial identification of the virus.

To reduce the level of virus production it may be necessary to consider euthanasia of piglets from non-immune sows at birth and/or create a four week free of farrowing window.

Intensive cleaning and disinfection will be needed on-farm to remove all traces of the virus and prevent viral exposure to piglets. This will include emptying all slurry channels and cleaning and disinfection of pits beneath slats. Pig flow and procedures may need to be adapted on farm to create the potential for all-in:all-out management by building. It may also be necessary to create clean and

dirty areas on farm with separate footwear, overalls and equipment as cleaning and disinfection of the unit progresses.

Resources:

SOP 8: Containment, control and elimination of infection (Indoor /Outdoor)

SOP 9: Controlled exposure of herds to virus

7. Monitoring of virus circulation within herd

Strategic:

Monitoring of virus circulation within the positive herd will be necessary to assess when the target of virus free weaner production has been achieved.

Operational:

Sampling and testing for monitoring of virus circulation in herds is included in **SOP 2.2**, taking in to account experience from North America. This document is expected to be updated as more information is acquired.

Resources:

SOP 2: Sampling strategy and collection, handling and storage of samples for use in investigation of a Porcine Epidemic Diarrhoea breakdown

2.1 - Sampling for PED - suspect clinical outbreaks

2.2 - Sampling to establish herd status for PEDv

2.3 - Testing for PEDv - feed or feed ingredient samples

8. Controlled movements from infected sites

Strategic:

Any movement of pigs or pig faeces from a positive site poses a great risk to further spreading the PED virus, but movement restrictions will not be imposed despite Notifiable Disease Status.

A responsible voluntary approach to movement controls is critical. The success of the Swine Dysentery Charter in the East of England in controlling the outbreak was in part due to sensible controls on movements and by stepping up cleaning and disinfection of vehicles in contact with the unit or pigs from the unit.

Operational:

Ideally there should be no movement of pigs or pig faeces (or other species of animals that may move to a holding with pigs) from a PEDv infected farm until plans have been put in place to control the risk of virus spread. This might include identifying biosecure locations to which weaners could be moved

with appropriate intensive cleaning and disinfection of vehicles involved in the movement. Alternatives, such as temporary weaner accommodation on the site could also be considered.

As PED is not a food safety risk finished pigs could move to abattoir for processing ideally at the end of the week with more intensive cleaning and disinfection of vehicles, the lairage and of the washing facilities at the abattoir.

Any movement would require a joint commitment from the farm, haulier and destination (farm or abattoir only) and would need to be planned in advance with agreement from all parties and all risks assessed. The lorry driver in particular is key to the success.

The PED Control Centre could take a role in advising or coordinating movements with a check list of things to consider.

Resources:

SOP 10: Controlled movements from infected sites

9. Intensive cleaning and disinfection

Strategic:

Essential to eliminate PEDv from the farm once all animals have been rapidly exposed to it. Strict cleansing and disinfection protocols must be followed to return farm to negative status.

Operational:

The effective elimination of PEDv is reliant on high quality cleansing and disinfection.

Pig flow and procedures may need to be adapted on farm to create the potential for all-in:all-out management by building. It may also be necessary to create clean and dirty areas on farm with separate footwear, overalls and equipment as cleaning and disinfection of the unit

Cleaning includes emptying all slurry channels and cleaning and disinfection of pits beneath slats. Chlorine gas has been used effectively in North America, although with obvious personal safety considerations. Removing manure from the farm is also critical (see **SOP 10**).

Dirt inactivates most disinfectants and dirt also physically protects the virus. As well as helping to make cleaning more effective detergents have some effect on PED virus and should become a standard routine. Detergents must always be used in addition to disinfection, not a replacement. Surfaces should be "white glove" clean before applying disinfectant.

PEDv is inactivated by most virucidal disinfectants, including phenols, peroxygen, chlorine, sodium hydroxide (2%), formalin (1%), sodium carbonate (4% anhydrous or 10% crystalline, with 0.1% detergent), ionic and non-ionic detergents, strong iodophors (1%) in phosphoric acid.

Information on disinfectants effective against PEDv should be maintained as an annex to the contingency plan.

Drying is critical. Heating to 70°C for 10 minutes would be ideal as this inactivates the virus but vehicles and buildings should be completely dry before reuse to minimise risk.

Leave buildings empty for as long as possible to allow drying and sunlight to eliminate residual viral infectivity. Looking at North American experience to gauge if a realistic time could be specified.

Waterlines should be cleaned and disinfection.

Rodent control precautions should be evaluated and improved as required.

Repainting or whitewashing should be considered for difficult to clean areas e.g. wood.

Resources:

SOP 11: Intensive cleaning and disinfection of unit following breakdown

10. Manure management and fallen stock disposal

Strategic:

PED virus transfers via faeces and survives in manure for extended periods of time. Any object that becomes contaminated with pig manure can be a source of infection for pigs. It is critical to prevent PED from being moved from farm to farm during manure spreading and this may impact on the timing of application and where manure should be spread.

Similarly deadstock pose a significant threat for spreading virus and should be handled, stored and disposed of quickly and bio-securely.

Operational:

Manure Management:

- If using a contractor then must explain the potential risks.
- Good communication with those who may have pigs locally at risk is essential.
- It may be possible to identify areas where the potentially contaminated manure can be spread at least risk.
- Plans should be drawn up for entrance and exit to the site with minimal cross-over with the path for the manure spreading and the rest of farm traffic or areas used by farm staff.
- Explain clearly the routes that will be used to transport manure to fields.
- Agree in advance how any manure spills, particularly on public roads, are to be handled.
- Additional time will need to be factored in for cleaning and disinfection of equipment used in manure spreading.
- Options for longer-term storage to allow time for virus to die off may also need to be considered.

Fallen Stock:

- The ideal scenario is obviously on-farm incinerators, and it may be worthwhile considering hiring a mobile incinerator during the peak of an outbreak.
- If this is not possible special arrangements should be agreed with the fallen stock collector.

- Fallen stock should be placed in sealed containers at an agreed collection point outside the unit.
- The outsides of the containers should be rinsed and disinfected once filled and sealed.
- They should be collected either as a separate collection at the end of the day or as the last collection at the end of the day.
- Ideally vehicles normally used for other species should be used for collecting high risk material.
- The material should be taken to a secure location for incineration.
- Collection should only be by companies specifically approved to transport high risk material with procedures in place to thoroughly wash and disinfect vehicle and all equipment used.
- All contaminated protective gear should also be properly cleaned or disposed of them to ensure no virus is transferred to other farms.
- The same criteria is applicable to fallen stock of other species on a PED positive farm, as they pose the same risk of contamination by carrying infected pig faeces.

Resources:

SOP 12: Manure management

SOP 13: Fallen stock

11. Confirmation of 'free' status

Strategic:

Following return of farms to production of virus-free weaners ongoing monitoring for clinical signs and testing for virus should be planned for at least 6 months to check that the virus has been eliminated or that re-emergence of the virus is detected as quickly as possible.

Operational:

Testing to confirm freedom of PEDv is essential to the elimination strategy.

The PED Control Centre would be responsible for keeping updated records of farms now considered 'negative'.

Resources:

SOP 14: Confirming return to disease 'free' status

	Standard Operating Protocols	Responsibility	Status at Jul 2015
SOP 1:	Investigation of a Porcine Epidemic Diarrhoea breakdown	APHA	Complete
SOP 2:	<p>Sampling strategy and collection, handling and storage of samples for use in investigation of a Porcine Epidemic Diarrhoea breakdown</p> <p>To include</p> <ul style="list-style-type: none"> 2.1 - Sampling for PED - suspect clinical outbreaks 2.2 - Sampling to establish herd status for PEDv 2.3 - Testing for PEDv - feed or feed ingredient samples 	APHA	Complete
SOP 3:	General industry biosecurity standard	NPA	Complete
SOP 4:	Farmgate biosecurity – people	AHDB Pork	Complete
SOP 5:	Farmgate biosecurity – vehicles	AHDB Pork	Complete
SOP 6:	Farmgate biosecurity – line of separation, loading	AHDB Pork	Complete
SOP 7:	Cleaning and disinfection of vehicles	AHDB Pork	Complete
SOP 8:	<p>Containment, control and elimination of infection</p> <ul style="list-style-type: none"> - 8a: Indoor herds - 8b: Outdoor herds 	PVS	Complete
SOP 9:	Controlled exposure of herds to virus	PVS	Complete
SOP 10:	Controlled movements from infected sites	NPA	Complete
SOP 11:	Intensive cleaning and disinfection of unit following breakdown	AHDB Pork	Complete
SOP 12:	Manure management	AHDB Pork	Complete
SOP 13:	Fallen stock	Ian Campbell	Complete
SOP 14:	Confirming return to disease ‘free’ status	PVS	Draft

Document Updated August 2016