

# DPI Primefact

## Recognising exotic diseases of pigs

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Animal Biosecurity, Orange

*This primefact provides information on how to recognise some important diseases exotic to Australia that affect pigs. These diseases can affect all pigs, including pigs in all production systems, feral pigs and pet pigs.*

Pigs are considered 'high risk' for the introduction of exotic viral diseases through the illegal feeding of prohibited pig feed ('swill') to pigs. Prohibited pig feed includes meat, meat products and anything that has come into contact with meat or meat products.

It is illegal to feed swill to pigs in all Australian states and territories.

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### Clinical signs of an exotic pig disease

General indications of an exotic pig disease include:

- unusually high number of pig deaths
- unusually high number of sick pigs
- unusually high number of lame pigs
- unusually high number of pigs not eating
- unusually high number of pigs with a fever (39.5-42°C)
- unusually high number of pigs that do not want to get up or have nervous signs
- vesicles (blisters) on pigs' snouts or feet
- discolouration of the ears, belly, rump, legs or tail (white-skinned pigs)

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### Vesicular diseases of pigs

Vesicular diseases of pigs are viral diseases that include foot-and-mouth disease, swine vesicular disease, vesicular exanthema, vesicular stomatitis, and Senecavirus A.

## Foot-and-mouth disease

Foot-and-mouth disease (FMD) is a highly contagious viral disease of cloven-hoofed animals. It is characterised by the formation of vesicles and erosions in the mouth, nose, teats and feet. Although not very lethal in adult animals, it causes significant production losses and is a major constraint on international trade.

In pigs, the main clinical sign is lameness. There is also fever and loss of appetite. Vesicles form along the top of the foot, on the heels and between the claws (Figure 1).

The feet are sore and affected pigs prefer not to move. Vesicles may also form on the snout, but tend to rupture quickly (Figure 2). Abortion is common and mortality in piglets can be high.

Figure 1 – Blister on claw



Image credit: USDA

Figure 2 – Ruptured vesicle on snout



Image credit: Frank Filippi, CSIRO

## Swine vesicular disease

Swine vesicular disease (SVD) is a contagious disease of pigs characterised by vesicles on the coronary bands, heels of the feet and occasionally on the lips, tongue, snout and teats. The disease may be inapparent, mild or severe. Severe disease is usually only seen when pigs are housed on abrasive floors in damp conditions.

The main importance of SVD is that it is clinically indistinguishable from FMD and any outbreaks of vesicular disease in pigs must be assumed to be FMD until investigated by laboratory tests and proven otherwise.

## Vesicular exanthema

Vesicular exanthema (VE) is an acute viral disease of pigs. The disease is characterised by the formation of blisters that are clinically indistinguishable from those caused by FMD.

The earliest clinical sign is a marked fever with the pigs being lethargic, not eating and unwilling to stand. Sows may abort and lactating sows may stop producing milk. The disease may not be noticed in a herd until obvious lameness and blisters are seen on the snout and in the mouth (on the lips, gum or tongue); on the soles, the skin between the toes, cuticle and claws; and occasionally on the teats or udder. In some outbreaks, the foot lesions may predominate and in other outbreaks they may be insignificant.

## Vesicular stomatitis

Vesicular stomatitis (VS) cannot be reliably clinically differentiated from the other vesicular diseases when horses are not involved. Horses are resistant to FMD and susceptible to VS.

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## Senecavirus A

Senecavirus A (SVA), previously known as Seneca Valley virus, has been confirmed as the causative agent of swine idiopathic vesicular disease outbreaks in the United States of America (USA), China, Brazil and Canada. It is also associated with a syndrome known as epidemic transient neonatal losses.

In most cases the production impact is low, but the clinical signs of SVA infection are indistinguishable from those caused by other exotic vesicular diseases of pigs. SVA is therefore an important differential diagnosis of FMD. The clinical presentation of SVA in piglets can also resemble transmissible gastroenteritis and porcine epidemic diarrhoea.

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## Transmissible gastroenteritis

In herds newly infected with transmissible gastroenteritis (TGE) virus, all ages of pigs are affected. The virus is spread through the faeces and by aerosol. Overseas, starlings have been implicated in spread of disease.

Acute outbreaks of TGE cause severe disease in young pigs. There is likely to be an explosive pattern of infection including vomiting and yellow diarrhoea. Affected pigs become dehydrated and are likely to die. There will be a high mortality in piglets < 3 weeks of age. Sows may also become sick with clinical signs including vomiting, diarrhoea, loss of appetite and milk failure.

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## Porcine epidemic diarrhoea

Porcine epidemic diarrhoea (PED) is caused by a porcine coronavirus. The PED virus is similar to, but genetically distinct from, the TGE virus. PED clinically resembles TGE.

PED results in vomiting and occasionally scouring in adult pigs; severe diarrhoea, vomiting and often death in piglets; scours and vomiting in weaned pigs; and scours, reductions in feed intakes and scours in grower-finisher pigs.

In naïve herds, the number of pigs affected will likely be near 100% and mortality may range anywhere from 50-100% in suckling piglets, 1-3% in grower-finisher pigs and negligible in adults.

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## Classical swine fever ('hog cholera')

Classical swine fever (CSF) is due to a pestivirus. CSF has occurred in Australia in the past, but it has been successfully eradicated on each occasion. All Australian outbreaks were suspected to be a result of feeding infected swill to pigs.

Signs of infection with CSF usually appear 5-10 days after exposure to the virus. In very acute cases, young pigs can die without showing any clinical signs. Acute cases can present with a fever, depression, loss of appetite, conjunctivitis, constipation followed by diarrhoea, discolouration of the extremities, and nervous signs including a staggering gait. Many affected pigs die after being sick for 1-2 weeks. Chronic cases can present with wasting and diarrhoea. Reproductive issues may also be noticed, including abortions, mummified foetuses, weak and stillborn piglets, and persistently infected piglets.

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## African swine fever

African swine fever (ASF) is a highly infectious viral disease of pigs. There is no cure available. It has a variety of clinical signs, but can appear similar to CSF. Diagnosis can only be confirmed by laboratory testing.

There have been no reported cases of ASF in Australia. An outbreak of this deadly disease was reported in China in 2018 and in 2019, ASF continued its spread throughout South-East Asia, with confirmed cases reported in Mongolia, Vietnam, Laos, Cambodia, Myanmar, North Korea, South Korea, the Philippines and most recently, Timor Leste and Indonesia. In March, 2020 Papua New Guinea confirmed the presence of ASF.

The ASF virus spreads by direct contact between infected and susceptible pigs. It also spreads by contaminated material from the environment, via contaminated clothing, footwear, vehicles or equipment and the feeding of infected swill to pigs. Most international spread has been associated with the swill feeding of garbage from international airports or seaports to pigs.

ASF occurs in the warthog population in Africa due to the soft argasid tick. It is not fully understood whether soft ticks (such as kangaroo tick of the genus *Ornithodoros*) may contribute to the transmission of the virus in Australia.

Pigs of all ages are affected.

The first sign is usually the development of a fever (41-42°C). Pigs become depressed, stop eating, huddle together, seek shade and, in the peracute form, may die before other clinical signs develop. Pigs often develop a swaying gait with the hind legs appearing weak. Flushing of the skin, particularly over the abdomen and extremities in white-skinned pigs, commonly develop in pigs that survive for >1 day, which may deepen to a bluish-purple colour (cyanosis) [Figures 3, 4, 5, 6 & 7]. Difficult breathing is usual and foam, often blood-tinged, may appear at the nostrils [Figure 8]. Pigs may show signs of abdominal pain. Vomiting is common. Nasal and eye discharges can be seen in severe cases. Some pigs become constipated, while others may develop a bloody diarrhoea [Figure 9]. Sows may abort at all stages of pregnancy.

Figure 3 - Close-up of flushed/cyanotic skin



Image credit: FAO\*

Figure 5 - Flushing of the abdomen



Image credit: Pirbright institute†

Figure 7 - Flushing at the leg extremities



Image credit: PIADC‡

Figure 4 - Flushing/Cyanosis of ear tips



Image credit: Pirbright institute†

Figure 6 - Skin flushing



Image credit: PIADC‡

Figure 8 - Bloody foam at nostrils



Image credit: PIADC‡

Figure 9 - Bloody diarrhoea



Image credit: Pirbright institute†

\* <http://www.fao.org/3/X8060E/X8060E00.htm>

† <http://apha.defra.gov.uk/documents/surveillance/diseases/african-swine-fever-images.pdf>

‡ <http://www.cfsph.iastate.edu/DiseaseInfo/disease-images.php?name=african-swine-fever&lang=en>

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## Aujeszky's disease ('pseudorabies')

The pig is the only natural host of Aujeszky's disease virus. Infection can be inapparent or can result in clinical disease. Aujeszky's disease virus can also infect ruminants, cats, dogs and rodents causing a fatal disease.

Clinical signs of Aujeszky's disease in pigs vary with the viral strain, infectious dose, age and immune status of the pig. Infected newborn piglets usually die within 24-48 hours after birth; fever, loss of appetite and nervous signs are commonly observed. Weaned pigs can also exhibit nervous signs, but to a lesser extent. Mortalities can reach 50% in recently weaned pigs. Sneezing, coughing, nasal discharge and breathing difficulties persisting for 5-10 days are common in older weaners. Mortality can reach 10% in these pigs, but most production losses are the result of poor performance and stunted growth. Respiratory disease affecting a large number of pigs with a low number of deaths is most common in grower and finisher pigs. Infected adult pigs may not show clinical signs. Reproductive consequences depend on the time of infection during pregnancy and include abortion, mummified fetuses, weak and stillborn piglets.

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## Porcine reproductive and respiratory syndrome

Porcine reproductive and respiratory syndrome (PRRS) was first seen in the USA in 1987 and in 1990 a similar syndrome was reported in Europe. The European strain caused purpling of the extremities and the disease was initially named 'blue ear disease'.

In the first weeks after introduction of the PRRS virus, clinical signs may be seen in all ages of pigs. Clinical signs in the breeding herd include loss of appetite, fever, depression and abortion. In piglets and weaner pigs, clinical signs may include respiratory distress ('thumping', mouth breathing), loss of appetite and depression. Reproductive losses are evident over the following 1-4 months where pre-weaning mortality may increase to 50-60% as a result of starvation, diarrhoea and fading.

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## Nipah virus

Nipah virus (NV) is a serious zoonotic disease (transmissible from animals to humans). Fruit bats are the natural host of NV, but infected bats show no clinical signs of disease.

NV is highly infectious in pigs and can cause severe neurologic or respiratory disease resulting in significant economic losses for pig producers. Generally, mortality is low except in young piglets. NV should be considered if pigs have an unusual 'barking' cough or there are human cases.

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## Japanese encephalitis

Japanese encephalitis (JE) is a mosquito-borne viral disease, which is maintained in nature by transmission cycles involving *Culex* sp. mosquitoes, certain species of wild and domestic birds and pigs. Humans and horses may also become infected resulting in encephalitis (inflammation of the brain) and death in severe cases.

Adult non-pregnant sows show no obvious signs of infection. However, pregnant sows show evidence of reproductive failure including abortions and mummified foetuses or they may give birth to weak or stillborn piglets. Nervous signs are occasionally seen in pigs up to 6 months of age.

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