

# **Cattle Diseases - Bovine pestivirus**

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Bovine pestivirus (also referred to as bovine viral diarrhoea virus (BVD) and mucosal disease virus) is a virus that is now recognised as an insidious cause of losses in beef and dairy herds in Australia. Infection is widespread, with many herds having evidence of infection with this virus, even extensively managed beef herds. Bovine pestivirus affects all types of cattle, and has probably been present in Australia as long as we have had cattle. In the past it has commonly been misdiagnosed as other cattle diseases. In herds recently infected with pestivirus, production losses of between 25 and 40% have been recorded due to reduced reproductive performance, death losses and ill thrift. If pestivirus stays in the herd, annual production losses between 5 and 10% commonly occur.

## **Transmission**

Bovine pestivirus is spread by close contact (nose-to-nose) between cattle. The greatest period of spread is during yarding, particularly when cattle from different groups or herds are mixed together or penned in adjacent pens.

## **The disease**

Bovine Pestivirus is capable of causing a large number of disease "syndromes" in cattle herds.

### **Bovine viral diarrhoea**

Bovine viral diarrhoea occurs when healthy normal cattle are infected with pestivirus. It is rarely seen in Australia, with most pestivirus infection going unnoticed. When seen, signs include a transient fever, a depressed "hollow" appearance, diarrhoea and sometimes a cough. While never recorded in Australia, profuse bleeding from small wounds, such as eartagging wounds may also occur. Cattle infected with pestivirus may also be more susceptible to other infections due to a depressed immune response while their body copes with the pestivirus infection. Infected cattle develop a strong immunity when they recover.

### **Foetal infections with pestivirus**

Bovine pestivirus is capable of crossing the cow's placenta and infecting the developing foetus. If cows lack immunity to pestivirus and are infected while they are pregnant, the virus can damage the foetus. Cows that have immunity to pestivirus from previous exposure can block this passage and protect their foetus.

This in utero infection of the foetus via the naive dam is the most important form of pestivirus infection and results in most losses under Australian conditions. Foetal infections with pestivirus

result in a wide range of disease syndromes and production losses. The losses that occur depend on the stage of pregnancy when foetuses are infected with pestivirus.

- If the cow is infected in the first month of pregnancy, the pregnancy is terminated either by abortion or resorption of the foetus by the dam.
- If the foetus is infected in the second to the sixth month of pregnancy, a variety of different syndromes can be observed. The foetus may still be aborted (this does not necessarily occur straight away); but, more often, the foetus survives full term with the resultant offspring born malformed, weak, "dwarfed", stillborn, or clinically healthy but "persistently infected" with pestivirus. Persistently infected calves may grow well, but generally are unthrifty compared to others the same age and they often suffer from chronic scours or pneumonia.
- If infection occurs around three to five months of pregnancy, the virus affects the developing nervous system of the foetus. Calves may not be able to stand or suck or may develop convulsions after birth because they are missing parts of their brain. These calves may also have eye abnormalities such as blindness and cataracts or bent up front legs. Some calves will survive but have a wobbly gait and may have a permanent head tremor.
- If the cow is infected between 6 and 9 months of pregnancy, the foetus is generally resistant to any adverse effects of the virus although some growth retardation of the developing calf may occur.

The most important outcome of foetal infection with pestivirus is the birth of calves that are "persistently infected". These animals shed pestivirus for life, constantly infecting other cattle mixed with them, in particular, pregnant heifers and cows.

### **Mucosal disease**

Persistently infected cattle may also develop mucosal disease. Mucosal disease is the most dramatic syndrome associated with pestivirus infection and the syndrome most often recognised by producers. Affected cattle drool excessively, appear depressed and feverish, have persistent often bloody diarrhoea, and sometimes a soft cough and lameness (symptoms that can easily be confused with Foot and Mouth Disease and some other exotic diseases!). The severity of mucosal disease varies from an acute form with death within a few days to chronic wasting disease.

With the acute form of mucosal disease, there is a profuse diarrhoea with ulcers in the nose, mouth, eyes and between the toes. At post mortem these ulcers are often found to extend right through the upper and lower intestinal tract. With the chronic wasting form of mucosal disease, calves just grow poorly. Often there are no visible abnormalities at post mortem, but microscopic changes can be found. Persistent infection with pestivirus should always be considered where some young cattle in a mob are doing very poorly while most of the other cattle are doing very well.

### **Diagnosis**

Blood tests can be done to identify bovine pestivirus in live animals. This is aimed at detecting persistently infected cattle. Tissues collected at post mortem from dead cattle and aborted foetuses can also be tested for pestivirus.

Blood samples can also be collected from a cross section of a herd to determine if cows or heifers have been exposed to pestivirus by determining their antibody status. This can give an indication if pestivirus infection is active in a herd or not and aid in designing an appropriate control program.

## **Control**

Control of bovine pestivirus centres around ensuring replacement heifers develop a strong immunity before they are bred.

In herds that are currently infected with pestivirus, control can be achieved by mixing a "persistently infected" calf with replacement heifers prior to breeding. This needs to be undertaken with great care.

In herds that are free of pestivirus, control centres around appropriate quarantine to keep introduced and neighbouring stock away from pregnant females ie by adopting strict biosecurity measures.

## **Vaccination**

A pestivirus vaccine is now registered for use in Australian cattle herds. It requires two shots of the vaccine 4-6 weeks apart for protection of the developing foetus ie., both shots of the vaccine must be given prior to breeding for foetal protection to occur. Timing of booster vaccinations is not as critical as initial vaccination. Bulls should be vaccinated as well as cows as healthy normal bulls can be transiently infected and shed pestivirus in their semen for a short period after natural exposure.

## **Further information**

For further information contact the DPI&F Business Information Centre on 13 25 23.

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