



Dr Sally Oswin

Sally Oswin graduated as a veterinarian from the University of Melbourne in 1993 and worked in mixed private practice in Victoria until 1999. At the end of 1999 Sally took up the position of Veterinary Technical Services Manager with CSL Limited and went on to complete an immunology course at the University of Melbourne. Sally's role at CSL involves looking after the cattle portfolio, which includes responding to queries and concerns regarding cattle diseases and the use of vaccines, providing training for veterinarians and producers, and involvement in the research and development of new cattle vaccines. Some of the more interesting aspects of Sally's job involve the implementation of on-site training programs for large corporate cattle stations in Australia's north, running vaccine trials at CSL's Research Station at Woodend, and working towards the registration of new vaccines.

BOVINE PESTIVIRUS

Bovine Virus Diarrhoea (BVD) Mucosal Disease

Bovine Pestivirus is a common infectious viral disease of cattle that has the potential to affect cattle in a number of ways, perhaps most importantly causing reduced reproductive performance. You may also know of this virus by one of its other names, Bovine Virus Diarrhoea (BVD) or Mucosal Disease.

Danger signs indicating possible Pestivirus problem

- Increased no. cows and heifers returning to service after initial joining/AI
- Heifers and cows PT in calf but failing to deliver at term
- Stillborn, premature calves or calves that die soon after birth
- Birth of abnormal calves (neurological problems including the inability to stand or suck, blindness, abnormal stance, incoordination, severe tremors. Calves may also be born with contracted joints, abnormal hair loss or of low birth weight)
- Calves that don't grow properly and suffer other illnesses
- Outbreaks of respiratory disease in groups of cattle

Cattle suffering from Mucosal Disease (acute illness and death, usually around 6-24 months of age)

Bovine Pestivirus is a very complex disease so I thought the most practical approach would be to begin by listing a summary of the danger signs indicating a possible Pestivirus problem in the herd. It is important to keep in mind that other disease issues can manifest with similar signs, but in general, the more of these indicators that are present in the one herd, the more likely it is that Bovine Pestivirus may be the cause.

Lets go through them one by one:

Pestivirus is often responsible for causing an increased number of heifers and cows returning to service after the initial AI or joining.

Heifers and cows that pregnancy test in calf may fail to deliver a calf at term, indicating a loss through resorption of abortion of the foetus.

The delivery of stillborn, premature calves or calves that die soon after birth.

The birth of abnormal calves, and these abnormalities may include neurological abnormalities such as calves that are unable to stand or suck, calves that are blind, uncoordinated, have an abnormal stance or demonstrate severe tremors. In addition, calves may also be born with contracted tendons, abnormal hair loss or of low birth weight.

Calves that do survive may not grow properly and they may suffer from other illnesses, so runty, sickly calves may indicate that there is a Pestivirus problem in the herd

Pestivirus can also be responsible for outbreaks of respiratory disease, particularly in weaners or breeding females around calving and early lactation.

And finally, cattle suffering from Mucosal Disease may be the indicator that Pestivirus is present. I will go into this further as we go on but these animals typically demonstrate acute illness and death, usually between the age of 6 and 24 months.

As I mentioned, all of these symptoms in isolation may have a number of potential causes, but the more of them that are present on the one property, the more likely that Pestivirus is implicated.

Prevalence and Transmission

·60% Australian cattle/90% Australian herds exposed (similar worldwide)

But: prevalence within a herd or group varies greatly

·1% persistently infected (carriers)

·Transmitted by direct contact (nasal discharge, saliva, semen, faeces, urine, milk) also flies and equipment (ie, shared needles, nose grips, reused rectal gloves)

·Importance : Exposure of pregnant cattle

Surveillance work that has been undertaken would indicate that Bovine Pestivirus is quite a widespread infection both Australia wide and in most overseas countries as well. Around 60% of the Australian cattle population are thought to show evidence of past exposure to the virus with around 90% of herds demonstrating evidence of past infection. These figures are thought to approximate the prevalence in most overseas countries as well including the US, Canada, the UK and much of Europe.

It is important to keep in mind though that the prevalence within any particular herd or group of cattle will vary greatly with age, mainly in that the older cattle are, the more likely they will demonstrate evidence of past exposure.

It is believed that approximately 1% of the Australian cattle population are persistently infected carriers, but again this represents the entire cattle population, if you look at age groups it is not unlikely to see as many as 5, 10, or 20% of calves that are dropped on one property having carrier status due to a recently introduced infection.

The disease is predominantly transmitted by direct contact with other cattle, so where nose to nose contact is possible, so is the transmission of disease. It is shed by carriers in nasal secretions, saliva, semen (and hence transmitted through joining) and it may be transferred by flies or equipment. It is also thought probable that sheep and pigs can passively transfer the disease to cattle.

It is crucial to realise that the economic importance of Pestivirus as a pathogen is most likely to be evident when cattle that are pregnant are exposed to the virus.

Disease syndromes caused by Bovine Pestivirus

Lets take a closer look at the disease syndromes caused by Bovine Pestivirus, and I have chosen to address this by considering two scenarios, the first being the situation when non-pregnant cattle are exposed to the virus. When healthy cattle are exposed to Pestivirus in the absence of stress or other

disease it is probably going to cause some degree of immunosuppression and maybe a mild transient illness, but it is most likely that you will not even be aware that the animal has been infected.

If on the other hand, the animal is exposed to the virus in combination with stress such as that experienced in a feedlot, a saleyard or after a long period of transport, or if there is some other concurrent disease present, then the infection may manifest as Bovine Respiratory Disease, the most common cause of illness seen in feedlot cattle. It is also possible that a Pestivirus infection in a stressed or sick animal may have the potential to exacerbate diseases other than BRD as well.

The second scenario, and likely the more significant one, is the situation when a pregnant animal is exposed to Bovine Pestivirus. When this occurs, one of three things is likely to happen.

1. There will be reproductive loss in the form of failed conception, resorption or abortion of the foetus
2. The foetus will go to term but be stillborn, unviable or abnormal (and I discussed these abnormalities earlier)

- or 3. The calf will be persistently infected or a carrier of Pestivirus. It is these carriers that are the key to survival and spread of the virus in the herd and they will all go on to develop Mucosal Disease and die, usually between the ages of approximately 6 to 24 months. I will discuss this syndrome in greater detail shortly.

If we take a look at the costs of this reproductive syndrome alone, in a herd with a newly introduced infection, it has been shown that production losses may be as high as 25 to 50%.

Mucosal Disease - the fate of PI calves

We briefly talked about the importance of carrier animals in the perpetuation of the disease, I'll just revisit this here. Mucosal Disease is actually the name of the condition that is the fate of all persistently infected calves. These calves are almost wholly responsible for spreading the disease in the herd and if they are female and selected for breeding, all of their offspring will also be carriers. In addition to this, all carriers are destined for an early death due to 'Mucosal Disease' which occurs due to a mutation or superinfection with Bovine Pestivirus. They will often die by the age of 6-24 months, although some may live longer, and the symptoms of Mucosal Disease include:

Depression, anorexia, fever, drooling of saliva due to mouth ulcers, watery diarrhoea due to a damaged intestinal tract, lameness due to erosions between the toes and ultimately death.

Confirming a Pestivirus problem

- Blood testing for evidence of antibodies against Pestivirus**
 - gives an impression of herd prevalence
 - may indicate when the infection occurred

- Blood testing cattle for virus (antigen)**
 - costly so best to test 'likely' candidates, ie, runty or sickly calves or calves born to a group of dams that experienced reproductive problems

If you are aware that some of the presenting signs are evident in your own herd, then the next step is to confirm a Pestivirus problem. This is done by taking blood tests, either to look for antibodies to the virus which gives an impression of herd prevalence and may tell you when the infection occurred, or by blood testing cattle that are negative for antibodies to see if they are carriers. This is more cost effective when 'likely' candidates are selected for testing, and by this I mean any runty or sickly calves or calves born to a group of dams that experienced reproductive problems in the same pregnancy.

Controlling the disease

- Improved biosecurity in combination with vaccination**

- Improved biosecurity :**

- Quarantine and test all introductions, cull or vaccinate as appropriate

- **Avoid mixing cattle during pregnancy**
- **Test any 'suspect' animals and cull carriers**

·Vaccinate:

- **Prejoining vaccinations**

The disease is best controlled through a combination of improved biosecurity and the introduction of a vaccination program.

By improved biosecurity I refer to the implementation of some management practices to reduce the likelihood of spread of the disease. These should include:

- Quarantine and testing of all introductions, then culling or vaccinating them as appropriate
- The avoidance of mixing cattle during pregnancy, and this includes with over-the-fence contacts
- And testing any 'suspect' animals and culling them if found to be carriers

In addition, the introduction of a vaccination program is of enormous importance to prevent the disease from spreading or being reintroduced down the track and we recommend that the vaccine be administered to all breeding cattle prior to joining. The CSL vaccine is called Pestigard™ and it carries the important label claim of reducing reproductive losses due to Bovine Pestivirus.

You will find a table in your notes outlining the specifics of the recommended vaccination program.

	Calves		Heifers			Cows		1st Season or New Bulls		Bulls*
Age/ Time	6 weeks	12 weeks	6-8 weeks pre-joining	2-4 weeks pre-joining	Pre-calving	2-4 weeks pre-joining	Pre-calving	6-8 weeks pre-joining	2-4 weeks pre-joining	2-4 weeks pre-joining
Pestigard™			✓	✓		✓*		✓	✓	✓

*2 doses required if previously unvaccinated

For a vaccination program specifically suited to your herd contact your Veterinarian or CSL Veterinary Technical Services on 1800 333 011

Summary

·Bovine Pestivirus is widespread throughout Australia and the rest of the world

·Production losses can be in the vicinity of 25-50% with a newly introduced infection

·Biggest impact is when pregnant cattle are exposed for the first time - reproductive losses and generation of persistently infected calves

·Ideal method of disease control involves both improved biosecurity practices and the introduction of a vaccination program

To summarise, Bovine Pestivirus is widespread throughout Australia and the rest of the world and production losses can be in the vicinity of 25 to 50% with a newly introduced infection. The biggest impact of the disease is experienced when cattle are exposed to it for the first time during pregnancy, and the disease is predominantly manifest as reproductive losses and the generation of persistently infected calves. And finally, the ideal method of disease control involves both improved biosecurity practices and the introduction of a vaccination program. It has been shown in countries overseas that have had access to vaccines for some time that optimal disease control is achieved when they are used in combination with improved management practices, and I believe this is likely to be the case here in Australia as well.