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## BOVINE VIRAL DIARRHOEA VIRUS (PESTIVIRUS)

Bovine Viral Diarrhoea Virus (BVDV), also commonly known as Bovine Pestivirus is recognised as one of the most economically significant diseases in the Australian beef and dairy industries. BVDV is a virus that causes a variety of clinical syndromes, with reproductive disease being the most significant. The virus has existed in Australia for over 40 years and research has found that 90% of all cattle herds have evidence of Pestivirus infection.

### HOW IS PESTIVIRUS SPREAD?

The main source of infection is persistently infected (PI) animals. Infected animals shed a large number of viral particles in all body fluids and excretions (urine, faeces, saliva). Infection in susceptible animals tends to occur from direct animal to animal contact that may occur during yarding, mustering, agricultural shows and sales. The most common ways that BVDV is introduced to a herd through the introduction of replacement breeding animals, new bulls and occasionally over the fence contact with infected animals.

### PERSISTENTLY INFECTED (PI) ANIMALS

#### How are PI animals produced?

PI animals are produced when a pregnant female contracts the virus at exactly the right time during the early stages of her pregnancy. The virus then spreads to the unborn calf and the calf's immune system recognises the virus as being 'normal' hence they do not develop an immune response to expel the virus from the body. The calf is then born persistently infected with the virus. If the cow is infected later in her pregnancy, the calf may be born either persistently infected, have developmental problems or be born perfectly healthy.



#### Signs of a PI animal

The majority of PI animals show signs of immune deficiency, ongoing infections, poor weight gain, ill thrift and sudden death. However, some PI animals appear normal and do not show any obvious signs of illness. These animals are hard to recognise making it difficult to visually diagnose the source of BVDV in your herd. BVDV is a complex virus that has the ability to mutate in PI animals to what is known as a cytopathic strain which causes mucosal disease. Acute mucosal disease in cattle is seen as depression, anorexia, drooling, increased temperature, many show ulcerations of the mouth, tongue and around the feet, profuse smelly diarrhoea, nasal discharge, dehydration and death.

#### Why are PI animals such a problem?

Although around 50% of PI animals will die by the age of twelve months, the damage they can do prior to then can be catastrophic. It is important to remember that pregnancy tested in calf (PTIC) cows or heifers brought onto the property may be carrying a PI calf so infection may not be from a female native to your herd. PI calves, whilst alive, can spread the disease throughout a cow herd, to those bulls in for the new joining period and then your weaner herd.

## CLINICAL SYNDROMES ASSOCIATED WITH BVDV

There is a wide spectrum of outcomes associated with BVDV. Infections may be subclinical (no outward signs of disease), clinical or chronic. This depends on the immune status of the animal, the stage of gestation of female animals and the amount or strain of virus that the animal is exposed to.

In Australia, common outcomes of exposure to BVDV in cattle include one or more of the following:

- \* Reproductive Syndromes – as listed below
- \* PI Animals – BVDV infection during pregnancy
- \* Immune response – passing infection with BVDV and a subsequent immune response to the virus

## BVDV AND THE REPRODUCTIVE PERFORMANCE OF YOUR HERD

Reproductive syndromes associated with BVDV include: conception failure, normal to prolonged returns to oestrous, increase in return to service numbers, spread out calving pattern, slow to grow and weak calves, birth defects such as blind calves or calves with neurological problems, poor weaning rates due to ill thrift and death. A good pregnancy rate does not indicate a BVDV free herd as reproductive losses are associated with the timing of infection.

Infection Period	Clinical Syndrome	Effects on Production
Mating or AI	- disrupts ovulation and fertilisation - early embryonic death	- reduced conception and pregnancy rates
First Trimester	- production of PI calves - late embryonic death - abortions or still births	- prolonged return to oestrous - increase in returns to service
Second Trimester	- abortions - unviable/abnormal calves born at full term - congenital abnormalities (skin, nervous system, eyes)	- reduction in the number of calves born and the viability of those on the ground
Third Trimester	- no reported problems associated - calves are born with BVDV antibodies	

## TESTING FOR BVDV

There are a range of options for diagnosing BVDV in your herd ranging from crush side snap tests to those that need to be sent to external laboratories. Your veterinarian can help you decide which method is best for you. There are two types of tests used to detect the virus in a cattle herd.

**Antibody Test** - Blood is collected to give an indication of whether an animal is infected and how recent the infection was. The test looks to see if there has been an immune response to the virus and is used as a general screening test to see if BVDV is present in the beef herd. Dairy farmers can use a bulk milk test to see if BVDV is present.

**Antigen Test** – This test is used to see if an individual is a PI animal. These animals have no immune response against BVDV so will test negative to an antibody test but positive to an antigen test. Hair samples, ear notches or blood samples can be used. This test is especially important for producers wanting to test high value bulls and cows prior to sale to ensure they are not a PI animal.

## PREVENTING BVDV

There are several ways to manage a herd depending on their previous exposure to BVDV.

If you have many PI calves in your herd, you may actually have a good level of immunity.

Likewise, without a PI, there is a good chance your herd is naïve. There is no way to know

this without testing. There is a preventable vaccine available called Pestigard. Given the potential effects of BVDV on the unborn calf, the vaccination course needs to be completed prior to joining with an annual booster then given.



It can be challenging to establish a herd profile (what animals are infected, persistently infected or otherwise) however this will help with the cost-benefit analysis of what vaccination protocol is suitable for your herd.

*This information sheet is not intended as a substitute for a veterinary consultation.*

*It is recommended that a consultation be arranged with a veterinary practitioner if you have any concerns with your herd's health.*