What is Pestivirus?
Pestivirus, which is also known as BVD or BVDV (Bovine Viral Diarrhoea Virus) is a virus that occurs in cattle. Pestivirus can occur either in “Type 1” or “Type 2”, however Australia only has Type 1. Pestivirus has been widespread in Australia for a long time, with estimations that up to 90% of herds either are, or have been affected at some time.

How it’s spread
Cattle spread Pestivirus to each other via “nose to nose contact”, or essentially through any animal to animal contact of an excretion or secretion (e.g. mucous, semen, fluids from a dam to a calf in utero). Examples of common occasions when Pestivirus is spread include:
- Buying/Sharing Bulls
- Introducing replacement females
- Trading animals
- Purchasing poddy calves
- Over the fence contact
- Strays
- Animals mingling at shows
- Multi-vendor sales
- Semen
- Embryos (specifically the fluid on the outside of the egg if it’s not washed off)
- Dung (to a lesser extent – UV kills the virus reasonably quickly on pastures)
- Mixing groups (e.g. different age groups) on property
- Yarding different animals together
- Agistment

How it can infect and affect animals
If an animal contracts Pestivirus, it’s known as a “Transient Infection”. A transient infection is a general illness where an animal may have an increased temperature, and other symptoms such as lethargy, nasal discharge, conjunctivitis or a cough. If the transiently infected animal is pregnant when they become infected with Pestivirus, they may either abort their foetus or give birth to what’s known as a “Persistently Infected” animal (or P.I. for short). P.I. animals are the result of a foetus being exposed from across the placenta before their immune system became functional, before four months of gestation. If the foetus survives the intrauterine infection, the calf will be born P.I., and because its immune system does not recognize the virus, they shed enormous amounts of BVDV for their entire, though typically shortened, lives.

P.I. animals are dangerous in a herd because they are always infected with Pestivirus, and continually shed the virus to the animals surrounding it (this will be expanded on further in the next section).

The possible outcome of a pregnant female’s Pestivirus infection depends on what stage of gestation she becomes infected:
- Before and up to 1 month: = Early embryo death, disruptions to ovulation and fertilisation
- From 1 to 4 months: = Production of P.I. calves, late embryo death/abortion/stillbirth
- From 3.5 to 5 months: = Abortions, development of unviable or malformed calves
- After 5 months: = Late term abortion or birth of a clinically normal BVDV immune calf

How it can affect your herd
Considering the list above, one of the most obvious effects of Pestivirus is a potential decrease in reproduction or calving rates, which can have a devastating effect on a beef or dairy business.

Affects related to general illness from a transient infection of Pestivirus include ill-thrift, weight loss and also suppression of an animal’s immune system, making it more susceptible to other infections. These affects are particularly negative for animals in, or about to go into a feedlot. Increased temperature that can accompany an infection such as Pestivirus can also temporarily affect bull fertility. An increase in temperature can reduce sperm production and can have an effect for up to two months. Bulls transiently infected may also shed BVDV virus in their semen for a prolonged time.

P.I.s can obviously perpetuate reproductive losses by continually infecting other animals; however they also have a weak immune system and a high mortality rate (approximately half of all P.I.s die in their first year of life and then another half die in every year subsequent). P.I.s can also succumb to a condition known as “Mucosal Disease”. Mucosal Disease can cause lesions in many places (most visible in the mouth), and can cause fever, dehydration, diarrhoea and often death. Due to its symptom similarities to Foot and Mouth Disease, Mucosal Disease is reportable in many states including Victoria.

What does it look like?
Pestivirus can present in a number of fashions as previously detailed, such as:
- Poor reproductive rates
- Abortion
- Deformed calves
- Ill-thrift
- Weight loss
- Fever
- Cough
- Diarrhoea
- Lesions (in animals with Mucosal Disease).
However, what complicates diagnosis is that not only are these symptoms common with a number of illnesses, but Pestivirus and P.I. animals can also be present in your herd with no apparent symptoms at all. This highlights the importance of doing Pestivirus diagnostic testing (such as blood tests) in your herd before you can effectively and efficiently manage it.

Assessing your herd’s susceptibility

There is no “one size fits all” option when it comes to Pestivirus management, and assessing your susceptibility to the effects of the disease will establish the best course of action for your specific business. The keys to establishing how susceptible your herd is include:

• Does your herd often get exposed to other animals – do they go to shows, or sales, get agisted, get mixed with other groups of animals, or have a lot of animals transferred through your place (e.g. trading animals)?

• How much immunity already exists in your herd?

The risk of your animals catching Pestivirus increases with the number of different animals they are exposed to. This risk is compounded if they lack immunity to this disease. Your animals can either develop immunity from being vaccinated or from previously having been transiently infected with Pestivirus, and then naturally developing antibodies while their body fights the infection.

Blood Testing (for antibodies)

You can test for your animal’s levels of immunity (level of antibodies) by getting your vet to do some blood tests. This will tell you if your animals have been exposed (and hence have antibodies), and also approximately how long ago they were infected.

Ear Notch and Hair Testing (for antigens)

If your animals come back with a zero score for antibodies, this either means that your animals have no natural immunity to Pestivirus, or that they are a P.I. To assist you in determining if an animal is a P.I., you can also get your vet to do a test for “antigens”, which you can either do via an ear notch test or a hair test. Spot testing ill thrift animals, or animals that have been found dead is also a good way to diagnose BVDV on your property.

Management Tools

There are two main management tools for providing immunity to at-risk animals – vaccination and what’s commonly referred to as “auto-immunisation”.

Vaccination

The vaccine available for prevention of Pestivirus is called Pestigard®. It is a killed vaccine, which is administered twice in the first year (the second dose should be given from six weeks to six months after the first), then with an annual booster each year after that. It is approximately 80% effective once the second dose is administered. Vaccination can be beneficial as it is a controlled prevention method; you know you have given the vaccine and that your animals are largely protected. You must be careful to continue your vaccination schedule each year, because if you stop vaccinating and your animals lose that immunity they will again become susceptible to BVDV infection. You must consider that while vaccination is controlled protection for your herd, it is an ongoing cost.

Auto-Immunisation

Another management tool considered by some producers is referred to as “auto-immunisation”, which is basically where you allow your animals to be infected by a P.I., enabling them to develop antibodies naturally. Obviously, you have to identify P.I.s, and then also be careful to control them, so they don’t inappropriately come in contact with animals such as pregnant females (which could lead to reproductive losses or the creation of more P.I.s). Some negative aspects of this management tool include:

• Potential condition losses that can accompany a transient Pestivirus infection

• Your animals immune system is suppressed, so they may be susceptible to other infections

• P.I.s have a high death rate (50% die each year), so you may have trouble maintaining them in your herd

• It can be hard to control and monitor – you could end up with P.I.s not shedding enough virus and hence leading to no exposure and no immunity in your herd.
Biosecurity

Another aspect of management to keep in mind is biosecurity, or employing tactics to keep Pestivirus out of your herd. Biosecurity elements might include checking with the company you purchase semen and/or embryo from that they are tested and clean, or asking for antigen/P.I. tests from people you buy bulls from. Other tools that may assist you include making sure your fences are adequate and also if possible, keeping pregnant females away from risk factors such as external fences.

Working out the best management tool for you

You really need to consider what you do in your own business to establish what management tools are going to be best for you, but key questions to ask yourself include:

- How often are your animals exposed to other animals (at shows or sales, during agistment, do you have a closed herd, how many neighbours have cattle etc.)?
- What are your stock values – do you spend a lot of money on tools like artificial insemination or embryo transfer which would be a big financial loss if calves are aborted through infection with Pestivirus?
- Would it jeopardise your reputation if you sold animals that were infected with Pestivirus?
- How much immunity already exists in your herd?
- Will the benefit you gain from vaccination, outweigh the cost?

Keep in mind that you may only have a significant loss from Pestivirus sporadically, but you can’t necessarily control when that loss happens, and if it coincides with a stress on your business, such as drought, it may be difficult for your business to cope.

Pestivirus can seem confusing, but if you ensure that you do diagnostic testing, consider what management system is going to be best for you, and find a good consulting vet to help you develop your management program, controlling losses from this virus is very achievable.

Take home Pestivirus messages:

- Pestivirus is a virus that occurs in cattle
- Can cause significant reproductive loses and ill-thrift in your herd
- Vaccination is an option for management
- Vaccination may not suit everyone’s business, so you need to establish what is going to be best for your specific needs
- Phone your vet, local DPI or the Disease Watch Hotline on 1800 657 888 if you suspect FMD.

For further information, please contact the VFF Livestock Group on 1300 882 833 or by email to Zoe Moroz on zmoroz@vff.org.au

Links

Pfizer Animal Health:
https://www.bvdaustralia.com.au

Swans Veterinary Services:
http://www.swansvet.com/page15.php

Meat and Livestock Australia:

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