

Bovine Viral Diarrhoea (BVD) in New Zealand

What is BVD?

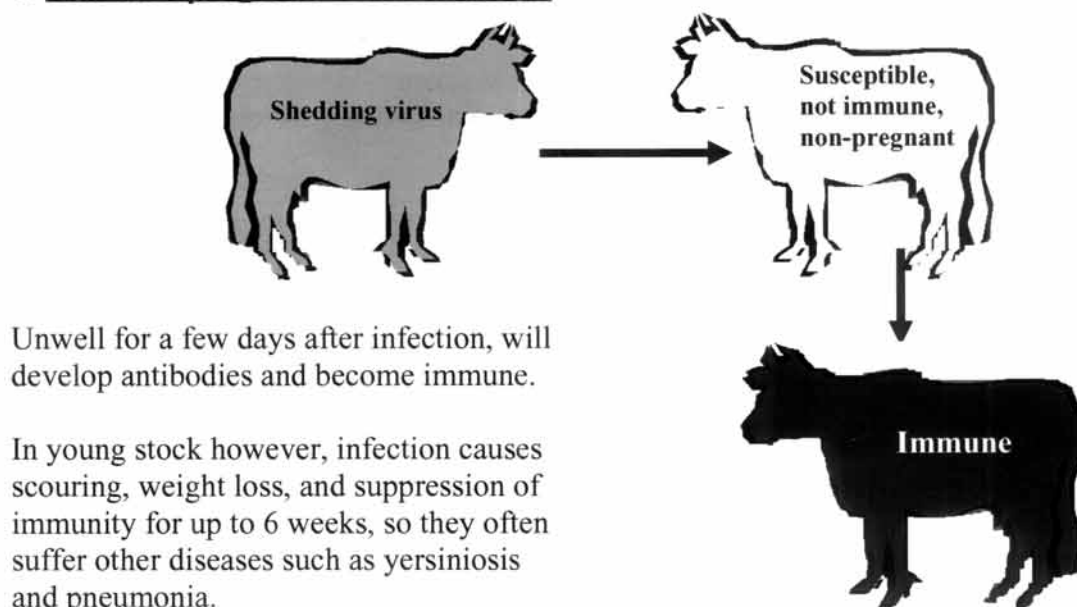
BVD is an economically important viral disease of cattle that can be quite complicated with carrier animals being the main problem. About 80-90% of NZ farms have had the virus at some time with about 60% of cattle having evidence of past infection. Infection can go unnoticed in adult cattle with the animals experiencing some fever and slightly reduced appetite and milk production for a short period. Disease in calves and weaners is usually more severe with diarrhea being the main feature. After infection, animals are usually immune for life though a serious consequence is that calves born from dams infected during pregnancy will shed the virus in large amounts for their entire life.

The BVD virus remains in the herd by two methods (i) direct transmission between animals through physical contact and, (ii) virus invading the foetus in a pregnant cow. The latter method gives rise to newborn calves that either develop poorly and die relatively young or grow up apparently normal but become life-long shedders known as “persistently infected”, or “PI” cattle. These carrier animals act as a major source of infection for other animals.

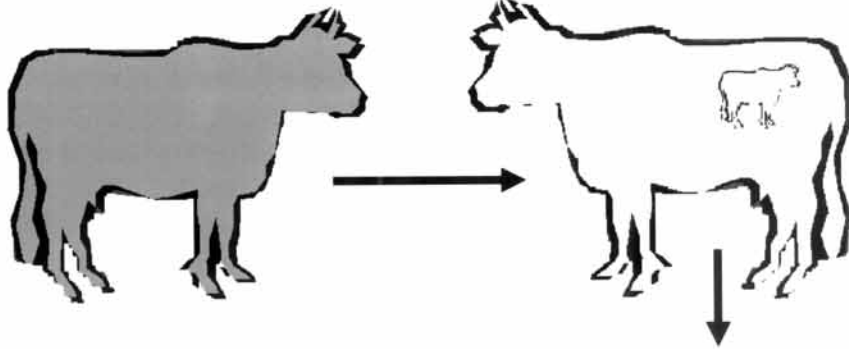
All body fluids including saliva, tears, nasal discharge, semen, urine and faeces contain the virus. Generally, close contact with other animals is required for transmission, but it has been observed that air droplets containing the virus can be transmitted up to 8m and infect cows across the fence. The time from infection to the development of clinical signs is about 1-3 weeks. Luckily, the virus only survives for a short time in the environment.

Figure 1: Transmission of BVD between cattle

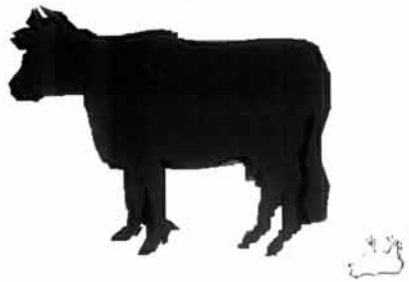
1. Cow non-pregnant when infected:



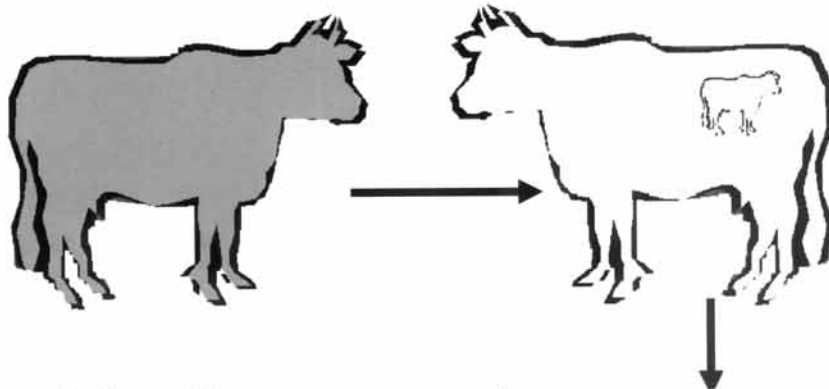
2. Cow infected when 0–50 days pregnant:



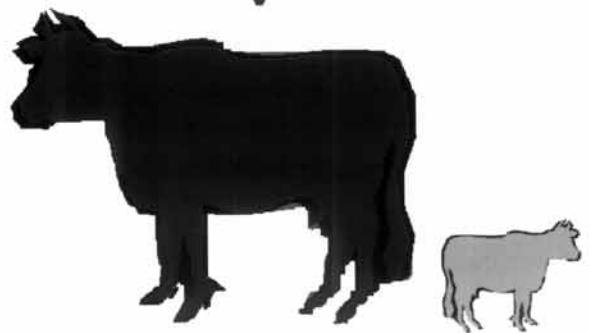
Early embryonic loss, return to oestrus, cow develops antibodies and becomes immune, long returns noticed.



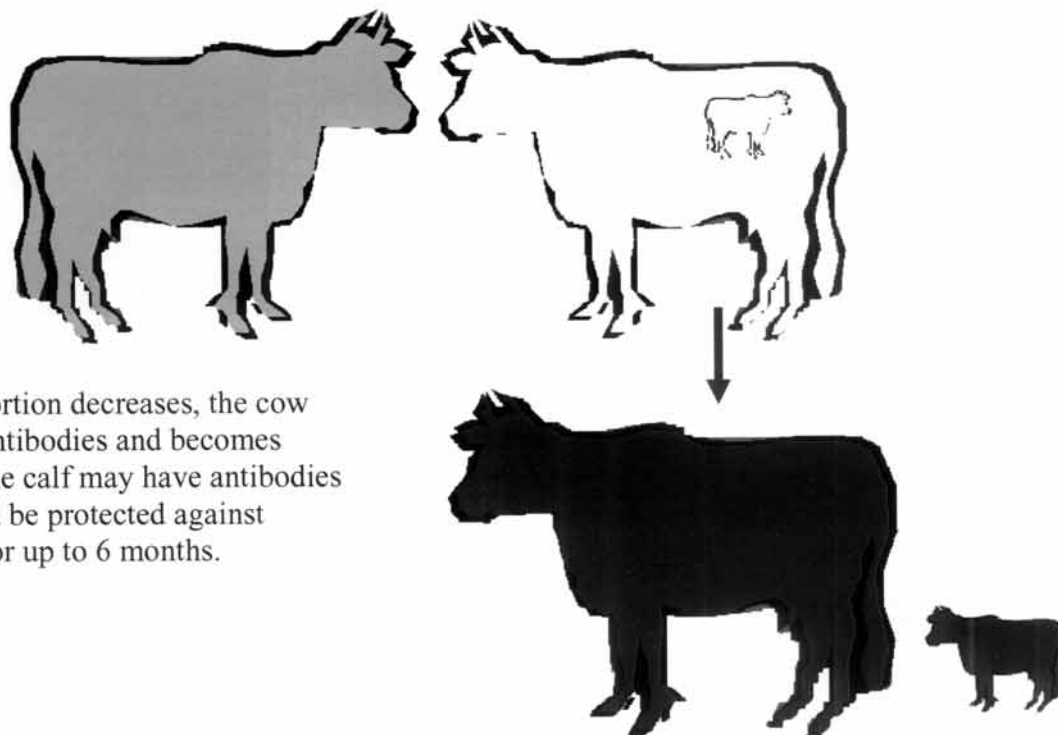
3. Cow infected when 100-120 days pregnant:



Cow develops antibodies and becomes immune, but there is a high chance of abortion, if the calf is born alive IT IS A PERSISTENT CARRIER shedding large amounts of the virus in all secretions (PI).



4. Cow infected when over 120 days pregnant:



Risk of abortion decreases, the cow develops antibodies and becomes immune, the calf may have antibodies at birth and be protected against infection for up to 6 months.

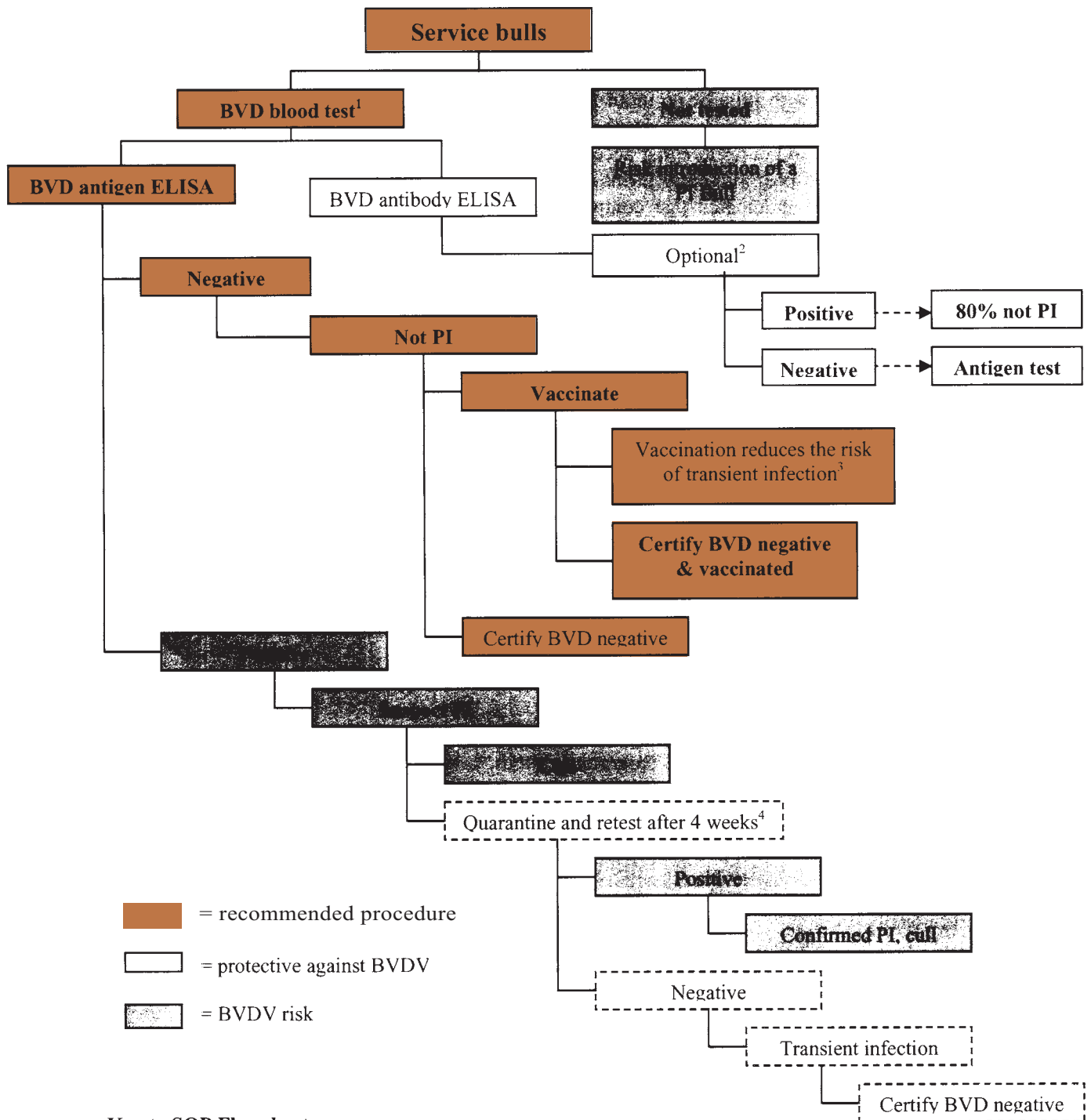
What's the damage?

The main losses in dairy and beef herds are due to the effect of the virus on the reproductive performance of the cow and on the foetus she is carrying. *In adult breeding cows* the disease can cause huge reproductive losses, the costs of which are often hidden and difficult to calculate.

Infection in young cattle, especially those less than 12 months of age produces a variety of symptoms that may or may not be recognized as BVD.

| <i>Effects in adult cattle:</i> | <i>Effects in young cattle:</i> |
|---|--|
| <ul style="list-style-type: none"> ● reduced conception rates ● increased number of long returns ● spread out calving pattern ● high non-pregnant rates ● abortions; fresh or mummified ● high empty-at-calving rates ● calf losses around calving from <ul style="list-style-type: none"> ➤ premature births ➤ still births ➤ weak/dummy calves ➤ birth defects ➤ carrier animals being born | <ul style="list-style-type: none"> ● scouring ● ulcers in the mouth with dribbling from the mouth ● ulcers between the toes causing lameness ● coughing ● nasal and eye discharge ● rough coat ● reduced appetite with nil or poor weight gain and loss in body condition ● sub-clinical infection without symptoms except reduced weight gain |

"Warrant of Fitness for Breeding Sires"



Key to SOP Flowchart

1. Testing should be timed such that test negative bulls can be fully vaccinated prior to the mating start date.
2. BVD antibody is occasionally used as a cheaper pre-screening blood test with the assumption that antibody positive cattle are not PI. This is not recommended for two reasons. First up to 20% of PI animals will test antibody positive. Secondly, a negative test result requires confirmation by an antigen test, potentially adding greatly to the overall cost of testing. BVD antibody may be measured but only as an optional extra to the antigen test; a positive test indicates that the animal has been previously exposed to BVD virus and a negative test indicates a naïve animal.
3. Transient viraemia has been associated with poor semen quality and transient shedding of virus in semen.
4. Retests would only be recommended where the value of the bull is significant or if absolute confirmation of persistent viraemia is required for any other reason.