

Beating the scourge of bovine viral

You may have had BVD in your herd, but do you really understand its effects on herd fertility or the devastating economical effects?

By Keith Cutler
Endell Vet Group



BVD and BVDV are commonly used abbreviations in agricultural and vet circles, yet few know what they mean or understand their true implication. They refer to the Bovine Viral Diarrhoea Virus, a pestivirus which affects cattle worldwide.

Surveys carried out on blood samples collected from cattle in the UK and bulk milk samples from dairy herds show more than 85% of the national herd to be endemically infected with this virus.

It is estimated that 85% of the virus circulating within the national herd arises from persistently infected (PI) animals, which comprise up to 2% of the national herd.

This is causing huge economic loss to the UK's cattle farming com-

munity, measurable in millions of pounds each year, and yet in an on-farm situation this loss is rarely recognised or appreciated. This is because of the exquisite adaption of this virus to its bovine host and the wide variety of clinical signs that infection can cause.

The wide variety of clinical signs that can be attributed, at least in part, to infection with the BVD virus occur for various reasons. Different strains of the virus exist. Type I – commonly seen in the UK – tends to be less pathogenic than type II which can cause sudden and catastrophic illness.

And when the virus does attack it targets rapidly dividing tissues. Commonly these include the gut lining, lymphoid tissue which produces white blood cells, sperm producing tissues in the testis and foetal tissues. Viral damage to each of these target tissues will result in different clinical

signs which may be as diverse as diarrhoea and weight loss, impaired immune function, reduced fertility or pregnancy failure. The immune status of the animal challenged by the virus also has an effect on the severity of infection and the signs seen.

IMMUNITY

As a rule of thumb immunity to BVD, whether achieved following natural infection or vaccination, is solid and provides good protection. Immune animals, therefore, rarely show any signs of infection when challenged by the virus. Non-immune animals also show few signs directly attributable to the BVD virus itself.

The main signs of BVD in non-immune animals are more frequently those attributable to other infectious agents which, because of the immune suppression caused by the BVD, cause more disease of a greater severity than they otherwise would have done. Common examples include outbreaks of calf pneumonia, which frequently occur at the same time as BVD is sweeping through a calf house, and an increased incidence of mastitis and a raised bulk milk cell count in dairy herds endemically infected with BVD. These other diseases can cause significant financial loss which may not be obviously linked to BVD but which, nevertheless, is indirectly attributable to it.

Where BVD shows its real subtlety, but causes greatest financial loss, is when it infects a non-immune pregnant cow. Again a variety of scenarios can prevail, depending mainly on the age of the foetus when attacked.

Developmental abnormalities may be caused when the foetus is not killed. Frequently these affect the central nervous system with perhaps the most common problems affecting the cerebellum, the part of the brain which controls balance, and the eyes. This may result in the birth of calves which have difficulty



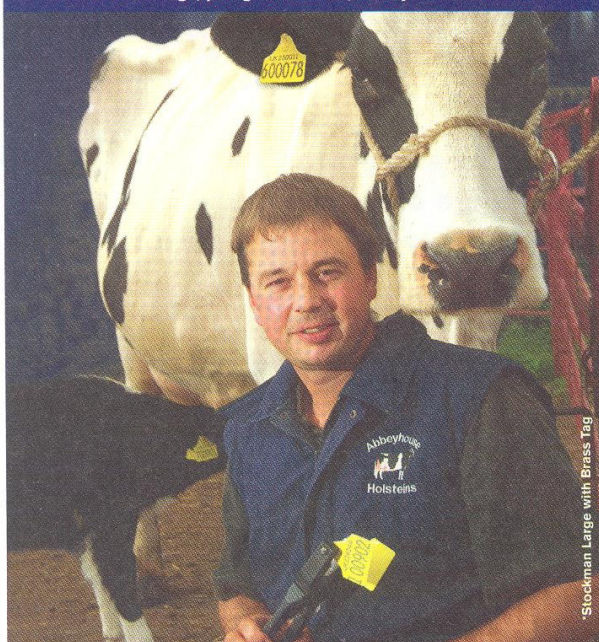
Which is the PI? These heifers might look the same but the one on the left is infected with BVD.

standing or which have small eyes or cataracts in the lens.

Perhaps the most devastating consequence of BVD is when it occurs during pregnancy before the foetal immune system has developed. In this situation the presence of the BVD virus is not recognised as abnormal by the developing foetus, resulting in an animal born persistently infected with the virus. Such animals may be small and stunted and have an increased susceptibility to other infectious

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diarrhoea virus



Calf pneumonia often occurs at the same time as BVD sweeps through a calf house, causing significant financial loss.

diseases. Other persistently infected animals, however, may appear entirely normal and live within the herd undetected.

Whichever is the case, all persistently infected animals, whether showing prior signs of ill health or whether appearing entirely healthy, will die of mucosal disease – an irreversible and untreatable scour which is inevitably fatal.

It eventually affects all PI animals, usually between six months and two years of age, although some individual PIs may live for much longer than this. Until this time, these PI animals will excrete BVD virus all day every day, acting as a potent source of infection for all other animals in the herd.

CONTROL

Control of BVD can be achieved by vaccination, which can provide

→p58



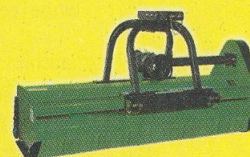
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Livestock BVD ERADICATION

'No reason why BVD

significant economic advantage in endemically infected herds even when a particular problem isn't perceived. Vaccination alone, however, can never be guaranteed to eradicate the disease from a herd. Crucial to this is the identification of persistently infected animals.

This can be done by testing blood samples, although the presence of maternal antibodies acquired from colostrum can interfere with this testing, so it cannot be considered reliable until at least four months of age.

Younger animals can, however, be tested thanks to new testing techniques which can be carried out on ear notch samples. Ear tags have now been designed which allow the necessary samples to be taken automatically when a calf is tagged. Samples are then batched for testing

in bulk to achieve economies of scale. When a PI animal is identified it is vital that it is removed from the herd and destroyed as soon as is possible.

Despite the complexity of BVD, control and eventual eradication of this virus from our national herd is technically achievable. This aim has already been achieved in the Scandinavian countries and in areas of the UK (the Shetland and Orkney Islands) and a pilot project aiming to control and eradicate the virus from East Anglia is under discussion (see panel below). Given industry support and full participation, there is no reason why, in time, the virus could not be eradicated from the UK, providing a huge economic advantage to our cattle industry.

livestock@fwi.co.uk

East Anglia farmers getting tough on fighting BVD

Following the success of Shetland and Orkney in eradicating BVD, Norfolk and Suffolk farmers are now gearing up to do just that

There is a growing awareness that BVD is an infection of major importance for both cattle health and welfare.

Control of BVD results in striking improvements in health and productivity and considerable cost savings.

Following the success of control and eradication programmes in several European countries and the Shetland and Orkney Islands, an industry partnership has formed to initiate a similar pioneering control programme on mainland Great Britain.

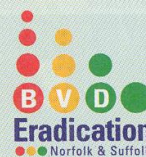
The partnership group were approached by members of the Norfolk and Suffolk Clubs of Holstein UK who indicated a strong desire to control BVD in their region. Members of the strategy group met with club members to discuss the structure of a possible BVD control and eradication scheme, with the objectives being to eradicate BVD virus from participating herds and to prevent participating herds

becoming re-infected with BVD virus.

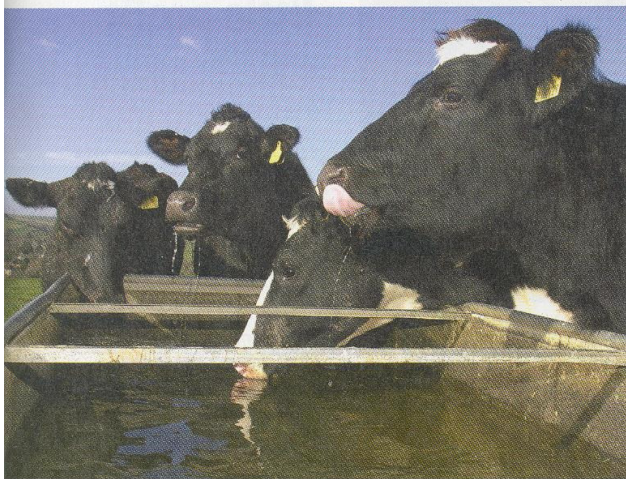
Some herds may achieve full eradication without vaccination enabling them to become fully accredited BVD Free under CheCS rules [Cattle Health Certification Standards]. Others will not, however, so an essential part of the scheme will be to build in flexibility to make allowances for difficulties, such as taking cattle to shows and issues with biosecurity. Although achievement of fully accredited status will be an aspiration for some herds, it is not one of the prime objectives of the scheme.

Who will do the work?

One of the most important factors for a successful scheme is a reliable, expert, technical service provider to supply BVD control advice to farmers and vets and BVD testing programmes using both milk and blood samples and with accurate results delivered quickly. The SAC, under the expert guidance of George Calldow, will provide all these services.



can't be beaten'



Despite the complexity of bovine viral disease, control and eventual eradication is technically achievable.

How is this being paid for?

Due to the significant commitment from Norfolk and Suffolk cattle producers, the strategy group looked for ways of getting them started. EBLEX have provided funding for the research project and also initial screening of herds through bulk milk and analysis of blood samples from 10 youngstock for farmers joining the scheme. Support from SAC will be funded by a modest membership fee to the scheme.

There is a significant cost-benefit to be achieved by tackling BVD on farm. The farmers in Norfolk and Suffolk will not only be seeing these benefits directly, but also demonstrating this to others by providing on-farm data to the scheme co-ordinator Joe Brownlie of the Royal Vet College to provide cost-benefit figures, in parallel with the scheme.

When does it all get started?

The strategy group have now secured a service provider, funding, a plan of action and held a meeting with all vets involved with the farmers in the scheme. It is absolutely vital the scheme runs as a partnership between the vet and farmer, as the most appropriate path for control on each individual farm may vary. Mike Bardsley, vet from the Three Rivers Practice, attended both the recent vet and previous farmer meetings and reckons the initiative has been positively received by both farmers

and vets in the area. "Historically, brucellosis eradication began in East Anglia, mainly due to the bordering coastline and lower livestock density, so the region lends itself perfectly to the BVD initiative."

The next step will be to make contact with those farms participating to begin the initial testing and develop an individual programme to suit their needs. Although the present scheme is currently limited to a number of participating farms in Norfolk and Suffolk under the aegis of their Holstein UK clubs, the strategy group hope this pioneering project will widen in time to become the blueprint for regional, if not national BVD control.

WINDOW ON THE WEB

* For further information on BVD go to either of the following sites:
www.bvdv-control.org
www.sac.ac.uk:8080/consultancy/pchs/bvdnorfolksuffolk



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