Cattle keepers’ guide to safeguarding health
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I very much welcome the publication of this guidebook as a quick reference guide to six important endemic cattle diseases; Bovine Viral Diarrhoea, Infectious Bovine Rhinotracheitis, Johne’s Disease, Leptospirosis, Neosporosis and Tuberculosis. These six diseases can have a significant economic and welfare impact on your farm and the industry as a whole. These diseases affect a large proportion of our herds in Wales but there are steps we can take to help protect cattle from possible infection. This guidebook will give you the key facts on each disease – their signs, how they spread and what we can do to prevent them.

The Wales Animal Health and Welfare Framework Group is committed to helping the industry raise the already high standards of animal health and welfare in Wales. Through good husbandry practices, adoption of high welfare standards and disease prevention measures (biosecurity), we can minimise the likelihood of livestock contracting or spreading disease.

As a farmer myself, I am only too aware of the amount of information that we all have to read and understand. I hope that you will be able to use this quick guide to learn more about each disease and what you can do to prevent it. Controlling and eradicating these diseases is not easy but we all have a stake in this and must work together as an industry to improve animal health and welfare standards and help sustain the profitability of the farming industry.

**Peredur Hughes**
Chair of the Animal Health and Welfare Framework Group
Introduction

Buying-in cattle carries the risk of introducing disease. Infectious diseases such as Bovine Viral Diarrhoea, Infectious Bovine Rhinotracheitis, Johne’s Disease, Leptospirosis, Neosporosis and Tuberculosis can impact on your herd and business in a number of ways:

• Production and economic losses
• Restrictions on animal movements
• Animals suffering and dying
• Culling of infected animals
• Loss of valuable genetics
• Potential for risk to human health

There are practical precautions you can take to prevent the introduction of these diseases into your herd. The aim of this guidebook is to provide you with basic information and advice that will help you maintain and improve the health of your herd through applying appropriate biosecurity measures. This will help to protect your herd from some of the major infectious diseases of cattle. Controlling and preventing these diseases will improve the health and welfare of your cattle and increase your farm’s profitability.

You should discuss the health challenges of your herd with your vet before taking any action. Good biosecurity and health planning with your vet will help you prevent and control disease on your farm.
Bovine Viral Diarrhoea (BVD)

Background

BVD is a viral infection that mostly affects cattle. It is a complex disease and affects different cattle in different ways. If cattle are infected just before breeding, conception rates are reduced whereas infection at the time of breeding may lead to early death of the unborn calf.

Abortion can result from infection during any stage of pregnancy but infection during the first third of pregnancy is critical because, at this stage, the immune system of the unborn calf has not yet achieved the ability to recognise and eliminate the virus. As a result, that calf is then born with a state of persistent infection and is known as a “PI”.

How it can spread

PI cattle cannot produce antibodies (immunity) against BVD and remain infected for life. They produce large amounts of virus throughout their lives and, although they may initially appear to be normal and may remain so for years, they often succumb to a condition called Mucosal Disease from which they eventually die. Significant numbers of PI cattle survive into adulthood and pass on infection to pregnant cattle and cause new PI calves to be born. If PI cows breed, their calves are also persistently infected.

Clinical signs of acute disease

If non-immune cattle are exposed to BVD infection the result is called ‘acute’ infection.

- The signs of acute BVD vary. Most affected animals show few or no signs but acute infection can result in fever, diarrhoea, respiratory disease or generally looking ‘out of sorts’.
• Because acute BVD infection causes suppression of the immune system, these animals are more likely to catch other diseases such as gut infections or pneumonia.

• Bulls may become temporarily less fertile and can infect cows through their semen.

Occasionally, calves may show a range of defects at or after birth, particularly where BVD infection takes place later in pregnancy. These defects include:

• Cataracts
• Abnormal brain development causing difficulty in walking as well as growth defects such as domed heads
• Shortened tails and changes to the texture of the coat
• In older calves mucosal disease is severe and always fatal

**Testing**

Cattle can be tested for both the presence of virus and antibodies to assess their exposure to BVD. Blood, milk and tissue samples can all be tested. Your vet can advise on the best means of testing for your herd.
Prevention

- PI cattle are the main source of new infection. The introduction of one PI animal into a herd can lead to significant financial losses.

- Ideally, cattle should be sourced from herds that are accredited free of BVD. Alternatively, bought-in cattle should be quarantined and tested negative before being introduced into the herd.

- Be wary that a pregnant, apparently healthy, animal could carry a calf that may turn out to be a PI, even if she tests negative for virus. For this reason, pregnant cattle should not be bought into a herd that is free of BVD, or is becoming free of BVD, unless they come from a BVD accredited source.

- Once identified, owners should cull PI animals. Clinically healthy PI animals can be sent to slaughter for human consumption.

- Joining a BVD health scheme will help you monitor, control and eradicate the disease from your herd.

- Vaccines for BVD are available and may be used to vaccinate all breeding females before going to the bull or being inseminated. Vaccination is useful to protect cattle while BVD is being eradicated from the herd but will not result in full control of BVD infection on its own.

- You should consult your vet to develop a vaccination programme that best suits your business.

- Appropriate biosecurity and health planning with your vet will also reduce the risk to your herd.
Infectious Bovine Rhinotracheitis (IBR)

Background

IBR is a highly contagious respiratory infection that is caused by Bovine Herpesvirus-1 (BHV-1). Infected animals have poor health and lower productivity, which can cause significant economic losses to cattle producers. Infection can occur in cattle of any age but it is most commonly seen between the ages of 6 and 18 months.

How it can spread

After the first infection, the virus is never fully eliminated. It stays in nerve cells as a lifelong hidden infection. At times of stress the virus can begin to multiply again and may be excreted, generally from the nose and the eyes. The disease spreads both through direct contact between cattle and in the air, so cattle in the same airspace are at risk.

Clinical signs

Although it is a respiratory disease, cattle do not often cough or sneeze. The most common signs are:

- Fever
- Discharge from the nose and eyes (initially watery and, later on, it turns to puss)
- The nose, upper airway and often eyes become inflamed

Other signs can include:

- Dullness and a loss of appetite
- Difficulty breathing
• Drop in milk production
• Infertility and abortion

Testing
The disease can be confirmed by laboratory tests.

Prevention & Treatment
• The purchase of animals with dormant infection is the main way the virus enters a herd.
• Ideally, cattle should be sourced from herds that are accredited free of infection. Alternatively, bought-in cattle should be quarantined and tested negative before being introduced into the herd.
• Any infected animals should be isolated from the rest of the herd and treated with anti-inflammatory drugs and antibiotics for secondary infections if necessary.
• Cattle with dormant infection can be identified by laboratory tests and should be culled from the herd.
• The disease can be prevented through the use of vaccines. Vaccination is recommended from around four to six months of age. Ask your vet for advice.
• Appropriate biosecurity and health planning with your vet will also reduce the risk to your herd.
Johne’s Disease

Background

Johne’s Disease is an infectious wasting condition of cattle and other ruminants caused by a bacterium known as MAP (Mycobacterium avium subspecies paratuberculosis). Cattle usually become infected during the early weeks of their life through sucking on dirty teats or consuming milk or food contaminated with the bacteria. The bacterium is shed in the faeces or milk of infected adult cattle.

Animals with the disease fail to absorb nutrients from the intestine, will eventually lose body condition and have a significantly lower milk yield. The animal’s general health and welfare will be poor and they will be susceptible to other diseases including mastitis.

How it can spread

A diseased animal will eventually shed large numbers of MAP bacteria in its faeces and so a single animal can pose a high risk to other animals in the herd, especially calves. MAP can also infect animals through milk and colostrum. Cattle can catch the disease at any time but are most vulnerable in the first few months of their life. Calves may be infected in the womb but are more commonly infected through:

- Drinking contaminated colostrum
- Ingesting bacteria that may be present on the teats
- Contaminated feed
- Contamination in the environment or water

The other main route of introducing infection to a farm is through infective material brought onto the farm e.g. colostrum or slurry. Rabbits and other wildlife can also be infected with
MAP, although they are believed to be much less significant as a source of disease than infected cattle.

**Clinical signs**

Signs of the disease generally include:

- Persistent diarrhoea and severe weight loss, a period of reduced milk yield or infertility well before the animal begins to show other signs of advancing disease.

Once an animal has severe diarrhoea and is losing weight the disease can usually easily be confirmed by a blood test or by testing the faeces.

**Testing**

After infection, it may be years before the infected animal becomes ill. At the early stages of infection, the only way to confirm whether an animal has Johne’s Disease is to carry out blood tests but these do not detect all infected animals. The blood test detects an antibody to MAP, which is produced by infected cattle, but this is not very reliable during the early stages of disease as cattle tend to produce the antibodies relatively late on in the infection.
Prevention

- The major source of infection is the purchase of apparently healthy infected cattle or other livestock. Try to obtain them from herds accredited as low risk for Johne’s Disease and/or that are undergoing regular testing and where no recent (3-5 years) evidence of infection has been found.

- Testing animals on arrival in their new herd reduces the risk of introducing infected animals.

- You should consult your vet to develop a testing programme that best suits your business and also consider joining an accredited herd health scheme.

- Cull diseased cattle from the herd as early as possible and do not breed from their offspring as they are probably also infected.

- Once infection is present on a farm it is important to limit the exposure of calves to the MAP bacteria through removing the sources of infection (infected cattle) and maintaining excellent calf hygiene standards and colostrum management.

- Once discovered, the reduction of the level of infection in a herd will take several years to achieve.

- A vaccine is available but it is only suitable in very limited situations because it can interfere with the TB skin test and the Johne’s Disease blood test.

- Appropriate biosecurity and health planning with your vet will reduce the risk to your herd.
Leptospirosis

Background

Leptospirosis is a bacterial infection that is spread by animals but can also infect humans. It is caused by a bacterium called Leptospira hardjo. People who regularly deal with animals, such as farmers and vets, have a higher risk of catching leptospirosis, although the condition in people is rare in the UK.

How it can spread

The disease can spread through urine, abortion material and semen. Humans are most likely to catch the disease through direct contact with these materials because pasteurisation destroys the bacterium in milk.

Clinical signs in cattle

- High temperatures for a short while
- A drop in milk yield
- Abortion can occur
- May result in infertility
- Infection may also produce prematurely born and weak calves

Testing

Leptospirosis can be diagnosed by a blood test. Bulk milk samples can also be taken and tested to give an indication of the level of disease in a herd.
Prevention & Treatment

- The disease may be eradicated from affected herds by testing and culling or controlled by vaccination. When herds are being vaccinated for the first time, two doses of vaccine should be given four to six weeks apart. After that cattle should be vaccinated annually.

- Alternatively, bought-in cattle should be quarantined and tested negative before being introduced to the herd.

- Prevent your cattle having access to watercourses – they can carry infection for long distances.

- Cattle should be treated when ill. Bear in mind that this is likely to be an expensive option when used to treat more than a few animals and it will not prevent re-infection.

- Appropriate biosecurity and health planning with your vet will reduce the risk to your herd.
Neosporosis

Background
Neosporosis is a disease caused by a parasite called Neospora caninum. It is the most frequently diagnosed cause of abortion in cattle in the UK.

How it can spread
Infection can enter the herd either through ingesting infected dog faeces or through bought-in infected animals. Cattle that are already infected can pass the parasite onto their unborn offspring through the placenta – this is called ‘vertical transmission’.

Infected calves may be aborted or born with no abnormal signs. If they survive they may carry the infection and, if they become pregnant, they will either abort or produce congenitally infected calves. Calves infected in this way remain infected for life.

Clinical signs
Cattle can be infected without showing any signs but these can include:

- Abortion, between 3 and 9 months of pregnancy (particularly 5 to 7 months)
- Still birth or a prematurely born calf
- Occasionally, calves will have brain disease at birth
- Repeat abortions in the same cow

Testing
A blood test is available. It detects an antibody reaction, which is produced by infected cattle, but this is not reliable during the early stages of the disease as cattle tend to produce the
antibodies relatively late on in the infection. Tests can be carried out on the aborted foetus to identify if the parasite is present.

Prevention & Treatment

- Ideally, cattle should be sourced from herds that are accredited free of Neosporosis.

- Dogs are a source of the disease so they must be prevented from accessing calving areas, carcase material and placentas.

- Dogs should also have the minimum access to pasture used for grazing and the production of forage.

- Make sure cattle feed and forage storage is dog-proof to prevent contamination by faeces. It is also good practice to prevent contamination by foxes, badgers, rats and mice.

- Have high hygiene standards at calving. Still born calves, carcases of dead and aborted calves and placental material should be removed from the calving accommodation and paddocks as soon as possible, kept at a biosecure location and removed by a fallen stock contractor.

- Once identified, owners should cull infected animals.

- Appropriate biosecurity and health planning with your vet will reduce the risk to your herd.
Tuberculosis (bovine TB)

Background
TB in cattle is caused by the bacterium Mycobacterium bovis. It can affect humans as well as animals but the risk to public health is kept low through regular testing of cattle, milk pasteurisation and inspections at abattoirs.

Responsibilities
TB differs from the diseases already described in that it is a notifiable disease. This means that anyone who suspects that an animal or carcase is or may be affected must notify the veterinary authorities immediately. Whilst the Welsh Government implements controls to stop disease spreading and to protect both public and animal health, there are many things that cattle keepers can do to reduce the risk that TB poses to their herds.

How it can spread
TB is mainly a respiratory disease of cattle. Disease spread between infected and uninfected animals is most likely to occur during periods of close contact, particularly when cattle are housed. The bacterium can also enter the body through ingestion and infection can be present in muck and slurry, milk and sometimes urine.

Wildlife, such as badgers and deer, can also be infected and cattle and wildlife can infect each other.
Clinical signs

In the UK clinical signs are rarely seen because cattle are removed before they develop any signs of illness. The signs can include:

- Chronic coughing
- Mastitis
- Weight loss

Following infection it may be many months or years before the disease becomes apparent and infected cattle can spread infection long before they show any sign of being unwell.

Testing

The control and eradication of the disease relies on the early detection and removal of infected animals before they become ill. All herds of cattle in Wales are tested at least annually by the Welsh Government. This means that infected animals are often identified and removed before characteristic TB lesions have time to develop.

Prevention

- Cattle keepers are required by law to have their cattle tested for TB and all infected animals have to be slaughtered.
- There is no effective treatment and no vaccine is currently licensed for use in cattle.
- Bought-in cattle may introduce infection into a herd.
- Ideally, cattle should be pre-movement tested. Alternatively, testing animals on arrival in their new herd reduces the risk of infection spreading.
- Asking for information about the disease history of an animal and the herd it comes from will help you make a decision about the level of risk and how to manage it.
• Buying cattle from herds with a recent history of the disease represents more of a risk than buying cattle from herds that have never had TB.

• Be aware of the risk from neighbouring (possibly infected) cattle. Take precautions to limit any possible contact.

• Badgers visiting farm buildings can be a disease risk. There are a number of effective precautions that can be taken to prevent badgers accessing cattle housing and feed stores.

• Direct contact between badgers and cattle at pasture is thought to occur infrequently. Measures should focus on preventing cattle from having access to badger setts and latrines as well as preventing badgers from accessing food and water troughs.

• More information on the measures that can be taken to help prevent contact between badgers and cattle is available on the Welsh Government website: www.gov.wales/bovinetb

• Appropriate biosecurity and health planning with your vet will reduce the risk to your herd.
How to minimise the risk from these diseases

For all of the diseases, bought-in cattle can be a source of new infection. Asking for a disease history of an animal and the herd it comes from at the point of sale will allow you to make more informed buying decisions and know what precautions you may need to take. You can reduce the risk of disease being introduced into your herd by asking sellers or auctioneers for the following information before you buy:

• Does the animal come from a herd that is accredited free of, or low risk for, any infectious diseases? Disease-free accreditation schemes exist for BVD, IBR, Leptospirosis and Neosporosis whilst the Johne’s Disease scheme categorises herds according to their risk level. See the Cattle Health Certification Standard for further information.

• Has the animal been tested as free from any particular disease? If so, how and when? Your vet will need to advise you on how to interpret the result – no lab test is 100% accurate.

• Has the animal been vaccinated for any particular disease? Vaccines are available for BVD, IBR and Leptospirosis.

Once you know the disease history of an animal and the herd it comes from, you can make arrangements for introducing new cattle to your herd. This should be part of your herd health planning advised by your vet. Ideally, cattle should be sourced from herds that are accredited as disease free (or the lowest level of risk) and tested negative before they move.

It is also best practice to separate incoming cattle in an appropriate isolation facility. Isolation is somewhere no physical contact can be made with other livestock and other cattle do not
share the same air space or have access to drainage or manure from the isolation facility. Check the cattle in the isolation facility daily for any signs of illness.

There are other actions you can take to minimise the risk of introducing disease:

- During the isolation period, the animal(s) can be tested again and vaccinated for BVD, IBR and Leptospirosis (if part of the herd health plan).
- Non-accredited mature cattle should be blood tested for Johne’s Disease. It is also good practice to TB test any animal after arrival, especially if it has not recently been tested.
- Milk isolated cattle separately, ideally using dedicated portable equipment. If this is not practical, milk cattle in an existing facility after the rest of the herd has been milked and left the parlour.

Remember that the risk of disease being introduced is two way – bought in animals can spread disease to your herd but cattle in your herd can also spread disease to introduced stock. Although this handbook focuses on six endemic cattle diseases, other infectious diseases can be controlled by applying good biosecurity and herd health planning. Work with your vet to implement health planning for your herd and, if you are in any doubt about disease risk from purchased cattle, get advice from your vet.
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Useful links


Biosecurity: www.gov.wales/topics/environmentcountryside/ahw/biosecurity

Cattle Health Certification Standard (CHeCS): www.checs.co.uk


Herd sure Cattle Health Improvement Service: www.ahvla.defra.gov.uk/apha-scientific/services/herdsure/index.htm

My Healthy Herd: www.myhealthyherd.co.uk