



Hybu Cig Cymru  
Meat Promotion Wales

# Herd health

Maximising your herd's potential  
through improved health



## About HCC

Hybu Cig Cymru - Meat Promotion Wales (HCC) is the organisation responsible for the development, promotion and marketing of Welsh red meat. We work with all sectors of the Welsh red meat industry - from the farmers through to the retailers, to develop the industry itself as well as develop profitable markets for Welsh Lamb, Welsh Beef and pork from Wales.

This booklet forms part of a series of publications produced by HCC's Industry Development team.

The Industry Development team undertake a range of activities that include:

- Technology Transfer
- Research and Development
- Market Intelligence
- Training
- Benchmarking



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# Introduction

A successful and profitable beef enterprise relies on having productive and efficient cattle. Within this one of the most important factors is the health of the herd.

Disease in the beef herd has a major impact on the physical and financial performance of many farms in Wales. In most cases the physical performance of the beast(s) would have been impaired before the disease has been fully detected. Once detected it is crucial that the disease is correctly identified and treated accordingly.

This booklet will give an outline of the main health and disease issues that currently face beef enterprises in Wales while also exploring the benefits of herd health planning.



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## Prevention of disease

As with most cases prevention of cattle disease and health issues is far better and more cost effective than attempting to cure problems. Many preventative actions will have an impact on multiple areas of herd health; for example an action to prevent calf pneumonia may also lead to a decrease in calf scour.

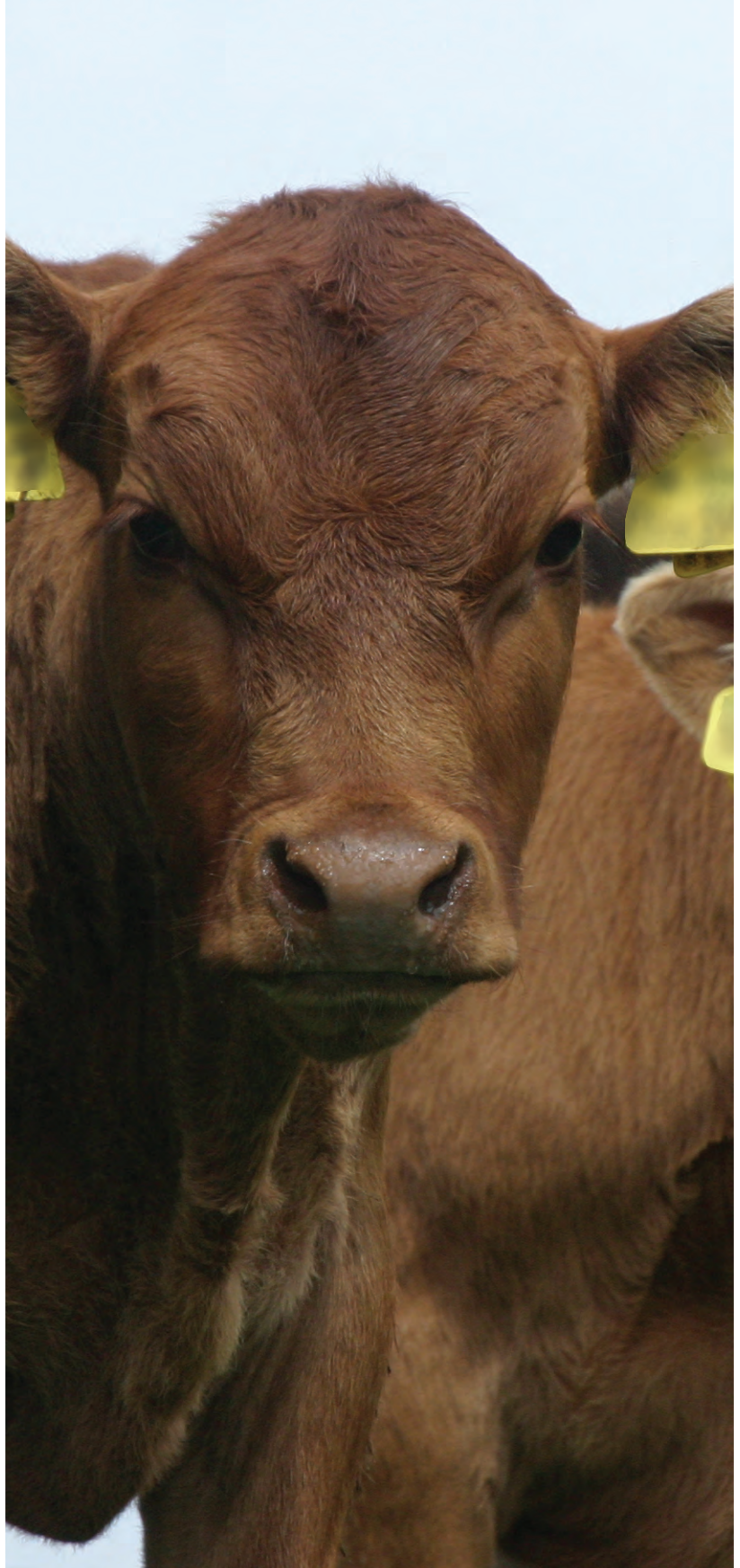
Common interventions/preventions include:

- Colostrum management
- Airspace management
- Humidity
- Managing routine tasks
- Nutritional management

### Colostrum management

Colostrum is the milk produced by the dam in the first 24 hours after birth. It is critically important that calves get sufficient colostrum in the first 6 hours of life. Newborn calves are unable to produce antibodies to disease and so must get the necessary antibodies from their mothers to protect themselves. A lack of good quality colostrum will make the calf more susceptible to a number of diseases including joint and navel ill, diarrhoea and pneumonia.

Weak calves, following a bad calving or outdoors in poor weather, may struggle to get enough colostrum. Particular attention should be paid to these animals and assistance given if necessary. Stomach tubing with stored colostrum is possible and 10% of the calf's body weight is currently recommended. Replacement colostrum is also available but less effective. Stored colostrum should be frozen then gently thawed in warm water before use. Using microwaves and boiling water to thaw the colostrum will destroy the valuable antibodies.



## Quarantine

Bought-in livestock present the biggest health risk to any farm as they can introduce new diseases. Careful planning must accompany the buying of animals. Quarantine measures should be adhered to in order to protect both the current herd and the purchased animal.

Quarantine should be carried out in an isolation facility that has separate airspace and water. If separate equipment is not available then purchased animals should be managed last and the equipment disinfected. The time animals spend in the isolation facility is dependent on the risk being managed and should be long enough to allow the course of some diseases to be run. Testing will be required to manage some disease risks, for example BVD, which will require detection of persistently infected (PI) animals.

Quarantine is an important aspect of preventing disease however it is not appropriate for all diseases e.g. Johne's. It is important that a detailed conversation with the veterinarian is held to produce a quarantine procedure that is understood by all involved.

## Airspace management

The airspace of cattle mostly affects respiratory diseases but may have an impact on other diseases. Ideally airspaces should not be shared by animal groups of differing ages. Once the animal has been weaned it should be housed away from adults and older youngstock. If this cannot be achieved then consideration to airflow should be given. Airflow should at minimum move from younger to older animals as older animals have a greater likelihood of having previous exposure to any pathogens present.

Airflow in sheds can be monitored, or checked, by the use of smoke bombs. These generate a large amount of grey smoke. The smoke should rise as directly as possible from calf level and clear within 2 minutes. Try to determine areas where airflow is limited by using smoke bombs e.g. old buildings with low roofs. Consider testing at varying stocking densities and weather conditions as these can affect performance. If concerns are noted then advice specific to the shed or farm should be sought.



*Good example of natural ventilation*



### Humidity

The humidity in an environment can affect the health of the cattle in the shed. Moist environments are more conducive to the survival and replication of many diseases. The climatic conditions may be difficult to control though good airspace management may improve the situation and drainage is also key to controlling this issue.

Good drainage will ensure that pens and handling areas remain as dry as possible under foot. This will reduce evaporation into the air and therefore reduce an increase in humidity. All efforts should be made to keep humidity at acceptable levels.

### Nutritional management

Healthy, well-fed cattle will perform better. All cattle should be fed according to their needs and if in any doubt a vet or nutritionist should be consulted to look at protein and energy levels as well as the mineral status. It is possible to take blood and tissue samples from animals in order to check mineral and nutrient levels.

Once a risk has been identified this should be integrated into the herd health plan to avoid future problems.

### Management tasks

There are a number of tasks such as tagging, castrating and de-horning that are potentially stressful for the animals. When undertaking such tasks they should be done in a manner that minimises the stress to the animal which will in turn ensure that the animal's immunity remains as unchallenged as possible.

The choice of specific techniques and drugs used for management tasks are a matter for the farmer and vet to discuss but in the majority of cases animals will benefit from pain relief medicines. These medicines will reduce stress.

### Vaccination

Vaccination options are covered later in the booklet but it is worth stating that vaccination is an option that could be utilised in certain situations. Stress and high disease challenge will reduce the benefit gained from any vaccine.

# Importance of herd health planning

Herd health planning is a tool that can be used to improve animal health and welfare on the farm. The health plan should be seen as a continuous process rather than a one-off event.

Basic principles of successful herd health planning:

- **Record relevant information**  
Disease incidence should be monitored and recorded. This will identify problem areas which can be focussed on.
- **Seek advice and plan ahead**  
Speak to your vet or farm advisor to discuss treatment programmes for known disease risks.
- **Check the plan**  
Continue to monitor disease levels to evaluate if treatment programmes are working
- **Conduct an annual review**  
Discuss with your vet or farm advisor which treatment/management techniques have and have not been successful and set targets for future improvement.

Examples of herd health plans are available through your vet or farm assurance scheme. Online and paper versions are available; whichever is chosen it is important to keep the level of recording focussed and relevant. It may be easier and more efficient to focus resources on a specific disease rather than aiming to address several health issues at once.

Recording the data allows the identification of disease trends within the herd. These can include barren rates and losses amongst calves at various stages in growth. Recording the dates of birth and age of death can provide useful information when combined with cause of losses and allow the most effective control measures to be put in place.



## Economic impact

The financial losses experienced by the Welsh and UK cattle industry as a result of disease and health issues cannot be underestimated. Analysis has shown that a disease or health outbreak can have a severe impact on the financial viability of any beef enterprise.

Losses can be sudden and significant, for example the death of a suckler cow can easily lead to a loss of £1,000 or an aborted calf will mean no income from that cow for the year. However, losses can also be less obvious, for example through reduced daily live weight gain or increased feed costs. These losses will only be noticed by monitoring figures closely.

### The economic impact of BVD

BVD can have an effect on fertility creating obvious losses like abortion, but also less obvious are the effect on pregnancy rates and the percentage of barren cows. Even more hidden are the BVD losses seen due to the reduction in disease resistance, leading for example to pneumonia in calves and all the financial losses associated with this.

### The economic impact of Coccidiosis

The effect of a disease can also be delayed. For example an infection such as coccidiosis may have occurred in a young animal. This disease can cause permanent gut damage leading to poor growth rates later in life.

The costs of a vet, medicines or loss of an animal are easy to calculate. But the indirect effect on fertility, reduced weight gain and increased feed conversion can all amount to heavy losses. In addition, every disease will have an effect on the workload, some more than others, and increased labour costs should not be forgotten.





Table 1 shows the average losses of diseases per 100 cow unit.

Disease	Type of loss	Estimated losses in £ / 100 animals / year <sup>1</sup>
<b>Johne's</b>	Chronic weight loss Death Secondary diseases	£1600*
<b>Worms (lung and gut)</b>	Reduced growth rates Extended fattening period Sudden death	£5000*** in a severe outbreak
<b>Liver fluke</b>	Reduced growth rates Lower feed conversion Fertility losses Deaths Condemned livers	£2000****
<b>Coccidiosis</b>	Weight loss Reduced weight gain Lower feed conversion Death	£3300* for 100 calves at risk
<b>BVD</b>	Fertility losses Secondary diseases	£4500*
<b>Campylobacter</b>	Fertility losses (failure to conceive, early embryonic death, abortion)	£5350**
<b>Pneumonia (calves)</b>	Treatment costs Weight loss, reduced weight gain Death Labour costs Fertility losses (failure to conceive, early embryonic death, abortion)	£2200* for 100 calves at risk  In a severe outbreak this figure is easily 5 times higher
<b>Scour (calves)</b>	Treatment costs Weight loss Reduced weight gain Death Labour costs	£3300* for 100 calves at risk  In a severe outbreak this figure is easily 5 times higher

These are based on the most up to date figures from various sources.

\*Technical Note T501/T571/T574 SAC

\*\* G. Caldwell, Procs British Cattle Breeders Conference 2004

\*\*\*Beef disease directory, Eblex 2012

\*\*\*\*Pharmaceutical company

<sup>1</sup> In severe outbreaks the estimated losses are likely to be much higher

Through the use of performance indicators the impact of disease can be monitored and these figures should form the basis for a discussion with your vet and/or animal health advisor to decide on which preventative measures should be used. This should allow for action that will reduce disease impact and improve profitability.



# Beef cattle diseases

## Respiratory disease (Pneumonia)

Respiratory disease can be of variable severity and appear differently depending on a variety of factors. The disease can have a very rapid, destructive progression which involves severe clinical signs and even sudden death. At the same time clinical signs can be very mild and difficult to detect.

### Clinical signs associated with acute and subacute respiratory disease

When an animal is acutely affected it becomes very dull, has a reduced appetite and a fever (temperature at or above 39°C/102°F). A yellowish/white discharge (pus) can come from the eyes and nose. This is generally combined with shallow and rapid breathing (more than 40 breaths a minute) and coughing.

Rapid and accurate treatment of acute infections allows some calves to recover completely but a large number will go on to have chronic disease. This is due to the lungs undergoing scarring as a result of delayed or inappropriate treatment or the calf is infected with an overwhelming pathogen load.

## Chronic disease

In the chronic form the animal has lost a large amount of its lung capacity and therefore struggles to inhale sufficient air. These animals show abdominal breathing in which the abdomen moves more than usual when breathing with an increased respiratory rate (more than 20 breaths a minute). Frequently a cough is heard, especially during exercise but this is not always the case. Due to the increased respiratory effort animals lose weight and do not thrive.

There are multiple causes of pneumonia and these may be viral, bacterial or parasitic.

The main viral causes for respiratory disease are:

- Infectious Bovine Rhinotracheitis (IBR)
- Parainfluenza-3 virus (PI3)
- Bovine Respiratory Syncytial Virus (BRSV)

The severity of the clinical signs for these diseases depends on the strain of the virus, the susceptibility of an individual animal and the immunity of the herd. Generally youngstock are more susceptible to respiratory disease and show more clinical signs than adults. In

herds or groups of animals where these viruses are newly introduced severe disease can also appear in adult stock so these should be considered when planning quarantine procedures.

The most common bacterial causes for respiratory disease are:

- *Pasteurella multocida*
- *Mannheimia haemolytica*
- *Mycoplasma* species
- *T. pyogenes* and *H. somnus*.

Frequently respiratory disease caused by bacteria starts with initial infection with one of the viruses that cause respiratory disease. These viruses do not always cause many clinical signs but the damage that these viruses cause makes it easier for bacteria to invade the respiratory system and become established. These bacteria do more damage to the respiratory tract and animals get severe respiratory disease. Bacteria can also be the primary reason for respiratory disease.

## Prevention

Prevention of this disease depends on good airspace management and control of humidity. The airflow should be such that the air moves away from the calves as this will take any pathogens away from the calves (see the airspace section within this booklet, page 5 for more details).

Vaccination can be useful in controlling pneumonia. There are a large number of vaccines on the market which aid in the management of respiratory conditions. Testing is required on the farm to identify the pathogens that require control.

## Treatment

Respiratory diseases (pneumonia) can be treated with antibiotics and anti-inflammatories. Your vet will be able to advise on the best course of treatment based on the type of animal and any previous cases on the farm.

### Parasitic respiratory disease

There is only one parasitic cause of lung disease in cattle. Lungworm (Husk) is a disease that mainly affects grazing cattle and outbreaks can cause very minimal to very severe signs. Larvae are ingested on pasture and then travel from the intestinal tract to the lungs. The severity of the disease depends on the number of larvae ingested, nutritional status and age of the host, vaccination status and previous exposure to lungworms.

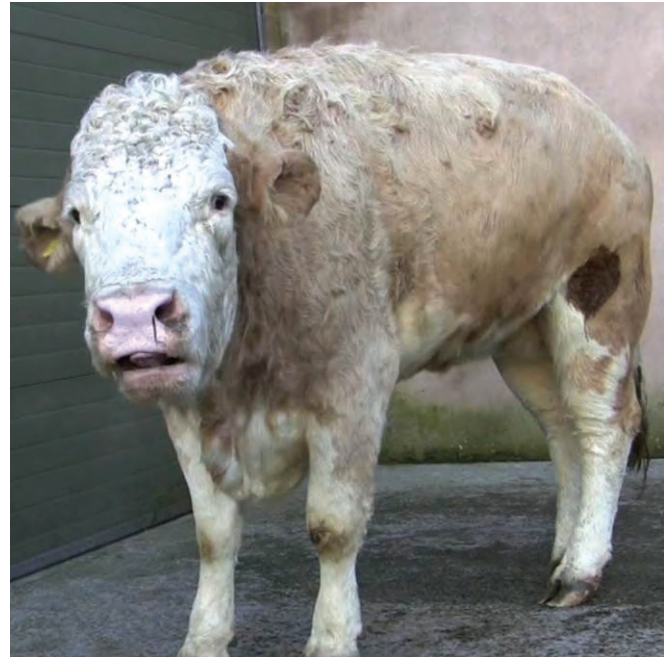
#### Prevention of lungworm

Vaccination of cattle is the most effective method of preventing lungworm in cattle. A primary course is required before exposure to get complete protection. Boosters may be required.

Worming strategically can also be used as a prevention strategy and long acting bolus or injectable products can be used. A side effect of this may be resistance in other gut worms and this is generally considered a risky strategy as gaps in cover may occur.

#### Treatment

Treatment of lungworm infection requires prompt action. All of the common anthelmintics can be effective.



*Affected animals cough frequently and have an occasional nasal discharge*



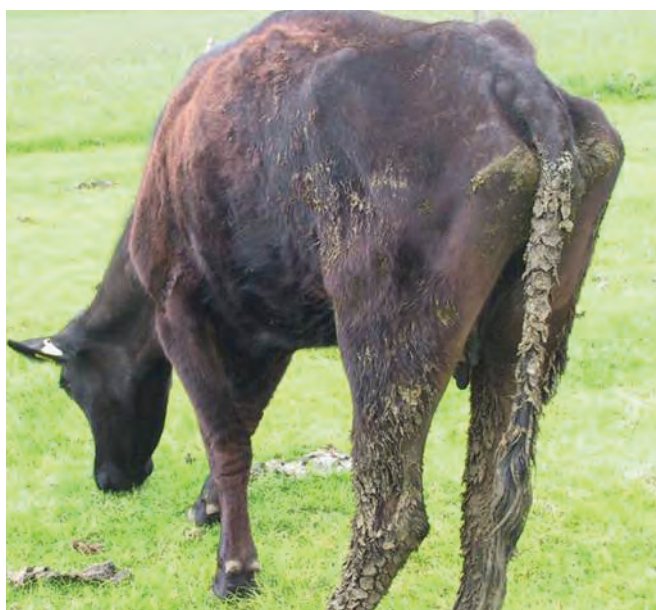
## Gastrointestinal diseases

The most common sign of gastrointestinal disease in beef cattle is diarrhoea (scours). This has many causes and can occur in all ages of cattle. If suffering with this condition cattle have thin watery faeces and lose weight. Blood may be present and animals can appear either depressed or perfectly normal. Other diseases of the gastrointestinal system predominately cause weight loss.

### Johne's disease

Johne's disease is a chronic wasting disease in adult cattle that is caused by the bacteria *Mycobacterium avium paratuberculosis*. Cattle are infected either before birth in the womb or as calves via infected faeces, colostrum or milk.

The time between infection and clinical signs is long and varies between two to six years. When clinical disease starts the animal keeps its appetite but develops chronic, watery diarrhoea with excessive thirst. The constant diarrhoea causes weight loss and can eventually cause an excessive build up of fluid under the jaw and belly with eventual death. More information on this disease is available in the HCC booklet: *A focus on BVD and Johne's*.



Cow showing the typical signs of Johne's disease infection

#### Prevention and treatment

There is no current treatment available for Johne's disease. Prevention relies on stopping new infections by controlling faeces in the calving pen. The majority of infections occur in the first 48 hours of life and calving pen hygiene is critical in the control of the disease.

Buying in animals is one of the biggest risks for introducing Johne's disease to the herd. When purchasing any animals quarantine protocols should be followed. However due to the nature of Johne's disease these

quarantine measures are unlikely to detect the disease. It is therefore most useful to purchase animals from low risk or accredited farms.

Testing is normally done on an annual basis to identify Johne's positive animals and these should be culled as soon as possible. Confirmatory faeces tests may be useful to ensure false positive animals are not culled unnecessarily.

### Parasitic gastroenteritis (PGE)

It is mainly youngstock (calves grazing for a first or second season) that are affected by gastrointestinal parasites that cause diarrhoea, reduced growth rates and ill-thrift. Two of the commonest examples of PGE in cattle are *Ostertagia ostertagi* (the brown stomach worm) which causes damage in the abomasums and *Cooperia oncophora* which affects the small intestine. Clinical signs of PGE can also occur during the housing period and is then more difficult to treat.

#### Prevention and treatment

Control of worms relies on anthelmintics (a detailed outline on the use of anthelmintics can be found on page 25). It is recommended that faecal testing is carried out to determine if worming is required.

### Salmonellosis

Salmonellosis is a severe infectious disease that can cause septicaemia (blood poisoning), fever, diarrhoea, pneumonia, joint-ill and death in young and adult stock. It can also cause abortion in cows. The most common types of salmonella are *Salmonella dublin* and *Salmonella typhimurium*. Salmonellosis can be zoonotic (infection that can spread from animal to man and from man to animal) and cattle can become carriers of the bacteria posing a risk to other animals and farm staff (carriers often spread the disease but do not show any clinical signs).

#### Prevention

Salmonellosis is prevented by attention to hygiene in the calf shed. Pens, buckets, feeding tubes and teats should be cleaned thoroughly where they are used. Calving areas and calf houses should be kept as clean as

possible. In addition calves should be monitored to ensure they are feeding well from the dam. This includes the feeding of sufficient colostrum. If the dams are vaccinated against salmonellosis this will improve the protection for the calves.

### Treatment

As with all scours in calves fluid therapy is the mainstay of treatment. This may be oral fluids or, if the calf is not able to rise, intravenously. The amount should be enough to replace losses. Non-steroidal anti-inflammatory drugs (NSAID's) are useful in controlling fever. Antibiotics may be prescribed and should be used in an outbreak following appropriate culture and sensitivity testing.

## Coccidiosis

Coccidiosis mainly affects cattle from 3 to 12 months of age and causes diarrhoea, which can be mixed with blood and straining. The pathogen is a protozoan parasite that infects the gut and reproduces in the wall of the intestine causing damage to the gut. This disease can affect both housed and grazing youngstock.

### Prevention

Coccidiosis is prevented by high levels of hygiene in the calving shed. Preventing faecal contamination of the feed and milk buckets will reduce the infection of the cattle. Cleaning and disinfection of the calving sheds and calf areas between groups will also help the prevention of coccidiosis.

### Treatment

Anticoccidials are available for treatment and should be used in combination with appropriate fluid therapy.

## Fasciolosis (liver fluke infestation)

Within cattle, damage to the liver due to fluke is a common reason for liver condemnation in Welsh abattoirs. Liver fluke mainly causes subclinical losses like ill-thrift and reduced growth rates in grazing cattle. More information on liver fluke can be found in HCC's publication *Controlling Liver Fluke on Welsh Farms*.

### Prevention and treatment

Liver fluke prevention is a complex area and in some cases strategic treatment may be the best way to control the disease. However drainage of wet pastures and fencing of areas where snails are likely to inhabit will reduce the infection. As with prevention triclabendazole products are the mainstay of treatment and treatment should be timed dependent on both the weather and historical patterns.



*Liver fluke infection is more commonly encountered in beef cows grazing poor wet pasture.*

## Bloat

Bloat is abdominal distension caused by gas build up in the rumen of cattle. This can be by obstruction (either physical by a food object or through a metabolic disease such as milk fever) of the gullet so the animal cannot belch normally and release the gas; this is known as gassy bloat.

Alternatively the presence of foaming agents in the diet leading to foam in the rumen which cannot effectively be passed may cause frothy bloat. These agents are found in forage such as clovers; therefore most cases are in the spring and autumn.

### Prevention

Allowing animals controlled access to high risk pastures and administration of antifoaming agents will reduce the risk of frothy bloat. Careful introduction of the new diet buffered with concentrates will allow the rumen to adapt without foaming and reduce the risk.

### Treatment

Passing a stomach tube may relieve some bloats however a trochar and cannula may be required in more severe cases. This does provide a route of infection and therefore it should only be used when necessary. Anti foaming agents such as dimethicone administered by stomach tube are effective for frothy bloat. The animals should be removed from the high risk pasture at the same time.

## Skin diseases

Some, but not all, skin diseases cause itching which can lead to extreme discomfort. Signs include hair loss and breaking of the skin with associated bleeding. There are different causes of skin disease. The most common infectious causes of skin disease are lice, mites and fungal diseases.

### Lice infestations

There are biting and sucking lice. Biting lice feed on tissue debris and the sucking lice feed on blood and tissue fluid. They can be seen with the naked eye. The main clinical sign is itching which results in restlessness, poor weight gain, a poor coat caused by self-trauma and hide damage. When infestations with sucking lice take place anaemia (low red blood cell count) can occur.



*Skin disease can cause production losses due to reduced feeding time and damaged hides*

### Mite infestations

Mites are small parasites that cannot be seen with the naked eye. There are different species of which the most common ones are; *Sarcoptes scabiei*, *Psoroptes* and *Chorioptes bovis*. Like lice these mites cause itching and in addition to the symptoms described above, crusting and thickening of the coat are possible.

### Fungal infections

Ringworm is caused by an infection of hair and skin with the fungus *Trichophyton verrucosum* or *Trichophyton mentagrophytes*. Typically the lesions are not itchy and appear greyish-white in colour and their outline is circular and slightly raised.



*Ringworm is common in youngstock and is readily transmitted to humans (zoonosis).*

### Prevention of skin diseases

Minimising the presence of skin diseases requires management of the stock in order to keep appropriate stocking densities and cattle as healthy as possible. Quarantine of bought-in stock and appropriate treatment during the quarantine will reduce the chances of bringing in parasites. High levels of hygiene in the housing area will reduce the presence of lice, mites and their eggs.

### Treatment

There are several insecticides on the market that will treat lice as well as several injectable anthelmintics. However accurate diagnosis is required as not all lice will be killed by the drugs. The treatment of mites is more complex and due to the potential severity of this disease veterinary advice should be sought.

Ringworm can be treated conservatively as it will resolve without further intervention but can be treated with topical antifungal sprays such as enilconazole. This is quite a labour intensive course, requiring at least 3 treatments. Washing of cattle may assist in getting rid of crusts and allow better penetration of the treatment.

## Urogenital diseases

There are a number of urogenital diseases in cattle. The most economically significant of these diseases generally result in reproductive losses such as abortions and stillborn calves. The three most common are *Leptospira*, *Neospora* and *Campylobacter*.

### Leptospirosis

Leptospirosis is a widespread disease in the UK and causes red water (urine) in youngstock and abortion, stillbirths, weak calves and milk drop syndrome (flaccid udders, without clear signs of mastitis) in cows. It is spread via the urine and animals can be infected and spread the disease without any clinical signs. This disease is zoonotic and therefore can be transmitted to humans.

#### Prevention

Vaccination is available and effective for the prevention of leptospirosis in cattle. Quarantine methods should be used to protect both the herd and any cattle joining the herd. Cattle should be tested to determine if they are likely to have been exposed and management decisions made on the result. Treatment can commence in animals that have been exposed to the disease but for animals that have not encountered it vaccination is a good option.

#### Treatment

Antibiotic treatment may be required in infected cattle. Oxytetracyclines have been used in the past but most antibiotics are effective. For incoming cattle where evidence of infection has been found antibiotic therapy may protect the main herd. This is an expensive option and it is better to avoid bringing infected animals into the herd.

### Neosporosis

Neosporosis is a protozoal disease in cattle that causes early embryonic death, abortion, stillborn and weak calves. Replication occurs in the tissues of the cow producing cysts which compromise the function of the organs in the calf leading to death of the foetus; however the full lifecycle has not been identified. Spread of the disease can occur either vertically (calves get infected in the womb via their dam) or horizontally (cows get infected through ingestion of infected dog faeces).

#### Prevention

*Neospora* infection starts with the contamination of feed by dog faeces. It is vital that faeces are not allowed to contaminate feed bins. A stable population of dogs will help but it is impossible to predict when and if shedding

will occur. Rapid removal and appropriate disposal of afterbirth will also break the infection cycle. Once infected cattle have been identified these should not be used for replacements. No vaccination is available in the UK.

#### Treatment

There is no current effective treatment available.

### Campylobacter

*Campylobacter fetus venerealis* causes endometritis (whites), failure to conceive, irregular returns (early embryonic death) and abortion in cows. The bacteria infect the uterus following mating, preventing implantation of the egg or causing death of the embryo in the uterus. This may be observed as irregular oestrus in the cow. Immunity can develop but occasionally permanent infertility results. As with Leptospirosis this disease is zoonotic.

#### Prevention

Testing all new bulls prior to mating is the most effective way of preventing disease entering the farm.

#### Treatment

Antibiotic treatment of bulls using sheath washes has been tried but the effectiveness of treatment is unclear and is therefore not recommended.



The most common way of campylobacter spread is venereal (via mating) with infected bulls.

## Health issues in calves

### Calving difficulties and calf vigour

Preventing calving difficulties is the first step in ensuring lively calves. It has been estimated that calf mortality in beef cattle is around 5%. Nearly half of all the calves that die do so within the first two days after birth. Calving difficulties and poor calf vigour are both important risk factors.

Deciding when to assist a calving is important for the survival rates of calves and cows. When the feet appear or the waterbag breaks a cow can be left for another 30 minutes before she is examined and assisted. Heifers can be left for an hour.

There are a number of reasons for poor calf vigour and these can include a prolonged birth or following calving assistance and when cows are in poor body condition at calving. The environment in which the calves are born can also influence its vigour.

### Prevention and treatment

Training and continuous learning are the most effective measures for preventing calving problems and for managing difficult calvings. Many bulls and cattle are now sold with Estimated Breeding Values (EBVs) for maternal traits including calving ease; these should be looked at before the purchase of any breeding cattle. When having calving difficulties an experienced stockman should recognise when they have reached the limits of their experience and know when to seek assistance.



### Scours

Diarrhoea (scours) is a common cause of disease and death in calves, especially in the first few weeks of life. The most commonly seen clinical signs are profuse diarrhoea, dehydration (identified by sunken eyes), metabolic acidosis ('drunk' and weak appearance of calf) and fever (temperatures above 39.5°C or 103°F). There are many causes of diarrhoea and some of them have been mentioned earlier in this booklet. The most common causes of diarrhoea in young calves are; Rotavirus, Coronavirus, Cryptosporidia, E. coli K99 and Salmonellosis.

### Prevention

Prevention of calf scours requires attention to hygiene at calving and in the housing pens. Buckets, teats and feeders should all be properly cleaned. If the disease occurs at grass consider moving fields for the remainder of the calving season. Colostrum intake is critical in allowing calves to fight off diseases and should be monitored closely. Vaccination of the dams for rotavirus and coronavirus will aid in the control of scours in the calves.

### Treatment

Oral fluids are the cornerstone of scour treatment in calves. The calf should be bedded down in a warm dry pen and given fluids either by teat or oesophageal feeder. Rehydration fluids are commonly available. If the calf is unable to stand then intravenous (IV) fluids are needed and a vet should be consulted. Suckling is the best indicator of calf improvement and so the oesophageal feeder should only be used once and then followed up with a teat.

Antibiotics are not required for scours and should only be used if there is an associated disease such as joint ill.



## Respiratory disease (Pneumonia)

Respiratory disease is a common cause of illness in calves. The signs and causes described under the general respiratory disease heading earlier in this booklet (page 10) are also applicable to calves.

### Treatment and prevention

The prevention relies on airspace management, humidity control, drainage of the pens and colostrum feeding. Although vaccination will assist in the control of pneumonia to get best results all of the points mentioned should be addressed.

Treatment of calves as in adults relies on antibiotics and non-steroidal therapy. The choice of antibiotic is best decided on the history of previous cases but oxytetracyclines are a common and usually effective choice.



*Careful control and management can reduce incidences of pneumonia*

## Navel ill and joint ill

Navel ill is caused when infection of the navel occurs soon after birth and causes pain and swelling to the outside structures of the navel in the first week of life. These symptoms can go hand in hand with a reduced appetite and fever.

Following the initial outbreak the infection can spread to the internal navel which causes more significant disease (fever, reduced appetite and ill-thrift) over a longer period especially as internal organs such as the liver can be involved. Severe infection and/or lack of treatment can cause bacteria to move into the bloodstream which generally then affects one or more joints of the calf (joint ill). Symptoms for joint ill include swelling of one or more joints, fever, depression and a reduced appetite. If not treated in time or treated insufficiently joint ill will cause chronic joint problems which may be severe enough to require euthanasia of affected calves.

### Prevention

Hygiene in the calving pen and navel dipping are essential in preventing joint ill and navel ill. Calf pens should be disinfected and deep bedded between calvings and navels should be dipped in tincture of iodine as soon as possible after calving. A second application may be useful. Ensuring that calves get enough colostrum is also essential.

### Treatment

Antibiotics and particularly penicillin can be useful in treating these conditions. Non-steroidal drugs may also be helpful. Veterinary advice should be sought if the condition does not rapidly improve as flushing the affected region should be considered and this is a veterinary procedure.

## Miscellaneous diseases

### **Bovine Viral Diarrhoea (BVD) Virus**

BVD is a virus that causes a range of clinical signs in youngstock and adult cattle. Infection of a pregnant dam can cause early embryonic death, abortion, mummified calves, weak calves, stillborn calves and persistently infected calves (PI's).

The presence of PI's in the herd can cause infertility, and increase the risk of pneumonia and diarrhoea in calves and adult stock. More information on this disease is available in the HCC booklet: *A focus on BVD and Johne's*.

#### Prevention

Prevention of BVD relies on eradication of PI animals quarantine procedures to keep the disease out along with strict bio-security. Vaccines are available and very useful but should not be relied upon to deal with the disease once on farm.

#### Treatment

There is no effective treatment for PI animals and these should be culled as soon as they are detected.



*Reduced growth can be a sign of BVD*



## Lameness

Lameness in cattle is shown as limping and the animal not bearing their full weight on the affected leg. The lack of weight bearing is mostly due to pain. Most lameness in cattle is present in the hind feet and may be infectious or non-infectious. Causes of lameness in beef cattle are generally infectious or traumatic. In the majority of cases lameness requires some form of treatment.

### Prevention of lameness

Attention to tracks and fields, good housing hygiene and good clean bedding can all minimise the impact of lameness in the beef herd. However the causes are various and consultation with a vet will help in formulating a farm specific plan.

### Treatment

Treatment relies on good foot trimming using the 5 step Dutch method. Antibiotic therapy may be used and penicillin is generally a good choice. While mild cases of lameness can be treated and cured on the farm more severe cases will require veterinary intervention.



*Lameness can have a serious financial impact in a beef herd*

### Mastitis

Mastitis is an inflammation of the mammary (udder) tissue and can be caused by bacteria, fungi and yeasts. Most mastitis occurs via introduction of the pathogen into the teat canal. After introduction of the pathogen in the udder it can multiply and cause disease. Possible routes of infection for beef cows are via the environment, through suckling and spread by flies.

Most mastitis develops during lactation but summer mastitis (which is spread via flies) can affect non-lactating cows as well. Clinical mastitis can be graded into 3 severities.

- Grade 1: the milk secretion is abnormal and no other signs of illness are noted.
- Grade 2: milk secretion is abnormal and there is swelling, pain and redness of the mammary gland present.
- Grade 3: the cow shows all the signs discussed at grade 2, but is also off-colour, has a reduced appetite and can have a fever.

#### Prevention of summer mastitis

The use of fly repellents and insecticides will reduce the incidence of summer mastitis which is the most common type in beef cattle. Moving cattle away from fields with flies (i.e. those with trees) will reduce the risk. Dry cow therapy has been suggested but should be discussed with your vet before treating all cows as it can make issues worse if not carried out correctly and training on applying tubes should be sought.



*Typical example of a cow suffering with summer mastitis*

#### Treatment

Once discovered the treatment usually consists of antibiotic therapy and non-steroidal anti-inflammatory drugs (NSAID) administration. These should be via specific tubes for treating mastitis and injection of antibiotics as prescribed by the vet. Stripping out of the affected teat is useful but as the udder will be painful it may be hazardous to attempt.



## Trace element associated conditions

The most commonly seen intoxications and deficiencies of trace elements in cattle are caused by copper, selenium, iodine and cobalt. The trace element status of individual animals and herds depends on many factors such as forage and other foodstuffs fed. Tests can be undertaken to establish the trace element level of animals. The results of these tests should be discussed with your vet or animal health advisor.

### Copper



*A dull coat is a sign of copper deficiency*

Copper deficiency is presented by a dull coat, grey/white spectacles around the eyes (depigmentation of the coat, which is most noticeable around the eyes), underdevelopment of youngstock, infertility and diarrhoea. This deficiency can be caused by insufficient levels of copper in the soil and feed, or due to a surplus intake of molybdenum or iron.

Copper toxicity is a chronic condition that can cause rapid death. It is caused by an accumulation of copper in the liver, which eventually damages and affects the function of the liver. The animal (non-ruminating youngstock are more prone to this than adult cattle) gets severely depressed, develops red water, jaundice (yellow colouring of the mouth and eyes) and eventually death.

### Selenium

Selenium deficiency is most common in the first year of life. It causes overall muscle weakness, stiffness, muscle tremors and fast, superficial breathing. In adult cows it can cause retained foetal membranes (retained cleansings). There is a great deal of interaction between selenium and Vitamin E and most selenium preparations contain both. It is not possible to differentiate between Vitamin E and selenium deficiency.

Acute selenium toxicity causes blindness, excessive salivation, lack of breath and death. Chronic toxicity causes depression, a loss in body condition, lameness and alopecia (hair loss).

### Iodine

Iodine deficiency causes reduced growth rates, foetal underdevelopment and abortion. If iodine depletion has taken place over a longer time period in pregnant cows, the thyroid of the calf can be increased in weight.

An excess in iodine is manifested by a reduced appetite, clear discharge from the nose and eye, severe salivation, increased respiratory rate (over 20 breaths per minute) and coughing.

### Cobalt deficiency

Cobalt deficiency in cattle is mostly displayed by ill-thrift and poor growth rates. Animals become dreamy and unresponsive, develop rough coats and reduced appetites. Vitamin B12 deficiency needs to be assessed when a cobalt deficiency is diagnosed.

Cobalt toxicity is very uncommon.

### Hypomagnesaemia

Hypomagnesaemia occurs when there is a low level of magnesium in the blood. This is caused by a lack of magnesium available in foodstuffs. A low level of magnesium in foodstuffs can be due to low levels of magnesium in the soil, the type of plant (e.g. Italian ryegrass) or high levels of cations in the soil (e.g. potassium) that can interfere with the magnesium uptake of the plant.

An animal that is affected by a low level of magnesium in the blood in extreme cases can stagger for a few steps, fall over and show spasms, convulsions (fits), rolling eyes and death in a few minutes.

Acute cases are similar, but symptoms last for a longer period (an hour or more) and the animal is generally not fitting continuously.

In subacute cases cattle are apprehensive, the head is held high and there are involuntary tremors which are exaggerated when the skin is touched or pinched.

### Prevention and treatment of trace element diseases

Prevention of these diseases is by the identification from history or from knowledge of the local environment and bolusing with an appropriate medication. It is rarely economically effective to use boluses speculatively therefore it is advisable to test for deficiencies before treating. Most laboratories offer trace element packages or individual tests to allow determination of trace element and mineral status. Testing cattle at times of high stress (calving for example) is usually recommended. Copper is best tested for through liver biopsy but this is not a common procedure on UK farms.

In many cases testing can only give an indication of the need for supplementation and in order to confirm whether a supplementation trial is needed. This involves leaving a small part of the herd untreated and observing response (typically growth rates).

Once identified deficiencies are best managed through specific supplementation by oral bolus or injectable compounds. In cases where deficiency has been identified licks and other free access sources are also used but are variable in their effect.



# Treatment of diseases

## Responsible use of medication

Good herd health planning is aimed at reducing the dependence on medicines within the beef enterprise while maintaining and improving production. When medication is required it is important that they are used according to best practice to ensure optimum results.

Medication guidelines are split into three basic groups; antimicrobial, vaccine and anthelmintic guidelines. There are a number of medications that do not fit into this category such as non-steroidal medications; these will be discussed later in the booklet.

## Antimicrobial usage on beef farms

### Choice of antimicrobial (antibiotic)

Inappropriate overuse of antimicrobials increases the risk of resistance developing. Therefore, it is important that the choice of drug best suits the ailment it is meant to treat. Should there be any uncertainty about the choice of antimicrobial then vet advice should be sought before treatment begins.

### Use of antimicrobials

While minimising the use of drugs is the overall aim this should not be confused with under dosing or not completing the prescribed course. Management should be aimed at reducing the need to treat large amounts of animals but the dose rate and length of course specified by the manufacturer should be adhered to. Before dosing, animals should be weighed as accurately as possible. This can be through the use of scales or weigh bands, though both should be checked to ensure correct weights are determined. Animals should be then treated for as long as indicated on the label.

Storage of drugs should be as indicated on the label. Incorrect storage may lead to drug failures and the need for additional treatment.

### Recording

There is a legal requirement to record medicine use and the data may also provide the vet or an animal health advisor with an important insight into the performance of the herd. Records should include date of treatment, animal number (or other identification) and withdrawal times. The batch number and expiry date should also be recorded. By looking at this data it may be possible to determine the areas where the enterprise is spending the most money.

## Vaccination usage on beef farms

### Choice of vaccine

Vaccine choice can be complex as there are a large number available. Care must be made to ensure that the correct vaccine is chosen that will gain the most economic benefit. Records from the farm will allow the identification of the primary health issues faced by the farm and will determine the vaccine approach.

Vaccines can also protect farms from disease that may enter from “across the fence” and so the farmer should discuss these potential risks with their vet. Administering a number of vaccines on the same occasion is not recommended.

### Use of vaccinations

Vaccines are an important tool for farmers in preventing disease and as such it is important they are used correctly to gain the greatest benefit. In order to ensure this it is important to choose the correct vaccines, store them in a suitable location and administer them correctly as directed by the manufacturer.

Vaccines cause an immune response in the animal. The animal must be in good health to gain the maximum benefit from the procedure. Vaccines must be part of an overall herd health strategy and must not be the only method of addressing the disease on the farm. Vaccination should be avoided at times of high stress to the animal (such as around calving). If carried out at times of high stress then the response to the vaccination will be impaired and protection will be reduced leading to apparent failure of the vaccine.





### Storage and administration

Vaccines should be stored according to the manufacturer's recommendations. This means that the time out of cold storage should be minimised. It is good practice to have a designated fridge for storage and care must be taken to ensure vaccines are used before the expiry dates are breached. A large number of vaccine failures may be attributed to lack of cold chain discipline and some vaccines appear to work but it is due to the lack of challenge experienced by the animals.

Vaccines are tested to provide effective coverage as long as they are administered correctly. This means that they should be applied using a clean syringe and needle or multiple dose applicator. It is important not to use the same needle in the bottle as is used to inject the animal.

### Vaccine timing

Vaccines work through triggering an immune response to specific diseases. To do this the animal should be in the best possible health. In addition the vaccine should be administered prior to any anticipated challenge to the animal. Most vaccines require at least 14 days from the second dose of a primary course to give full immunity to the animal.

Frequently multiple vaccines are included in the management schedule for a group of animals and while this is acceptable, it is important an appropriate delay between individual vaccines is allowed. Seek vet advice regarding multiple vaccinations; no vaccine should be administered at the same injection site or in the same syringe.

### Failure of vaccination

Vaccinations may fail to protect the herd for a number of reasons. Some of these have been mentioned previously but they fall into five main categories.

- **Misdiagnosis of disease**  
Discussing disease risks with your vet will ensure the most appropriate vaccine is used. Choosing the correct vaccine is likely to be most difficult when several pathogens may cause similar signs such as pneumonia.
- **Multi-factorial disease**  
Other factors may influence the success of a vaccine. Factors such as airflow and humidity together with poor quarantine may reduce the vaccines efficacy.
- **Poor storage and use of vaccination**  
Storage of the vaccine should be in a dedicated fridge with recording of the temperature and correct stock rotation. To aid this minimum stock should be maintained.
- **Different strains not being present in the vaccine**  
Vaccines are made from the most current strains but with time this will alter. It may be worth considering whether the vaccine strain chosen is appropriate.
- **Animals not being able to mount an immune response**  
Poor nutrition, stress or other diseases will affect the animal's ability to mount an immune response. No vaccine will protect sick or otherwise compromised animals.

Any perceived vaccine failure should prompt a review of protocols on the farm to ensure that all is being done correctly. This attention to detail will also improve the financial outcome for the beef enterprise.



## Anthelmintic usage on beef farms



### Responsible use

Anthelmintics are an important but frequently misunderstood and misused part of the farmers' armoury in protecting the welfare of the herd and finances of the enterprise.

There are some basic guidelines which should be followed in order to maintain the efficacy of anthelmintics on a farm. The following guidelines have been produced by the industry led initiative, Control Of Worms Sustainably (COWS).

- Use quarantine strategies for the farm. While resistance is rare in cattle parasites, purchased cattle is the most likely route that resistant parasites will come onto the farm. It is sensible to treat animals as infected with such parasites and treat them in such a manner that they cannot infect the herd.
- Monitor for efficacy. Faecal testing can identify if treatments are not working.
- Administer treatments effectively. Manufacturer's instructions should be carefully followed. The weight of the cattle should be accurately determined and all animals dosed for the heaviest in the group if the dosing gun is not to be changed at every animal. If using a dosing gun this should be checked and calibrated. Storage of drugs and equipment should be as indicated by the manufacturer.
- Administer anthelmintics only when required. A minimal level of parasitism will reduce potential for developing resistance on the farm. Faecal egg counting will aid in this decision making process.
- Select the correct anthelmintic for the task.
- Treat according to the parasites present and the age of animals.
- Adopt strategies that preserve susceptible worms on the farm.
- Reduce selection pressure on the farm. Worms are considered in-refugia when they are not able to be treated by the farmer (i.e. if they are on grass) and at the same time they are not causing production losses in the cattle though they may in the future. By maintaining a relatively high proportion in-refugia then the development of resistance can be delayed for as long as possible.
- Reduce reliance on anthelmintic strategies. There are management strategies that allow worms to be controlled before they cause damage for the enterprise. These include using adult animals to mop up worm eggs and alternative crops.

While these are the basic principles it is recommended that discussion of the latest information with your vet or animal health advisor should take place.

### Other medications

There are a few drugs available to farmers that are not in the classes that have been covered. Non steroidal anti-inflammatory drugs (NSAID's) are probably the most common. As with all drugs appropriate recording should be carried out with these types of medicines.

NSAID's are drugs that act as painkillers and reduce temperatures in the same manner as ibuprofen and aspirin in humans. They should be used in cases where there is thought to be pain or discomfort, where swelling occurs due to inflammation (bruising etc) or where there is a raised temperature. It is likely that most animals under treatment would benefit from NSAID treatment.

Other drugs that should be recorded include local anaesthetics for pain control on dehorning and castration, also prostaglandins and progestagen releasing devices that are used for reproductive control.

## Summary

Herd health relies on accurate data recording and thoughtful analysis of the data in light of familiarity of the farm. This and an appreciation of the risks to the enterprise can allow for the identification of the most appropriate interventions to be undertaken.

There are also basic principles underlying preventative measures that are common to many diseases. Many enterprises could benefit from a review of the housing areas and the management procedures to ensure the animals are performing to their highest level.

It is important to be able to recognise the main disease conditions accurately and understand how to treat them rapidly and correctly to minimise the impact of the conditions. Good training of staff and consideration of preventative measures will reduce the impact of disease on the farm.

### Further information

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For further information on this booklet or the work of HCC please visit [www.hccmpw.org.uk](http://www.hccmpw.org.uk)

