

## Section 8



# Animal Health: A Strategic Perspective

by David Graham (AHI)



### Introduction

The establishment of Animal Health Ireland is a major advance in the strategic management of infectious diseases. It brings together the different organisations and stakeholders, including Teagasc, in animal health and disease control to provide a co-ordinated team approach to animal health.

- ① What is AHI's role?
- ② What strategies are being used to control diseases of dairy cows in Ireland?

# Animal Health: A Strategic Perspective

## ① What is AHI's role?

### Animal health- a strategic perspective

Animal Health Ireland (AHI) aims to improve the profitability, sustainability and competitiveness of livestock farmers and related industries through superior animal health. It has particular interest in non-regulated infectious diseases i.e. those which government does not have a legislative responsibility to deal with. AHI has prioritised the following diseases for action: BVD, IBR, Johne's disease, mastitis/milk quality, parasites, calf diseases and lameness.

These diseases vary in a number of important ways. Some are caused by viruses, while others are due to bacteria, worms or fluke. Some are caused by single agents (e.g. BVD), while others (e.g. mastitis) may be caused by a number of different agents. For some there are specific treatments or vaccines available, while for others there are not. Elimination of the agents responsible for some diseases is possible at the herd level or beyond, whereas for others, it is a matter of ongoing management to minimize their impact. In light of these factors, each of these diseases needs to be addressed strategically and requires the co-ordinated efforts of research, advisory staff, veterinary practitioners, industry personnel and farmers.

## ② What strategies are being used to control diseases of dairy cows in Ireland?

### Bovine viral diarrhoea virus (BVDV)

#### Key risks



BVD is one of the most economically important viral diseases of cattle in Ireland, with almost all herds containing at least some animals that have been exposed to the virus. Persistently infected (PI) cattle, created when unborn calves are exposed to virus between 30 and 120 days of pregnancy, are efficient transmitters of infection and are largely responsible for the introduction and maintenance of infection in herds. In cows and heifers without previous exposure, infection can result in a range of negative reproductive outcomes. In addition, infection can weaken the immune system, leaving animals (particularly calves) more susceptible to other infections and lead to poor response to treatment.

### Cost of BVD

A recent cost-benefit study estimated the annual losses due to BVD virus to be at least €102 million, €55 million of which is attributable to the dairy sector. In contrast, the estimated total cost for a six-year eradication programme was €49 million, with €21 million attributed to the dairy sector. This represents a benefit:cost ratio of at least 14:1 and a pay-back period of around six months.

### Infectious bovine rhinotracheitis (IBR)

#### Key risks



There is evidence of infection with IBR virus in approximately 75% of dairy herds, typically with moderate to high levels of exposure within these herds and with each exposed animal considered to be a lifelong carrier. Data from the Central Veterinary Research Laboratory show that IBR virus is by far the most commonly detected respiratory virus in cows. While the impact of infection is greatest following initial introduction into a herd, there are also assumed to be ongoing losses in herds with established infection, as susceptible cattle are exposed to the virus. AHI is initiating work to develop a better understanding of the losses due to IBR at the herd level. This work will also seek to estimate the cost of the lost genetic gain arising from the exclusion of many potential sires due to infection. While less tangible, it is believed that this will be a significant figure.

### Strategy

Given the high level of exposure in many herds, culling is not an option for control (in contrast to BVD where only a very small percentage of animals are likely to be PI). Instead, the use of marker vaccines as part of a medium to long-term strategy is the key element in IBR control, the goal being to maintain immunity at a sufficiently high level to prevent carrier animals shedding virus to susceptible in-contact cattle. While this approach can be applied at the individual herd level, the herd remains at constant risk of reintroduction from neighbours or through trade.

In Europe, a number of countries are already free of IBR, and other regions or countries are implementing official, EU-approved, eradication programmes (based on vaccination), with apparent success. When completed, these regions or countries will join a list of those granted additional guarantees by the EU in respect to trade. These developments have the potential to increasingly raise barriers to live Irish exports.

### Johne's disease (JD)

#### Key Risks



JD is caused by a bacterium known as "MAP" and ultimately leads to weight loss, decreased milk production, scour and death. A recently published study found that around 20% of dairy herds have evidence of infection. In contrast to BVD and IBR, typically only a small percentage of cattle are likely to be infected in positive herds. However, due to the limitations of current diagnostic tests and the slowness with which signs develop, these may be responsible for the silent spread of infection to many other cattle in the herd.

Direct losses due to JD at farm level arise from reduced milk yield and constituents, early culling and reduced slaughter value. Once MAP enters a herd, it requires significant time and effort to reduce the level of infection and eradication may not be possible, particularly in the short-term. For this reason, a key priority is to identify herds that are free from infection and put in place appropriate measures to prevent introduction.

An additional issue in relation to JD is the hypothetical association of MAP with Crohn's disease in humans. While the view of Food Safety Authority of Ireland (shared by the European Food Safety Authority) is that the balance of available evidence does not support a causal relationship between MAP and Crohn's disease, the presence of JD in Irish dairy herds nonetheless represents a risk that the dairy industry naturally wishes to address. This is particularly relevant to the Irish industry, given the dependence on export markets and the importance of the infant formula sector to this country.

### Strategy

It must be emphasised that for all of these diseases, but particularly for JD, testing is only one component of successful control; appropriate management to address routes of entry into, and spread within, herds is also critical. Of course some of these management measures, such as those addressing purchase policy or sharing of equipment, will have benefits in controlling a wider range of infectious diseases.

The good news is that the level of infection in Ireland currently appears to lag behind that of many of our competitors. To fully harness this advantage, a control scheme is needed to identify and protect herds that are likely to be free of infection and to assist infected herds with reducing the levels of infection. Animal Health Ireland is currently developing resources for the industry on JD.

# Animal Health: A Strategic Perspective

## Mastitis

### Key risks



Analysis of recent data from milk recording herds shows that the trend in average somatic cell count (SCC) is on an upward path. A recent Teagasc study has highlighted the impact that SCC can have on farm profits. This estimated that a 90 cow herd on a 40ha farm with an SCC in the range 300,000-400,000 cell/ml would increase profit per cow by almost 70%, from €164 to €277, by reducing SCC to 100,000-200,000 cell/ml.

### Strategy

AHI, in consultation with industry representatives, has developed a national programme, called CellCheck, to deliver realistic and achievable solutions to address this problem. This takes a collaborative, multidisciplinary approach and aims to build awareness, deliver best practice, set new standards and build capacity. The initial building blocks of CellCheck include the development of clear and consistent guidelines on mastitis control, building the capacity and networks of service providers to support farmers and enabling farmers to take control of mastitis on their own farms.

In conclusion, it is increasingly evident that the impact of animal health is not confined to within the farm-gate, but has implications beyond this that affect processing, consumer decisions, regulation, trade and marketing. It is vital that cattle health is addressed on a number of fronts by a co-ordinated team effort. Inevitably, progress on health will require a planned approach to ensure sustainable, profitable production and enhance market access and consumer preference for Irish produce at home and abroad.

Details of all of these programmes, and of work on other diseases can be found at [www.animalhealthireland.ie](http://www.animalhealthireland.ie)



## Section 8

# Herd Health and Infectious Diseases

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### Introduction

In this chapter we deal with those infectious diseases, and parasitic infestations, that occur relatively frequently in Irish dairy cattle. We focus on general principles for the prevention and control of these diseases, rather than providing detailed information on each disease as this information is readily available elsewhere.

- ① What are infectious diseases and why should they be controlled?
- ② How do I keep infectious disease off my farm?
- ③ How do I recognise when animals are ill?
- ④ How do I treat animals who are ill?
- ⑤ How do I prevent the spread of infectious disease between animals on the farm?
- ⑥ How do I boost disease resistance in my animals?
- ⑦ How do I control parasites on the farm?
- ⑧ How do I prevent and manage abortion in cows?
- ⑨ How do I prevent and manage some of the specific infectious diseases of cattle (Johne's disease, BVD, IBR)?

# Herd Health and Infectious Diseases

## ① What are infectious diseases and why should they be controlled?

Disease may be caused by a variety of factors. Infectious diseases are those diseases that are primarily attributable to infection of an animal or person by a viral, bacterial or fungal pathogen (a disease-causing agent). In some instances, infectious disease outbreaks because of a combination of risk factors, for example housed cattle are predisposed to respiratory infection and disease by poorly-ventilated or overcrowded housing and/or by stress associated with weaning, transport and mixing.

Infectious diseases have a negative impact on production and profitability – some animals may become ill and die or require veterinary treatment (clinical disease) but many animals in the herd may be affected to a lesser extent without showing noticeable signs of illness (subclinical disease). They might have a reduced milk yield or weight loss and this hidden aspect is quite often the most significant impact of disease on the profitability of farming enterprises. Some infectious diseases have an impact on the export trade as they are subject to regulation by countries that import dairy produce from Ireland and also by international animal health agencies (EU, OIE, etc.).

Some of these regulated diseases are known to occur in Ireland (endemic) in which case the Department of Agriculture, Food and the Marine (DAFM) is likely to have a control or eradication scheme in place to ensure continued market access, e.g. bovine tuberculosis (TB), brucellosis and BSE.

Other regulated diseases do not normally occur in Ireland (exotic) in which case DAFM will have made provision to ensure that they cannot be readily introduced, or that if introduced they can be rapidly detected and controlled e.g. foot-and-mouth disease (FMD) and Bluetongue.

Exotic viral diseases such as FMD have a tendency to spread very rapidly and have serious implications for the export trade, justifying extreme measures such as “stamping out” (killing all animals that may potentially have had any contact with the virus) to ensure that they are quickly brought under control.

### Key message

**Keep infectious disease out of your herd!**

## ② How do I keep infectious disease off my farm?

### Checklist

#### Reducing the risk of new disease entering your farm

- Develop a biosecurity plan\* with your veterinary surgeon.
- Control animal movement onto and within the farm.
- Control movement of people onto and within the farm.
- Control equipment and vehicle movement onto and within the farm.

\* *Biosecurity refers to practices that help to prevent the introduction of disease into farms and spread within the farm. Simple, practical, biosecurity measures tailored to your farm reduce the risks of introducing infectious disease into your herd.*

### How to

#### Prevent the introduction of infectious disease in cattle

- Ideally operate a fully closed herd with no animals brought in (purchased, borrowed (bull) or returned from show or mart).
- If an animal must be purchased in, investigate the animal health history of the source.
- Quarantine all purchased and show/mart returning animals and animals returned unsold from the mart for 2–4 weeks (ideally 4 weeks) before allowing them to join the herd.
- Identify infected animals (carriers) by testing new additions before introduction to the herd during the quarantine period.
- Only transport animals in farm-owned trailers or in trucks that have been washed down and disinfected.
- Prevent nose to nose contact with neighbouring cattle across field boundaries, by double fencing or you could agree with neighbours that cattle will not be grazed in adjacent fields at the same time.
- Ensure boots and hands are disinfected on entry to the farm, especially by those who may have handled cattle on another farm. Ideally, provide workers with boots and clean overalls only to be used on your farm.



### Any quarantine area should:

- be totally separate from any areas occupied by the main herd especially calving pens and isolation/hospital area
- have equipment (e.g. buckets, tools) used exclusively in that area
- include animal handling facilities and make it easy to observe
- be clean. People should disinfect their hands and boots and remove their overalls before leaving this area and entering other areas of the farm
- be thoroughly cleaned and disinfected as cattle leave this area.

### Checklist

#### Purchased animals

##### Consider the healthy status of the source herd

- Actually view the animals to be purchased on the source farm to appraise their condition and general health.
- Clinical history (ask your vet to contact the source herd vet).
- Check their treatment records.
- Check laboratory reports including test results for specific diseases - has the herd been tested for evidence of BVD, IBR and/or Johne's disease?
- Check parasite control (recent treatments for worm/fluke infestation).

##### Consider individual animal health status

- Ensure you have negative laboratory test results for BVD virus and for antibodies to IBR before purchasing animals.
- Monitor the health of bought-in animals while in quarantine.
- Check somatic cell count of milking cows before they join the milking herd.
- Check faecal egg counts after dosing for signs of anthelmintic resistance.

### Key risks



- Adding new animals to the farm without an adequate quarantine period.
- Allowing animals to return from marts, shows, or exhibitions without quarantine.
- Not knowing the disease status of the source farm and failing to test for specific diseases prior to addition to own herd.
- Allowing other animals (domestic or wild) to contact your livestock, feedstuffs, or water sources.
- Failing to prevent disease transfer via human contact, vehicles, or equipment (including needles and rectal sleeves) used on more than one animal.
- Spreading manure or slurry from other farms onto your land.

### ③ How do I recognise when animals are ill?

#### How to

#### Recognise when an animal is ill



The farmer, not the vet, is responsible for the early detection of a health problem. This can be difficult as the early signs of animal ill-health are not always obvious. Your aim is to detect ill-health early, when treatment is most likely to be effective.

#### Key fact



**Freshly calved cows are the highest risk group for ill-health and so should be monitored most frequently.**

#### How to

#### Monitor cattle for signs of ill-health



Observe the group of animals from a distance before proceeding with a close-up examination of individual animals. Look for signs of abnormal behaviour, e.g. separation from the main group. Changes in feed intake, milk yield or body condition may also indicate an underlying health problem in a group of cattle.

#### Tip

Especially if new to cattle farming, familiarise yourself with the normal behaviour of your cows at grass - this will allow you to recognise unusual behaviour patterns in animals that are ill.

# Herd Health and Infectious Diseases

## Checklist



### Signs of ill-health in cattle

- poor body condition score.
- unusual behaviour: separation, not responsive or hyperexcitable, bellowing, etc.
- abnormal posture or difficulty in movement.
- abnormal appetite - reduced feed intake
- poor gut-fill or hollow flanks
- not chewing the cud
- coughing, grunting, straining
- rapid breathing (more than 30 breaths per minute)
- discharges (from the eyes, nostrils, mouth, vulva)
- abnormalities in manure (excessively fluid, wrong colour or smell)
- abnormal coat and skin (Bessnotosis and Photosensitisation)
- abnormal swellings (e.g. abdomen, legs, udder)

### Tip

Especially if you are new to cattle farming, become familiar with normal gut fill and flanks of cattle. The upper left flank behind the ribcage is the area overlying the rumen – a hollow flank suggests the rumen is not full and that the animal may have reduced its feed intake for some time (possibly due to illness) whereas a distended flank (if tense and drum-like) indicates bloat and may require urgent veterinary attention.

## How to



### Examine animals for ill health

If you suspect an animal is unwell, you should perform a closer examination. Before handling the animal, ensure you have restrained it securely and safely in a crush or self-locking head gate.

First check the animal's temperature and then inspect more closely whatever aspect of ill-health you had observed.

## How to



### Take an animal's temperature:

- Lubricate the digital thermometer.
- Insert the tip of the thermometer approximately 5cm into the rectum.
- Press the tip of the thermometer against the wall of the rectum.
- Remove the thermometer when the temperature reading has stabilised (approx. 30 seconds).
- Clean the thermometer after each use.

## Key fact



The normal rectal temperature range in adult cattle is 38.0 to 39.0°C. Temperatures of 39.5°C and above indicate a fever usually resulting from infection, toxæmia or pain; temperatures below 38°C may indicate shock or terminal illness.



## Checklist



### Important physical inspections to carry out on the restrained animal

1. Examine the udder (for heat, pain and swelling), the teats and the milk.
2. Inspect the head (eyes, mouth, throat, breath, ears).
3. Note the 'gut fill' of the animal.
4. If lame, lift the leg in question and examine the hoof.
5. If you need to examine a lame leg, use lifting equipment or a hoof-trimming crush to do the job safely.

Having completed both observations and examinations, you are then in a position to decide if and when veterinary care is required.

## Key risks



- If animals are not observed regularly (at least daily) diseases may become quite advanced before signs are detected.
- Delayed disease diagnosis will reduce the response to treatment and could allow infectious diseases to spread further.



## Laboratory Testing

- A wide range of laboratory tests are available to assess animal health status.
- The question is no longer can you test for a particular disease - but rather should you test? and how best to test?

- Laboratory testing for animal health always costs money - used wisely it can pay dividends, but used poorly it will yield no real benefit and may be misleading

Which animals to collect from, which samples to collect and which tests to request, are all specific to the disease in question and the objectives in mind. Detailed guidelines on the best approach to investigate each disease have been tailored for Irish farms and are available on <http://www.animalhealthireland.ie>

A few general principles on sample types and test types are outlined below.

Testing can be performed on individual animal samples or on combined samples (from two or more animals), e.g. a bulk milk tank or pooled faecal sample. Tests to determine infection status may be direct where they detect the presence of the infectious agent (e.g. PCR test for BVD virus) or indirect where they detect a hallmark of infection such as the presence of antibody (e.g. ELISA test for BVD antibody). No laboratory test is perfect. They all have limitations due to the type of technology they use, the type of sample they require, and the organism they are looking for. Modern professional laboratories are able to minimise these limitations. Incorrect test results remain a possibility but are very rare.

### Test performance

**Test sensitivity** - The percentage of infected animals that actually have positive test results when that test is used. Ideally 100% - no false negatives.

**Test specificity** - The percentage of non-infected animals that actually have negative results when that test is used. Again ideally 100% - no false positives.

### Pooled Testing

The extreme sensitivity of modern techniques such as PCR (Polymerase Chain Reaction) and ELISA (Enzyme-Linked Immunosorbant Assay) have meant that it is now possible to use a single laboratory test to evaluate several samples which have been carefully pooled together - primarily because of the cost benefits.

Usually this does not affect how samples are collected on the farm as the pooling is done within the laboratory itself. Check with the laboratory in question for more details.

# Herd Health and Infectious Diseases

## Bulk Milk

1. The bulk milk test can only test those animals which are contributing to the bulk tank on the day of sampling.
2. Remember cows which abort or are infertile don't always go into milk and therefore may not be contributing to the bulk milk tank on any given day.
3. Remember cows which are very recently calved, off-form or have been treated for antibiotics for any reason may not be contributing to the bulk milk tank on any given day.
4. A negative result when testing for the presence of infection agents may arise, even if one or more animals are infected, because of dilution effects.
5. A positive result when testing for antibodies may simply represent lifetime exposure of some of the milking herd to the agent in question.

## Accreditation

The commonest standard used today is ISO17025:2005. This is a formal system which uses internal and external audits, on-site inspections and approval of methods/documentation to strictly monitor the testing arrangements in place.

### ④ How do I treat animals who are ill?

#### Treatment of ill animals

- Isolate/hospitalise ill animals.
- Be careful to avoid transferring disease.
- Always maximise the welfare of ill animals.

#### How to

#### Comply with animal remedies regulations

- Only purchase medicines from your veterinary practitioner or other licensed supplier.
- Store medicines appropriately.
- Follow manufacturer's recommendations – only use medicines as indicated.
- Administer medicines at/by the recommended dose, route and frequency.
- If in doubt, consult with your veterinary practitioner before treating animals.
- Dispose safely of out-of-date medicines



- Maintain a register recording details of individual animal treatments.
- Observe withholding times for milk/meat.

### ⑤ How do I prevent the spread of infectious disease between animals on the farm?

#### Checklist

#### Reducing transmission of an infectious disease that is already present within the herd by:

- understanding how infection persists on a farm or within the herd
- understanding how infection is transmitted between cattle
- reducing the burden of infection to which animals are exposed
- increasing the resistance of animals to infection.



#### How does

#### Infection persist on a farm or within a herd from year to year?



Infectious agents can persist (i) in infected animals and/or (ii) in the environment.

Cows can remain infected with some disease-causing agents without showing ill-effects and can continue to be a source of infection to other cattle in the herd.

- They may pose a continuous risk in the case of cattle that are persistently- infected (PI) with BVD virus or only an intermittent risk, e.g. Salmonella "carriers".
- Cattle may be latently-infected with the virus that causes IBR (bovine herpesvirus1).
- Cattle may be infected with the infectious agent of Johne's disease (MAP) for years before developing disease but usually become increasingly infectious as the disease progresses.

Infected cattle can contaminate their environment by shedding and this can be a source of infection for other animals. Off the animal, most infectious agents will eventually be inactivated by direct sunlight (UV light), drying, unfavourable pH, etc.

## How is



### Infection transmitted?

- Some infectious diseases of cattle are not spread between infected animals but may affect more than one animal in the herd because they have been exposed to a common source (e.g. listeriosis where silage may have been contaminated by soil and has not been well preserved) Some infections are transmitted by vectors (biting flies or ticks), e.g. babesiosis or Schmallenberg virus.
- However, most of the economically important infectious diseases are contagious and occur after contact between infected and non-infected (susceptible) cattle.
- Contact between cattle may be **direct**, e.g. nose-to-nose contact across a gate or fence or **indirect** when a susceptible animal comes into contact with a person, place or thing that has been contaminated by an infected animal, e.g. when nose-tongs are used to restrain different groups of animals.
- Some infectious agents are most likely transmitted by a faecal-oral route (e.g. those agents which cause diarrhoea) whereas others are more likely to be transmitted by inhalation of droplets (e.g. those agents which cause respiratory disease). Alternative routes of transmission include contact with the mucous membranes that line the mouth, nose, eye, etc. and inoculation where an infectious agent is introduced through a break in the skin. Aborted fetal and placental materials, consumption of infected milk.



## How to



### Reduce the burden of infection to which animals are exposed:

- Avoid overcrowding which will increase the rate of contact between infected and non-infected animals and lead to a more heavily contaminated environment.
- Isolate sick animals from the rest of the herd (hospitalise) 3 days after clinical signs have abated and any discharge has ceased.

#### For housed cattle:

- Respiratory infections are usually transmitted by inhalation of infectious droplets – allow sufficient airspace and circulation of air within buildings to prevent the build-up of infectious droplets (remember cow comfort requires that buildings are not excessively draughty).
- Other infections (spread by the faecal-oral route) – ensure that the floor area is well-drained and kept clean or alternatively when cattle are on bedded floors - heavily soiled bedding should be removed and fresh bedding material provided on a regular basis.
- Feed and water troughs should be positioned so as to minimise the possibility of faecal contamination.
- Houses should be thoroughly cleaned and disinfected between batches of cattle; note that cleaning is essential before disinfection, as disinfectants are unlikely to be effective and may be rapidly inactivated when applied to dirty surfaces.
- Cows are most vulnerable to disease around the time of calving – hygienic management of calving pens will help to prevent infection of both cow (e.g. coliform mastitis) and calf.

#### For grazing cattle

- Remember to compost dung before applying it to land.
- Forage harvesting, reseedling and/or tillage should be carried out after application of slurry to pasture, particularly in the case of MAP– infected (Johne's disease) herds.
- Avoid mixing different groups/ages of animals – e.g. milking cows, replacement stock, calves should be grazed separately.

# Herd Health and Infectious Diseases

## ⑥ How do I boost disease resistance in my animals?

### How to

#### Increase the resistance of animals to infection



1. Vaccination is a means of boosting immunity to specific infectious agents – prompting the animal to produce antibodies or other defence against infection. It is not fool-proof and does not provide absolute protection. Usually it is aimed at minimising the impact of infection (i.e. preventing disease, rather than necessarily preventing infection) by tipping the balance in favour of the animal.
2. The age of the animal, its nutritional or metabolic status, stresses of various types and the presence or absence of another disease, collectively exert a strong influence on the cow's ability to resist infectious disease. Good husbandry and reduction of stresses imposed on the animal helps to build disease resistance.
3. Breeding for disease resistance. Disease resistance is a favourable trait that should be considered in breeding programmes but it is likely to be of low heritability and to have a complex genetic basis.

#### Vaccination in the dairy herd

Vaccines are medicines used to produce or boost immunity against the disease-causing organisms contained in the product as part of an overall disease-management or eradication strategy. They are mainly used for pneumonias, scours and reproductive diseases, and different products are available targeting viral, bacterial and parasitic diseases.

Depending on the product, vaccines may be given by injection into the muscle or under the skin (subcutaneously), or up the nose (intranasally) or by mouth. While most vaccines are designed to protect the animal receiving them, calf scour vaccines are given to the dam, with the calf protection being transferred to the calves via antibodies in colostrum and milk.

Vaccines against diseases that also affect humans (e.g. leptospirosis and salmonellosis) also indirectly protect farm workers and families.

Details of vaccines used in dairy herds with a current marketing authorisation are available from the Veterinary Medicine section of the Irish Medicines Board website <http://www.imb.ie>.

## Do I need to vaccinate for all diseases?

Not necessarily. A decision on vaccination strategies should be taken in conjunction with the herd's veterinary surgeon, taking into account factors including current disease status and test results, herd goals and the likelihood of the disease being introduced into the herd with current management practices.

### How to

#### Choose which vaccine to use



The decision should be based on a range of factors beyond the cost per animal. These include:

- The claims made by the manufacturer for the vaccine. Each vaccine (and all medicines) comes with a detailed data or information sheet which should be read carefully. This provides a range of additional information including dosage regimes, volumes, routes, safety in pregnant animals, what to do if you accidentally inject yourself, storage conditions etc.
- The range of different disease-causing organisms (and strains of these) that the vaccine covers.
- How quickly protection develops (onset of immunity).
- How long does protection last (duration of immunity).
- Age of use in calves (pneumonia vaccines).
- Packaging - how many doses does it come in?
- Ease of administration (volume and route).
- Shelf life of the product (note that, when opened, many products have to be used within a very short time)

## Can I vaccinate for several diseases on the same day?

There is often little data on safety or efficacy of vaccines when given in combination. The data sheets for a few products indicate that they can be given on the same day, while for others it is recommended that no other vaccines be given for 14 days before or after. For most, a case-by-case decision is recommended. Read the datasheet and discuss with your vet.

### Once I start, do I need to vaccinate forever?

Changes in vaccination policy should be made in conjunction with your vet. Stopping a programme may give short-term savings, but if the herd becomes increasingly vulnerable as a result, without management changes to reduce the risks (e.g. better housing, improved hygiene, revised buying-in policy), then the costs of any subsequent outbreak are likely to exceed the savings.

### How effective can I expect vaccines to be?

Vaccination should never be used as a substitute for good husbandry and management. Expectations should be based on what is claimed in the data sheet. For best results ensure:

- vaccines are within date and properly stored (especially after being opened/prepared)
- given properly (route, volume); ensure proper timing for initial course and boosters e.g. pre-breeding, prior to calving etc (see datasheets for details)
- proper management of colostrum and milk for calf scour vaccines (note that feeding pooled colostrum/milk is a recognised risk for spreading of Johne's disease).

## Parasite control

Parasite control is essential to enable dairy cattle to reach your targets, and their potential, in terms of growth, body condition, reproduction and milk production. Dairy cattle are susceptible to internal parasites at pasture because they are grazed intensively, and kept in single-age groups, so the most susceptible (young) animals are grazed together at high stocking rates. Immunity to most parasites increases with age, and this is reinforced by infestation. Low levels of parasitic infestation cause little or no impact on production and enable the development of immunity.

### 7 How do I control parasites on the farm?

#### Checklist

#### A successful parasite control programme will:

- focus strongly on calves and replacement heifers
- begin treatments about eight weeks after animals go to pasture, and as required afterwards
- try to graze calves on the cleanest ground available

- rotate calf paddocks as forage areas every few years, or rotavate and reseed regularly
- use anthelmintics selectively, strategically and wisely to allow young animals to develop natural immunity and prevent anthelmintic resistance
- recognise that rough or wet pasture may carry special parasite risks, regardless of whether cattle are at a 'low maintenance' stage of their life or year
- remain vigilant for changes in parasite patterns, or the occurrence of parasitic disease in all age groups.

### Roundworm infestation

Intestinal parasites damage the lining of the digestive tract, impairing the ability of the host animal to absorb nutrients. Lungworms live in the large airways where they cause coughing and breathing difficulty (parasitic bronchitis or hoose). Roundworm infestation is primarily a problem for calves in their first grazing season; it can also be a problem in older animals that have not been allowed to develop immunity in year 1.

#### How to

#### Recognise an intestinal parasite problem

- Calf/young stock performance is poor – growth rates and body condition fall short of expectations.
- Faeces are fluid (diarrhoea) and the tail and back end is dirty.
- Samples can be tested in the lab for worm egg counts.

#### How to

#### Recognise a lungworm (hoose) problem

- Listen for coughs – especially after exercise (e.g. when calves run to troughs at feeding time).
- Look out for breathlessness and weight loss.
- Samples can be tested in the lab for lungworm larvae.
- If dairy cows cough and show a rapid drop in milk yield, consider hoose as one of the possibilities.

# Herd Health and Infectious Diseases

## Checklist



### Planning the anthelmintic-based aspects of your control programme

- Any control programme has to be tailored to the individual farm – your advisor and vet can help.
- Select a product group that works on your farm.
- Focus on the active ingredient, not the brand.
- Remember that wormers differ in their duration of activity, and some are short acting, while others have residual effect.
- Fewer treatments are needed if the wormer you use has a residual effect.
- Control in the first part of the grazing season aims to prevent egg-laying and reduce parasite contamination.
- Parasite numbers build up progressively as the grazing season advances, and the risk of disease increases.
- Remember to leave a 'window' between doses of at least three weeks, and preferably six weeks, to allow for development of immunity; allow longer for products with a residual effect.
- Do not depend on wormers alone for worm control.

### Liver fluke infestation

Immature liver fluke tunnel through the substance of the liver before reaching the bile ducts where they mature and continue to interfere with liver function.

## How to

### Recognise liver fluke is causing a problem



- Young stock performance is poor – growth rates and body condition fall short of expectations.
- If fluke infection is very severe, animals may develop severe weight loss, pot belly, anaemia (pale around the eyelid, gums).
- Faecal samples can be tested in the lab for fluke eggs. However immature fluke can cause a lot of damage, and can only be detected by blood tests.
- ELISA tests on milk or blood can detect liver fluke proteins. These can be detected for some time after fluke infection has been cleared, so they need to be interpreted carefully.

## How to

### Control liver fluke



- Dose young stock with a flukicide in mid-summer and in autumn. The mid-summer dose will reduce the low-level early season fluke infections that seed pasture and infect snails, leading to heavier contamination in the autumn.
- The best flukicide to use in summer and autumn is a product that kills all ages of fluke.
- Cows can be treated at drying off. If the product used has limited effects on immature flukes, the treatment should be repeated after eight weeks of housing, when all flukes should be old enough for the product to kill them.
- Great care is needed when using flukicides in dairy cows because some products are not permitted, and all have milk-withholding times, which must be observed.

### Rumen fluke

This parasite is relatively common and harmless in the vast majority of cases. Usually only small numbers live in the rumen and disease caused by rumen flukes is rare in Ireland, and only occurs in certain circumstances. Unlike liver fluke, it requires a water snail for its life cycle, so it is only a threat on farms where pasture is flooded, which may become contaminated with dangerous burdens of rumen fluke larvae, and be a threat when the floods recede.

### Anthelmintic resistance

Some parasites have become resistant to specific anthelmintic treatments. These parasites survive treatment, such that repeated treatment increases the proportion of the parasite burden on your farm that is resistant to the drug in question. An effective parasite control programme must, establish if anthelmintic resistance is a problem on your farm, and if so, must address this problem. Some traditional advice on the use of wormers (e.g. dose before moving animals to clean pasture) has now been turned on its head to try and prevent the development of resistance.

## How to

### Check whether anthelmintic resistance is a problem:



- Sample six calves before treatment and about a week later.

- Assuming there were worm egg counts in the first count, then any count in the second sample suggests that worms survived the treatment and are resistant to that product.
- The closer the repeat sample count is to the pre-dosing count, the more severe the resistance problem is on your farm.

### How to

#### Prevent anthelmintic resistance



- Balance the need to control parasites with the need to ensure that your farm's worm population contains the highest possible proportion of anthelmintic-susceptible worms.
- Think about what the long-term impact of each treatment will be on the pasture's worm population, and whether this outweighs the short-term benefit you will gain from treating the animals on this occasion.
- Consider whether you need to treat every animal. Simply leaving any animals untreated if they are achieving/surpassing growth targets will be hugely beneficial in preventing anthelmintic resistance. It is unlikely that treating this type of animal is cost-effective in any case.
- When animals are going from dirty pasture to clean pasture, consider worming them either a few days before or a few days after moving them, so that the worms they are carrying onto the clean pasture are a mixture of resistant & susceptible worms, rather than exclusively resistant worms (as will happen if they are treated at the time of the move).
- Talk to your veterinary surgeon and agricultural advisor about quarantine dosing of bought-in animals, to ensure you do not bring in animals that are carrying worms that are resistant to further product groups.

### How to

#### Control parasites where anthelmintic resistance is confirmed



- Discontinue use of the wormer, and avoid using any others from that group of products.
- Ensure you apply the prevention of resistance principles above to prevent resistance developing to another group of products.

### 8 How do I prevent and manage abortion in cows?

#### Abortion in dairy cows

Any infectious agent that crosses the placenta in the pregnant cow and damages the foetus and/or the placenta can result in pregnancy loss; if the attack occurs in early pregnancy the embryo loss may only be apparent when cows are found to be "empty".

Infection at later stages can result in the cow throwing the foetus (abortion) or delivering a dead calf (still-birth). There is often a delay between the death of the foetus and its delivery, so aborted foetuses and membranes are very often poorly preserved.

Individual or "sporadic" abortions may be caused by various infectious agents (*Arcanobacter pyogenes*, *Bacillus* spp., fungal agents) or may occur due to other non-infectious insult or injury to the pregnant cow.

### Checklist



#### Infectious agents which may cause an abortion 'storm':

Multiple abortions occurring within a relatively short period of time (an abortion storm) suggest that several cows in the herd have been exposed to an abortion-causing infectious agent. These agents are listed below.

- *Brucella abortus*; Ireland is recognised as officially free of brucellosis since mid-2009.
- Salmonellosis; most commonly *Salmonella* Dublin infection which is adapted to cattle and tends to persist in infected herds.
- Leptospirosis (*Leptospira hardjo*).
- Neosporosis; a parasitic disease (similar to Toxoplasmosis in sheep) in which dogs play a role in the life cycle of the parasite (*Neospora caninum*); infection is most commonly transmitted vertically, i.e. from cow to calf during pregnancy; feed or pasture contaminated with faeces from infected dogs is another potential source of infection.
- Listeriosis; *Listeria monocytogenes* occurs in soil; disease outbreaks are usually associated with contaminated silage
- BVD and IBR viruses.
- Q fever (*Coxiella burnetii*).

# Herd Health and Infectious Diseases

Many of these agents can also be transmitted to humans and can cause disease (i.e. they are “zoonotic”) – brucellosis, salmonellosis, leptospirosis, and Q fever. Aborting cows do not normally display signs of illness unless there is retention of the foetal membranes (afterbirth) and uterine infection; salmonellosis is an exception where many of the aborting animals may be ill.

## How to

### Deal with the aborting cow



- Quarantine the aborting cow from other cattle, especially from other pregnant cows for 2-3 weeks until vaginal discharge has ceased.
- Submit specimens to the laboratory – blood from the cow for brucellosis and for salmonellosis, leptospirosis and neosporosis; and the foetus and afterbirth for post-mortem examination and culture.
- Hygienic disposal of contaminated material; thorough cleaning and disinfection.
- Closely monitor other pregnant cows to ensure that this is not an “abortion storm”.

## Advice note

There is a legal requirement (for control of brucellosis) on the owner or person-in-charge to isolate an animal that aborts and to either notify the Department of Agriculture, Food and the Marine or to send specimens for laboratory diagnosis.

## How to

### Prevent reoccurrence of abortion storm in future years



- Vaccinate cows where a definite diagnosis of salmonellosis or leptospirosis is confirmed.

## 9 How do I prevent and manage some of the specific infectious diseases of cattle (Johne’s disease, BVD, IBR)?

### What is Johne’s disease?

Johne’s Disease (paratuberculosis) is caused by infection with the bacterium *Mycobacterium avium* subspecies *paratuberculosis* (also known as MAP). The infection damages the intestine and the clinical signs are chronic diarrhoea and weight loss. There is no treatment and animals will eventually die.

### Is the disease contagious?

The disease is highly contagious and can exist silently in a herd for several years, with a greater number of young stock becoming infected each year. The first clinical case is often the tip of the iceberg and clinically affected animals will shed large numbers of MAP in their watery faeces.

### How is infection acquired?

Most cattle acquire infection early in life, through ingestion of colostrum or milk which contains MAP, or by exposure to faeces, water, feed, bedding or environments which are contaminated by MAP. Most animals become infected in the first 12 months of life.

### When do signs appear?

Clinical signs often appear when the animal is 2–6 years old. The time taken for diarrhoea to develop depends on the initial dose of MAP received by the animal and the production stresses on the animal. Calving is often a stressor for infected animals which causes animals to show clinical signs for the first time.

### What are the consequences of infection?

The clinical phase (illness) usually lasts for 1 to 6 months and ends with the death of the animal. Infected animals will die earlier, are less productive than herdmates and are a source of infection to other animals in the herd.

### How is Johne’s disease diagnosed?

The disease is suspected in animals with chronic diarrhoea which is unresponsive to treatment. Infection is confirmed by culturing or molecular testing of faeces for MAP or its DNA. Animals with clinical disease will have MAP antibodies in their blood and milk.

### How does MAP get onto a farm?

The disease is often introduced to a MAP-free herd through purchase of an infected animal. Apparently normal but sub-clinically infected animals can shed large numbers of MAP bacteria and contaminate the environment. It is best to have a closed herd and purchase embryos and semen to meet genetic needs. MAP might also possibly be introduced through contamination of pasture, forage or water with slurry.

### Are there diagnostic difficulties?

Johne's disease is unlike mastitis or BVD in that animals can be infected for several years but test negative on all tests, until the disease progresses to a certain point. A negative test does not mean the animal is uninfected and therefore emphasis should be on preventing disease introduction and spread, rather than animal testing.

### Checklist

#### Critical control points for Johne's disease



- Maintain a closed herd.
- Disinfect calving pens between each cow and use fresh bedding.
- Record the identity of the dam of each calf.
- Ensure each calf gets colostrum from only its own dam.
- Use milk replacer or pasteurised bulk tank milk for feeding calves.
- Offer hay early to discourage calves from eating contaminated bedding.
- Prevent calves coming into contact with the faeces of adult animals.
- House potential breeding calves separately from adults for their first year.
- Graze calves on new or clean pastures that have not been used for adult grazing and have not had slurry spread on them for at least one year.

### The importance of colostrum

Once the disease is present on a farm, the pooling and feeding of colostrum from many cows can rapidly spread Johne's disease to all herd replacements. Colostrum is critical to calf survival and there will be occasions when the dam's colostrum is inadequate. For such situations, farmers should use stored frozen colostrum from older healthy cows (8 years +) and blood test these each year for MAP antibodies.

### The Johne's disease herd

When MAP is diagnosed in a herd, the farmer should meet with his/her veterinary surgeon and review all elements of the control plan and its implementation. They should decide on a diagnostic testing regime to assist in identifying infected animals for management or culling purposes.

### Bovine Viral Diarrhoea (BVD)

BVD is a highly contagious viral disease of cattle that can be transmitted as easily as the common cold. It can be spread directly by infected animals, or indirectly, for example via slurry and contaminated visitors or equipment. Most infections with BVD are transient infections (TI) without clinical signs. The signs of BVD infection that are noticeable are mainly due to the effects on the unborn foetus. These effects range from foetal losses to calf deformities. Infection with BVD virus within the first 120 days of pregnancy may result in persistent infection of the foetus. Persistently infected (PI) animals will shed BVD virus at high levels for life and PI animals are therefore the most significant source of infectious BVD virus.

Control requires identification and removal of PI cattle and improved biosecurity to prevent reintroduction of the virus. Particular care should be taken to avoid exposure of pregnant cattle to the virus. A national programme to eradicate BVD will commence on a voluntary basis in 2012 and will be based on tissue tag testing of new born calves. Follow this link for further information: <http://www.animalhealthireland.ie/pdf/BVDVer3Mar-20100325-1s.pdf>

### Infectious Bovine Rhinotracheitis (IBR)

IBR is a highly contagious viral condition that affects the upper airways of cattle, particularly the nasal passages and the windpipe. The virus responsible for the disease is called bovine herpesvirus 1 (BoHV1) but is more commonly referred to as IBR virus. Follow this link for further information: <http://www.animalhealthireland.ie/pdf/DavidGraham-IBR.pdf>

### Sources of further information

Animal Health Ireland – <http://www.animalhealthireland.ie/>  
 DAFM Veterinary Laboratory Service - <http://www.agriculture.gov.ie/animalhealthwelfare/laboratoryservices/>



## Section 8

# Lameness

by Keelin O'Driscoll



### Introduction

Lameness is not only a problem for the cow; it can lead to significant financial losses for the farm business. Working together, farmers and vets can greatly reduce the prevalence of this painful disease.

- ① How do you identify lameness?
- ② Why is lameness important?
- ③ What are the common causes of lameness?
- ④ What factors contribute to lameness?
- ⑤ What is the standard annual preventive programme for farmers?
- ⑥ How do I design a footbath and what should it contain?

# Lameness

## ① How do you identify lameness?

**Clinical lameness:** Walking is obviously affected, the cow is unwilling or slow to place one or more feet on the ground and is likely to be near the back of the herd when walking to be milked.

**Subclinical lameness:** Changes are more difficult to detect, and can be overlooked if animals are not locomotion scored.

Indicators include:

- an arched back while either standing or walking
- stiff joints
- one limb moving faster or slower than the others
- 'short' steps i.e. the hind legs not coming far enough forward
- the hind legs swinging either outward or inwards
- standing with the front legs crossed.

## ② Why is lameness important?

**Prevalence and cost**

- 20-35% of cows suffer some degree of lameness.
- 90% of lameness is in the foot, with 80% in the hind limbs, and 80% of these cases in the outer claw.
- Clinical lameness is estimated to reduce milk yield by 350kg per lactation.
- A case of clinical lameness is estimated to cost €160 – €300.

**Costs**

**Direct costs include:**

- reduced milk yield for up to 4 months before, and 5 months after, clinical lameness
- discarded milk
- veterinary bills and antibiotics
- labour.

**Indirect costs include:**

- reduced fertility: cows are unwilling to stand in heat, jump on other cows, can have delayed cycling after calving
- increased risk of further lameness
- increased risk of secondary disease
- cows lose condition due to unwillingness to stand to feed
- increased risk of culling.

## ③ What are the common causes of lameness?

**Infections**

**Dermatitis/Mortellaro:** Highly contagious, this initially looks like a red rash, and can develop into extensive skin loss and scabbing around the cleft between the claws and on the heel. Formalin or copper sulphate footbaths are as effective at prevention as antibiotic footbaths, and should be carried out regularly. It is important that feet are cleaned before walking through the bath.

**Foot rot/foul in the foot:** Symptoms include swelling above the hoof, splayed claws, and a foul smelling secretion between the claws. It is caused by bacteria entering the foot through cracks in the skin caused by dirty wet conditions. Treatment requires antibiotics.

**Claw injuries**

**Sole bruises:** Red to dark purple discolouration, which only becomes visible about 2–3 months after the damage has been done. Cows are particularly susceptible to bruising after calving, especially if hooves are soft, so the damage appears during summer. Cows with bad bruising should be kept in paddocks near the parlour.

**Sole ulcers:** Can develop from very severe bruising. These occur when the tissue under the hoof becomes inflamed and can break through the horn, or cause under-run sole. Excess horn should be trimmed from around the ulcer, a shoe applied to the opposite claw, and topical antibiotic applied.

**White line disease:** Ranges from a thin black line to complete separation of the sole and wall, usually located near the heel in the outer hind claw. It results from stones and dirt penetrating the white line, and working up into the tissue causing pain, under-run soles, and possible infection. Treatment involves hoof paring to remove foreign objects and dirt, providing drainage for any infection, and removing of weight from the affected area.

### Other disorders

**Laminitis:** Claws become overgrown (high heels, long toes, and misshaped soles), and the horn is weaker than normal. Associated with concentrate feeding, and not enough roughage, and can lead to erosion of the heel, under-run soles, bruising and ulcers. Stones can pierce the sole of the foot and cause underlying tissue damage and infection, if not treated by hoof paring to reduce weight on the affected claw.

### Monitoring and recording lameness

- All clinical cases should be recorded, and cows that consistently become lame culled out of the herd.
- Observe the cows on a level non-slip surface; stony or soft tracks can hide gait problems, or cause walking to be uneven in the absence of lameness.
- View the cows after milking as cows are less likely to have impaired walking due to a swollen udder.
- Cows walking with difficulty should have their hooves examined to determine the cause, and treatment applied.

### Key Risks



#### ④ What factors contribute to lameness?

##### Poor genetics

- Bad hoof and leg conformation can lead to misshapen hooves that are weak and prone to injury.

##### Off pasture

- Poorly designed/sized cubicles: cows need plenty of space to perform normal lying down and getting up movements. Cubicle dividers should be unsupported at the kerb, and the neck rail should be about 1.7m from the kerb and 1.2m high.
- Inadequate cubicle number: aim for 10% more cubicles than cows, and at least one per cow.
- Inadequate bedding: lying on concrete can cause swellings and injuries to the limbs, and inhibit changes between standing and lying behaviour. Mattresses or mats in cubicles give cows somewhere comfortable to stand as well as promoting lying.
- Poorly laid concrete floors: uneven floors with poor concrete joins cause sole bruises and injury.

- Poor housing lay-out. Ensure good access to feed areas, wide passages, no sharp corners especially where cows are grouped.
- Good ventilation reduces lameness.
- Heifers should be trained to use cubicles before introduction to the main herd.
- Out-wintering pads: cleanliness should be monitored and woodchip cleaned off and replaced regularly to prevent blockages and bad drainage. Ideally cows should have either shelter or a hard drained area to stand on to prevent hooves becoming soft.

### Grazing season

- Farm roadways should be free-draining, well-maintained, and free from stones and holes.
- Rushed herding: heads of cows should not be sticking up, so cows can see where to put their feet. Poor herding causes sole bruising and white line disease.
- Backing gates: these should be used to reduce space, not to move cows. Heads of cows should not be up. If cows won't move forward, there is some other problem, such as stray voltage or a poorly designed entrance to the parlour.
- Sharp corners in raceways and the entrance or exit of the milking parlour.

#### ⑤ What is the standard annual preventive programme for farmers?

### Checklist

#### Lameness control programme



- Record all clinical cases and causes so that ongoing problems can be identified.
- Carry out routine hoof trimming, at least once a year at drying off.
- Conduct regular foot bathing to control infectious disease.
- Get prompt treatment for clinically lame cows.
- Provide clean, dry and comfortable walking and lying areas.

## ⑥ How do I design a footbath and what should it contain?

- Footbathing is used for prevention, not treatment, of dermatitis (similar to teat dipping for control of mastitis).
- Baths should be at the far end of the lane from the parlour, to avoid jamming up of cows at the footbath.
- Footbath programmes should always contain a disinfectant:
  - copper sulphate (5–10%)
  - zinc sulphate (10%)
  - formalin (3–5%)
- A cleaning bath that washes the feet first is recommended because manure contamination reduces disinfectant activity.
- Antibiotics are only necessary if there is a severe disease outbreak.
- The footbath should be 4–6 feet in front of the treatment bath to prevent dilution.
- Baths should be at least 5cm deep, 8–10 feet long, and as wide as the alley, with a non-slip surface.
- Treatment solutions remain active for approx 200 walk-throughs (more for formalin).
- Footbathing should be carried out once weekly at pasture, more frequently if cows are managed indoors.



## Section 8

# Animal Welfare

by Laura Boyle



### Introduction

Good health is essential for good welfare but they are not the same thing. An animal in good health can suffer poor welfare (although in the long-term, poor welfare will contribute to health problems).

- ① What steps will ensure good welfare for my cows?
- ② What are the benefits of ensuring good animal welfare?
- ③ What are the major indicators of poor welfare?

# Animal Welfare

## ① What steps will ensure good welfare for my cows?

'The five freedoms' form a comprehensive framework for safeguarding cow welfare within the constraints of a profitable dairy industry.

1. Freedom from hunger and thirst - with access to fresh water and a diet to maintain full health and vigour.
2. Freedom from discomfort - an appropriate environment including shelter and a comfortable resting area.
3. Freedom from pain, injury or disease - prevention or rapid diagnosis and treatment.
4. Freedom to express normal behaviour - sufficient space, proper facilities and company of the animal's own kind.
5. Freedom from fear and distress - conditions and treatment (e.g. stockmanship) which prevent mental suffering.

## ② What are the benefits of ensuring good animal welfare?

We are ethically obliged to ensure a good standard of welfare for the animals in our care. In some cases, this will clearly be associated with a cost (e.g. providing sand or straw in addition to mattresses/mats in cubicles). However, good welfare has many benefits such as:

- increased milk production
- reduction in production diseases (e.g. mastitis and lameness) and improved longevity
- increased consumer confidence in dairy products
- prevention of disease in both humans and animals.

### What are the emerging issues regarding dairy cow welfare?

A European Food Safety Authority (EFSA, 2009) report on the welfare of dairy cows in different farming systems in the EU found several areas of modern dairy farming lacking in regard to cow welfare. Long-term genetic selection for high milk yield was identified as the major factor causing poor welfare, and health problems in particular, in dairy cows.

The genetic component underlying milk yield is positively correlated with the incidence of lameness, mastitis, reproductive disorders and metabolic disorders. High yielding cows are also at a greater risk of poor welfare as they operate at a high metabolic rate and have a larger body size, which places demands on their behaviour and other adaptive mechanisms. The economic breeding index will help to reverse this trend as it includes health (including lameness) and longevity traits. The European Commission requested this report and may use it to form the basis for new legislation in the future.

## ③ What are the major indicators of poor welfare?

The indicators are many and varied including:

- behavioural changes and disorders (these form the first line of defence in situations of disease/stress)
- lameness disorders and injury
- mastitis
- reproductive and metabolic disorders
- behavioural disorders.

Lameness and mastitis are major welfare problems as they cause pain. Lameness is the most overlooked and underestimated welfare problem. Farms with a high incidence of lameness (above 10%) need to improve their housing conditions, genetic selection and management practices.

### How does the welfare of Irish cows compare with cows in other dairying systems?

The benefit of exposure to pasture for dairy cow welfare was emphasised in the EFSA report. This gives Ireland a welfare advantage over its competitors. Irish systems are intensive and the challenge to maintain good welfare standards increases with increasing intensification. Larger herd sizes and more fragmented farms will result in cows walking longer distances which could increase lameness. Larger herds and the focus on output per hectare rather than output per cow also means that there could be less emphasis placed on the welfare of individual animals. Producers need to be proactive in addressing current and emerging welfare issues for dairy cows if the Irish dairy industry's welfare advantage is to be maintained.

## Section 8

# Calving and Calf Health

by John Mee



### Introduction

Calving is a high-risk event for both the cow and the calf. Common problems encountered include difficult, abnormal or slow calvings. The newborn calf is challenged by numerous infections which can result in navel ill, scour and pneumonia.

- ① How can I minimise the likelihood of calving problems?
- ② How do I manage diseases such as navel ill, scour and pneumonia?

# Calving and Calf Health

## ① How can I minimise the likelihood of calving problems?

### How to

#### Prevent problems before calving

- Make sure your heifers are big enough at calving (60% of their mature body weight at service), e.g. 330kg for Holstein-Friesian heifers.
- Choose an easy calving sire, particularly for heifers.
- Make sure your heifers are not too fat or too thin at calving; ideally they should have a body condition score of 3.0 to 3.5 (1–5 scale).
- Feed them a balanced diet during pregnancy including trace minerals and vitamins. If you are unsure about the trace element status of your herd, ask your vet to bleed five cows and five heifers in late pregnancy.
- Control calving date. If calves are overdue, discuss the options with your local vet.
- Control infections in the pregnant animal by vaccinating or eradicating diseases.

### How to

#### Manage calvings to reduce problems

- Ideally move pregnant animals to a calving unit before they start to calve – this will generally ensure a more hygienic environment and help prevent losses due to early scours and navel/joint ill.
- Supervise but don't necessarily intervene during calving. Intervene if calving is not progressing normally; if two hours after the waterbag or fetal hooves appear the calf is not born, examine the birth canal and calf with a gloved hand.
- To avoid injuries to the calf, call the vet early if you're not sure you can get the calf out alive. Be careful not to pull the jack downwards too acutely before the chest comes out when assisting the calf at birth, as this can cause fractured ribs.

### How to

#### Care for the newborn calf

- Most calves do not need help but some do – particularly those presenting in abnormal positions or after a prolonged calving.
- Be present at calving to resuscitate a weak calf, dress its navel and feed it colostrum.
- Resuscitate weak calves by suspending the calf upside down (max one minute), pour water over its head and sit the calf upright. Use resuscitating drops/gels or other resuscitating aids if available.
- Navel ill is a problem where the calf's immunity and the calving environment hygiene are poor. To prevent this condition, ensure calves get adequate colostrum, dress the navel cord as appropriate, and keep the calving bedding clean and remove the calf quickly.
- Remove the calf from the cow after it has been licked to reduce its risk of picking up infections in the calving environment.
- Feed three litres of first milking colostrum within the first two hours of the calf's life. If the calf won't suck this volume from a nipple bottle or bucket, use a stomach tube. You should get training from your local vet in how to use this device safely.



## ② How do I manage diseases such as scour and pneumonia?

### How to

#### Treat the scouring calf

- Scour (diarrhoea) is caused by infections picked up by the calf in the calving unit and calf house and from the cow and other calves.
- Because scour is infectious, you need to separate out the scouring calf from the other calves.
- Calves with scour die from dehydration so you must replace the fluids and electrolytes lost in the scour. Give one or two extra electrolyte feeds (two litres each) separate from the milk feeds.
- Keep the calf on undiluted milk or milk replacer as this helps the calf to recover from the bowel damage more quickly.
- Call the local vet if the calf's temperature is above 38.5-39.5°C or if the calf is down, weak or its eyes are sunken, or a lot of calves are affected by scour.
- If calf scour is an annual problem, you need to send some calf faeces or blood samples off to a vet lab to check what is the cause on your farm. This is important as some common causes do not respond to antibiotics (eg. cryptosporidiosis, coccidiosis and viral infections) and vaccination or other drugs may be an option.



### How to

#### Prevent calf pneumonia

- Respiratory disease in calves is common and is caused by the spread of viral and bacterial infections in droplets exhaled by older stock and calves.
- Because disease spread is by airborne infections, good ventilation can limit transmission. Calf house ventilation details are given in the chapter on Replacement Heifer Management.
- As older stock are the main carriers of respiratory infections, young calves should never be housed in the same airspace as older stock.
- Ideally, calves housed individually or outdoors are at less risk of developing calf pneumonia.
- Calves can develop severe lung damage without obvious clinical signs, so you need to be vigilant to pick up on calves which are slow to drink, appear depressed, are slow to rise, have a nasal or eye discharge or are breathing heavily and check their temperature.
- Affected calves should be separated out and treated in accordance with your local vet's recommendations. Sometimes all the calves in the same airspace may need to be treated to prevent further cases occurring.
- If calf pneumonia is a recurring problem on your farm have a chat with your local vet about what samples might be useful to diagnose the causes.
- Based on this testing you may need to use a calf pneumonia vaccine.

Animal Health Ireland has produced a series of leaflets on calving management and calf health available at [www.animalhealthireland.ie](http://www.animalhealthireland.ie)