

Section 7

Diseases of Young Calves

by James O'Shaughnessy



Introduction

Young calves are vulnerable to a range of diseases; careful management can prevent unnecessary mortality.

- ① What are the key points in protecting calf health?
- ② How do I manage scour/diarrhoea?
- ③ How do I manage pneumonia?
- ④ How do I manage navel ill/joint ill?
- ⑤ How do I manage coccidiosis?
- ⑥ How do I manage clostridial diseases (older calves)?

Diseases of Young Calves

① What are the key points in protecting calf health?

Colostrum

Ensure the calf receives sufficient colostrum (see chapter on colostrum).

Navel treatment

Treatment of navels is outlined in the section on calving and neonatal care.

Environment

The calf's environment needs to be clean, dry and well ventilated. Particular attention should be paid to the calving pens and creep areas. Bedding should be regularly added to these areas. You should be able to kneel on the bedding without your knees getting wet. All areas where calves are should be cleaned out and disinfected between batches of calves. All equipment (e.g. stomach tubes, calving ropes, buckets) used should be cleaned and disinfected after use. Consult with your vet on an appropriate disinfectant.

Early identification and removal of sick calves

Any calves showing signs of sickness (scour, pneumonia etc.) should be removed immediately along with their dam and placed in a pen which is designated for sick animals only. They should only return to the group when the calf has recovered from illness. The pen which is used for sick animals must be cleaned and disinfected after each use. It must not be also used as an isolation facility for purchased animals/returning from shows.

Mixing of different age groups

Try and avoid unnecessary mixing of calves of different age groups. Older calves, which have been exposed to more disease causing agents, can potentially transmit disease to younger calves. This is especially important at herd events (TB testing, scanning or dosing) where different groups of cattle are brought together. At herd events such as these keep groups from mixing with each other.

Avoid overstocking

Have adequate space, both at housing and at pasture for calves. For example, having too many calves in the one creep area will make it more difficult to keep it clean and well-bedded but will also act as a stressor for these calves. Stressors such as overcrowding make calves more susceptible to disease.

Vaccination

Advice should be sought from your vet when deciding on a vaccination programme for a particular disease. This includes advice on vaccine type, dose, timing of vaccination, and method of administration. The use of vaccines is the main method in preventing clostridial diseases (blackleg, tetanus etc.) but should not be regarded as the sole method of prevention of calf scour and pneumonia.

② How do I manage scour/diarrhoea?

What causes calf scour?

Viruses (rotavirus, coronavirus).

Bacteria (E. coli, salmonella).

Parasites (cryptosporidia, coccidiosis).*

**Coccidiosis* causes scour in older calves (three weeks and older).

What are the two most common causes of calf scour in Ireland?

Rotavirus and cryptosporidia.

Where do my calves 'pick up' calf scour?

- A calf picks up these infections in either the calving pens or any other calf housing areas. All the agents that cause calf scour (viruses, bacteria and parasites) are passed out in the dung from other cows and calves. Without regular cleaning and disinfecting of all calf areas (e.g. calving pens, creep areas), these agents build up in the calf's environment.

What is the first thing to do when I see a calf with scour?

- Remove that calf along with its mother from the rest of the group and place in the pen designated for sick animals only. **Note that this pen for sick animals must be cleaned and disinfected after every time that it's used.**

How do I treat a calf with scour?

- Allow the calf full access to the cow (do not take the calf off milk)
- Provide extra fluids/electrolytes to replace the fluids lost by the calf. Give the calf at least one electrolyte feed during the day (in 2 litres of water) and depending on the severity of the scour, a second feed can be given later in the day.



Does a calf with scour need antibiotics?

In general they don't. As most cases of scour are caused by viruses and parasites (which don't respond to antibiotics), the use of anti-bacterials is a waste of money and may lead to bacterial resistance on your farm.

So when do I give a calf with scour antibiotics?

- A calf with scour requires antibiotics (+ veterinary assistance) in the following cases:
- If the calf's temperature is outside the normal range (38.5-39.5°Celsius).
- If the calf is weak, unable to stand, has sunken eyes.
- If the calf won't suck.
- If the calf is passing blood in its dung.

Should I take dung samples from calves with scour and send to the laboratory?

Yes, in the following cases:

- Calf scour is a regular problem on my farm.
- A number of calves have scour at the one time.
- The treatment that I normally use doesn't work.

What about vaccination?

- Vaccination can help in the prevention of calf scour, but:
- It should not be seen as the sole answer to prevention.
- For vaccination to work, the calf has to be given adequate volumes of colostrum as soon as possible after calving.

3 How do I manage pneumonia?

Any calf with signs of several or all of the following:

- Nasal discharge, coughing, heavy breathing, increased breathing rate ('blowing'/panting), in addition to signs such as dullness, reduced appetite, drooped ears and fever.

What are the main disease causing agents?

Viruses (RSV, PI3, IBR, BRCV and BVDV)

Bacteria (Pasteurella, Haemophilus and Mycoplasma).

How does pneumonia spread?

- Droplets coughed up by or exhaled from other cattle/calves.

What are the key risks?

- Calves not getting enough colostrum.
- Poorly-ventilated buildings (favours spread of disease).
- Stress (Overcrowded cattle sheds, mixing of different groups of cattle, sudden changes in weather/diet).
- Unnecessary mixing of calves of different age groups (older calves can act as carriers of many of the agents that cause pneumonia).
- In older calves at pasture, lungworm can act as the 'trigger' in calves developing pneumonia.

What do I do if I have a calf with pneumonia?

- Remove this calf along with its dam and place in the sick pen. Treat the calf under instructions from your vet. Once the calf has been removed from the group, take another look at the rest of the calves in that group. As pneumonia tends to spread rapidly in a group of calves, you may have to treat all the calves in the same pen (under veterinary advice/supervision).

If calf pneumonia is a regular problem on my farm what should I do?

- You need to discuss with your vet all the key risks mentioned above. Some or all of these will be contributing to your problems with calf pneumonia.

Diseases of Young Calves

Should my vet also take samples from calves?

- Yes if calf pneumonia is a regular problem on the farm. This may help in deciding what vaccine to subsequently use on the farm.

Should I regard vaccination as the most important tool in combating calf pneumonia?

- **No.** Most of the agents that cause calf pneumonia are widespread in the cattle population. So although vaccination will help, it is highly important that you (in conjunction with your vet) try and determine the underlying problem on the farm that is causing you to have regular cases of calf pneumonia. Is it a lack of colostrum? Is it due to overcrowding? Is ventilation in the shed poor? etc.

4 How do I manage navel ill/joint ill?

How can I reduce the number of cases of these on my farm?

- Ensure calves get enough colostrum.
- Improve the hygiene of the calf's environment. Regular cleaning and disinfection of calving pens and creep areas. Provide ample bedding for calves as referred to earlier in this chapter.
- Navel treatment (the principles of navel care are referred to in the section on care of the newborn calf).

Improving these three key factors above will have the added benefit of improving overall calf health.

5 How do I manage coccidiosis?

What is coccidiosis?

Coccidiosis is a parasitic disease of calves (three weeks of age and older), weanlings, yearlings and, less commonly, older cattle. It results in damage to the intestinal lining as a result of the parasite multiplying in the intestine.

What are the clinical signs?

- The clinical signs can vary from mild diarrhoea to severe blood-stained diarrhoea accompanied by the calf straining. Often the only sign noticed is a calf with a wet/soiled tail.

How is the disease spread?

- The disease is spread by the faecal-oral route. Calves ingest oocysts (the environmental stage) that have been passed in the dung by other calves/cows. The calf ingests these oocysts, which if ingested in high doses, results in the development of clinical signs of disease. It takes about three weeks from the time a calf ingests these oocysts before clinical signs appear.

What are the main risk factors for coccidiosis?

Environmental hygiene

- Wet and dirty bedding.
- Overcrowding (both at housing and at pasture).
- Badly-ventilated sheds.
- Dirty feed and water troughs.
- Calved heifers and cows with long dirty tails (major risk factor for very young calves who are trying to suckle).

Stress

- Avoid stressors on the calf. Mixing of different age groups or sudden changes in diet can act as stressors.

Nutrition

- Calves that have not received enough colostrum or are not getting enough milk from their dams have a reduced ability to deal with infection.

How can I reduce the incidence of disease in my herd?

Hygiene

- Ensure all housing and creep areas are clean, dry and well ventilated. Clean and disinfect housing areas between batches of calves. This parasite is resistant to most disinfectants. Discuss with your vet the most appropriate disinfectant to use.
- Avoid overcrowding at housing.
- Water and feed troughs need to be kept clean. Remove all faecal material.
- Ensure the tails of all cows and heifers at calving are trimmed. This reduces the risk of the calf ingesting faecal material when trying to suckle.

Avoid stressors

- The unnecessary mixing of different age groups or sudden changes in diet.

Nutrition

- Ensure calves receive adequate colostrum and are well nourished subsequently.

Preventive treatments

- Discuss with your vet the options available for using preventive and therapeutic measures.

6 How do I manage clostridial diseases in older calves?

What is clostridial disease?

Clostridia are a family of soil-borne bacteria that cause a number of conditions in cattle. One of the most common conditions is blackleg. What do I need to know about blackleg?

Blackleg is mainly a disease of grazing animals. It can also occur in housed animals that have grazed infected pastures. It mostly affects cattle from six months to two years of age. It can, however, occur in calves a few months old.

Spores produced by the bacteria are eaten by the animal during grazing. These spores, after ingestion, can be found in muscle, liver and spleen. If that area of muscle where the spores are located is subsequently damaged (injury, bulling etc.), the spores germinate and produce a fatal toxæmia.

Generally the animal is found dead. On rare occasions, the animal may still be alive. If the area of muscle damage (lesion) is in a limb, the animal will be severely lame. As the disease progresses, there will be a build up of gas in the area where the lesion is. The lesion will be spongy to feel and you can hear gas crackling when you press on the lesion.

What about treatment?

On the rare occasion an animal is still alive contact your vet immediately. He or she will prescribe the necessary antibiotic that you need to use.

The best form of treatment is prevention. If your farm has a history of blackleg, vaccinate stock before they go to pasture. Depending on the vaccine you use, follow the instructions as per the information leaflet that accompanies the product.

For further information on calf health, go to www.animalhealthireland.ie





Section 7

Significant diseases in beef cattle

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Introduction

Good breeding, calf-rearing, grassland management, winter feeding, housing, biosecurity, etc. are essential to maintaining good health in beef animals. The focus of this chapter is on some specific disease problems that can cause significant loss or concern for beef rearing and fattening enterprises.

- ① How do I deal with diseases causing ill-thrift in cattle at grass?
- ② How do I prevent/manage respiratory disease in housed cattle?
- ③ What are the common causes of sudden death in cattle?
- ④ How can disease affect reproductive performance in cattle?
- ⑤ What are the regulatory controls on specific infectious diseases of cattle?

Significant diseases in beef cattle

1 How do I deal with diseases causing ill-thrift in cattle at grass?

Ill-thrift is failure to maintain condition and bodyweight (adults) or to grow as expected (young stock). The major causes of ill-thrift in cattle at grass are: (1) malnutrition; (2) parasitism and (3) other chronic or long-standing disease

Good grassland management will ensure that cattle have access to plenty of leafy grass that they can readily digest and will provide all of their energy requirements for maintenance and growth. In addition, the diet must also provide small amounts of certain essential chemical elements (trace elements). Deficiencies of any of these micronutrients can result in ill-thrift.

Under Irish farming conditions, copper deficiency is the most common deficiency to affect beef cattle. Rather than a lack of copper in the soil an excess of soil molybdenum, iron or sulphur may be interfering with the uptake of copper. Other less common but significant trace element deficiencies are cobalt deficiency and selenium deficiency.

How to

Recognise copper deficiency.

Ill-thrift, and in severe cases, loss of coat colouration provide circumstantial evidence of deficiency. Your vet's knowledge of the area's copper/molybdenum status will be helpful, and laboratory tests can confirm it

Key risk

Young cattle are most at risk.

What can I do about it?

Copper can be supplemented in a variety of ways (feed, injections, long-acting boluses). However copper poisoning is a real risk, so it should only be supplemented on farms with proven deficiency.

Parasites

The most economically-significant parasitic infestation is that caused by roundworms in the gut. Younger animals are more likely to be affected and severe infestations can result in loss of condition and even death. Climatic and environmental conditions heavily influence the severity of infestations. Infested animals pass worm eggs in their faeces and the larvae that hatch from these infest other cattle as they graze.

Pasture burdens of larvae tend to snowball in the second half of the grazing season and this usually coincides with decreasing grass quality. Spring-born suckler calves are rarely affected by worms in their first grazing season because they don't consume enough grass to accumulate significant burdens, and because the 'dilution effect' of co-grazing with their relatively resistant mothers prevents the build up of dangerous levels of pasture contamination.

In their second year they will usually benefit from immunity acquired from 'trickle infection' acquired in their first grazing season.

Key fact

Autumn-born calves are more susceptible as they are turned out in the spring after weaning with little immunity and are often kept as same-age groups.

How to

Recognise roundworm infestation?

Scour, faecal staining of the hindquarters and tail; affected calves look empty and will lose weight

When/where does it occur? Young cattle

What can I do about it? Appropriate pasture management and the strategic use of anthelmintics

Lungworm infestation causes a parasitic pneumonia or "hoose" and can cause severe disease in suckler calves and weanlings, regardless of when they are born. Hoose should be considered when cattle are seen to be coughing at pasture. This will be exacerbated by exercise, and open-mouth breathing is common.

Laboratory tests (faecal analysis) may be required to differentiate hoose from other respiratory diseases.



Liver fluke infestation can affect all ages of cattle, but like all parasitic diseases, tends to be more severe in younger cattle. This parasite depends on a snail to complete its life cycle and it will be more prevalent on poorly drained land and during wet years. Rumen fluke can cause very severe scour and weight loss in some years on some farms (heavy rainfall, flooded pastures) but, as for many parasitic infestations, infestation is common but disease is rare.

Further information on the control of parasitic diseases may be obtained from the Animal Health Ireland website at www.animalhealthireland.ie

Other chronic diseases

Respiratory disease, which is dealt with in more detail in the next section, may also occur at grass. Many outbreaks are caused by viruses and can be confused with hoose in the early stages (see above). Residual lung damage resulting from respiratory disease in housed calves may continue to affect the performance of young animals after turnout. Other diseases that occur in housed calves in early life and can affect the later performance of beef suckler calves at grass include include navel infections or diarrhoea.

Bovine Virus Diarrhoea (BVD) can cause ill thrift in persistently-infected (PI) calves, which have been infected with the virus before birth, although some PIs show little or no ill effects. This disease is the subject of a national eradication programme being promoted by Animal Health Ireland, and based on testing of newborn calves for the virus. More information on this programme can be obtained at www.animalhealthireland.ie

Johne's Disease is a progressive and insidious disease that can cause scour and weight loss in adult cattle usually over four years of age, and is a difficult disease to control within herds. Laboratory tests for the disease are difficult to interpret; they only give a guide to the herd status, and are not useful for individual animals.

Control programmes are built around preventing infection in early life through management practices that limit the exposure of calves to the faeces of other cattle, and avoiding the purchase of animals that are incubating the disease. Whole-herd individual animal testing as an ancillary aid to early detection of infection. A national voluntary control programme for control of Johne's Disease is being developed by Animal Health Ireland. www.animalhealthireland.ie

2 How do I prevent/manage respiratory disease in housed cattle?

Respiratory disease in housed cattle can be a very significant cause of loss in beef enterprises, particularly in weanlings. There are the obvious costs associated with animals which die of the disease or which require veterinary treatment. However, the hidden costs associated with less severe disease in the remainder of the group (failure to thrive during the illness and subsequent recovery period and the fact that some surviving cattle never fully recover or thrive after the illness) are often of much greater economic significance.

What is respiratory disease and how do I recognise it?

Respiratory disease usually involves the upper airways (the nasal passages and the trachea or windpipe) in which case the signs are nasal discharge and coughing. In some cases the disease extends to the lower airways (the lungs), which by definition is referred to as "pneumonia" and in which cases animals are likely to have difficulty breathing. Animals with respiratory disease are also likely to show general signs of illness such as dullness and a poor appetite.

What causes respiratory disease in groups of cattle?

Respiratory disease in groups of housed cattle is usually associated with viral and/or bacterial infection of the airways. Cattle become infected by inhaling infective droplets produced by other infected cattle. The most significant viral agents are bovine herpesvirus 1 which causes infectious bovine rhinotracheitis (IBR) and bovine respiratory syncytial virus (RSV). Parainfluenza-3 (PI3) virus is less important and Bovine virus diarrhoea virus (BVD) may be involved in some cases.

These viruses can cause disease by themselves or damage the defence mechanisms of the upper airways allowing secondary bacterial infections of the lungs. The most significant bacterial agents are *Mycoplasma* species, *Mannheimia haemolytica*, *Pasteurella multocida* and *Histophilus somni*.

Significant diseases in beef cattle

Key risk



When is respiratory disease most likely to occur?

- After buying-in and mixing of cattle from different sources (*increases the risk of exposure to different infectious agents that cause respiratory disease*)
- Where there is overcrowding and/or poor ventilation (*increases the risk of infection*)
- Where cattle have been subjected to one or more “stress” factors immediately before housing such as weaning, castration, dehorning, transport, etc. (*reduces the animals natural ability to fight off infection and resist disease*)

What to do when it occurs - how is it treated?

There is no specific treatment for viral infections but in the case of an IBR Infectious Bovine Rhinotracheitis outbreak it may be advisable to vaccinate other animals in the group if they are not yet displaying signs of illness. An intranasal vaccine can provide protection within 24-48 hours but this should only be undertaken on veterinary advice and following laboratory confirmation of the diagnosis (this is usually based on testing of nasal swabs collected from affected animals).

Antibiotic treatment may be administered or prescribed by a veterinary practitioner to control secondary bacterial infections.

If possible, coughing calves should be kept separately from unaffected calves and you should consider treatment for hoose if calves were coughing at/before housing.

What practical steps can I take to prevent the occurrence of respiratory disease?

Where cattle are bought-in, follow the biosecurity guidelines detailed elsewhere in this manual – this will reduce the risk of introducing and spreading infectious diseases.

- Ensure that housing is adequately ventilated and drained. The ideal airflow is generated by a pitched roof where spent warm air can escape at the ridge and be replaced by fresh, cool air entering below the eaves - the objective is to provide for adequate air movement at calf head height. A strong smell of urine or slurry in a house or condensation on the underside of the roof are indications that ventilation may need to be improved. Adequate drainage is important to prevent excessive humidity while both drainage and ventilation are important in reducing the exposure of cattle to infective droplets in the air.

- Reduce or eliminate “stress” factors that contribute to the development of disease – (See Section on Managing Weaning in this Beef Manual)

- Consult with your veterinary practitioner about the use of vaccination before housing.

③ What are the common causes of sudden death in cattle?

Finding one or more animals dead which had not previously shown any signs of illness is not an uncommon experience but can be a very distressing one. The herd owner or stockperson will not be at ease until a cause can be identified and the risk to other cattle reduced or eliminated. Here we consider some of the **more common causes of sudden death in cattle** under Irish farming conditions and what steps can be taken to prevent further losses. The list below is not exhaustive and these causes are not ranked in any particular order.

“Blackleg” - *Clostridium chauveoi*

This disease most commonly occurs in young cattle and is caused by infection with the bacterium *Clostridium chauveoi*. An inactive form of the bacterium (spores) present in the environment can be acquired by the animal and can then remain dormant in muscle. Trauma and bruising to muscles, creates the necessary conditions (a reduction in the amount of oxygen) for the bacteria to be activated.

As the bacteria proliferate they produce large amounts of toxin which account for sudden death. The proliferating bacteria produce gas bubbles and discolouration of muscle which may aid a field diagnosis. The disease may be prevented by vaccination.

Other clostridial diseases

Malignant oedema is similar to blackleg, except that the damage to muscle which facilitates the proliferation of the bacteria is usually caused by a wound or injection site and the disease may be caused by any one of a number of different Clostridial species. The disease may be prevented by vaccination.



In Black disease and Bacillary haemoglobinuria (*Clostridium novyii*), the site of bacterial proliferation is the liver where the tissue damage is caused by migrating liver fluke. In addition to vaccination, both of these diseases may be prevented by controlling liver fluke infestation.

Clostridial enterotoxaemias are caused by the proliferation of *Clostridium perfringens* types B or C and the production of toxin in the intestines.

Hypomagnesaemia or “Grass tetany”

A sudden drop in blood levels of magnesium is one of the most common causes of sudden death in adult beef cattle at pasture. It usually occurs in lactating animals in spring and autumn and is associated with decreased availability of magnesium from the diet. Stress factors such as inclement weather conditions are contributing factors.

If found alive, affected cattle show very marked nervous signs; they are hyper-excitable and very rapidly go down in convulsions, whole body tremors and thrashing of limbs. When animals are found dead, one of the hallmarks is disturbance of the ground around the carcass. Urgent veterinary treatment may save some animals.

Prevention: animals at risk should be supplemented with magnesium during risk periods - various methods, including pasture dusting, water supplementation or provision of magnesium licks are available.

Lead poisoning

Lead is one of the most commonly recognised causes of poisoning in cattle and is usually attributed to cattle having access to old car batteries or to lead-based paints. Vehicle sump oil, old vinyl from floor coverings and car seat covers are also potential sources of lead. On rare occasions, catastrophic losses have occurred where discarded batteries have been ensiled and this silage then fed to cattle. Prevention simply requires that cattle are not exposed to potential sources of lead.

Bloat

Gas is produced during the normal digestive processes in the fore-stomachs and cattle belch frequently to discharge this gas and relieve pressure.

Bloat occurs where the stomachs become distended with gas or frothy fluid and can arise in two circumstances:

- (i) where there is an obstruction along the oesophagus or gullet or
- (ii) where there is a rapid fermentation in the stomachs producing a froth which cannot be belched up - this happens in some cases where cattle are grazed on lush clover-rich pastures.

Ruminal acidosis or “Barley poisoning”

If cattle suddenly gain access to and consume large amounts of carbohydrates such as cereal grain or other concentrate feeds, a very rapid fermentation process occurs in the fore-stomachs generating large amounts of lactic acid and producing a type of drunkenness which if sufficiently severe and untreated can be fatal.

Prevention involves gradual introduction of concentrate feeds and providing sufficient trough space.

Electrocution/Lightning strike

This is an occasional cause of sudden death in cattle with few signs of a struggle; occasionally scorch marks may be observed on the carcass. Electrocution (which should be considered where more than one animal is found dead at the same spot) can occur through contact with fallen power lines or with stray electric current in sheds – care should be taken before approaching the carcass(es) to ensure that the source of electrocution is not still live.

White Muscle Disease (Selenium/Vitamin E deficiency)

This is a disease mainly of fast-growing beef calves which can result in sudden death if the heart muscle is affected. Calves may show signs of muscle stiffness before death or are often found dead particularly at the onset of a herd problem. Confirmation of the diagnosis requires laboratory investigation.

Intestinal obstruction or other abdominal crisis

This includes a number of spontaneously occurring conditions such as intestinal torsion (twisted gut), intestinal entrapment, intussusception, abomasal ulceration and peritonitis; such conditions normally only affect one or two animals in a group.

Significant diseases in beef cattle

4 How can disease affect reproductive performance in cattle?

Most infertility in beef herds is associated with the kind of management, nutritional and heat detection issues described in other chapters.

How to Determine how diseases affect reproductive performance?



Infections can have a significant impact on the cow's capacity to produce viable calves, resulting in abortions, stillbirths, or weak calves. This impact can come from infections of the uterus (womb) after calving, preventing the cow from going back in calf, or from a variety of diseases which affect different stages of reproduction. Diseases like BVD may cause early embryonic death or abortion later in pregnancy, other infections can cause foetal death at any stage e.g. *Salmonella Dublin*.

Diseases also differ in the rate of abortion they will cause. Some diseases will cause sporadic abortions (e.g. listeriosis), while other diseases can cause abortion storms, or a large number of abortions together, causing an immediate crisis, e.g. salmonellosis or neosporosis.

What causes abortion?

Any illness where a cow has a very high temperature can result in abortion. Any infectious agents that cross the placenta in the pregnant cow and that cause damage to the foetus and/or the placenta can also result in pregnancy loss. When infection occurs in early pregnancy the resulting embryo loss may only be apparent when cows are found to be "empty".

Illness at later stages of pregnancy can result in the cow throwing the foetus (abortion) or delivering a dead calf (stillbirth). Sometimes there is a delay between the death of the foetus and its delivery such that aborted foetuses and membranes are very often poorly preserved.

Individual or "sporadic" abortions may be caused by an infectious agent (*Arcanobacter pyogenes*, *Bacillus spp.*, fungal agents) or non-infectious attack during pregnancy. Multiple abortions occurring within a relatively short period of time (i.e. an abortion storm) suggest that several cows in the herd have been exposed to an abortion-causing infectious agent.

The list of infectious agents includes:

Brucellosis, which is a very contagious disease causing abortion storms and is scheduled and notifiable. Abortion usually occurs after five months of pregnancy and the placenta and fluids released at calving are highly infectious. The Republic of Ireland is officially brucellosis free but the disease is still present in Northern Ireland. Herdowners are legally obliged to have any cow or heifer which aborts tested twice for brucellosis, this can be an opportunity to take another sample to test for other diseases.

Leptospirosis can cause abortion at any time during pregnancy and is among the main causes of infectious reproductive losses in Irish suckler herds. Tests on the aborted foetus are unsatisfactory and blood testing is preferred to detect exposure. Control involves vaccination in the spring.

Salmonellosis is a contagious disease which can cause abortions from the fourth month of pregnancy. It can also cause other illnesses in the herd. It can be detected by culture from the aborted foetus or placenta, or by blood test. This disease can be difficult to control, as many animals can carry the organism without showing signs. Vaccination of the full herd is recommended if Salmonella infection is confirmed.

Key risk



Brucellosis, leptospirosis and salmonellosis are all diseases which can infect humans. Take steps to avoid infecting yourself or others, seek advice if necessary



Neosporosis in cattle is caused by a parasite acquired from the faeces of infected dogs or foxes, or congenitally from the dam. Abortion normally occurs between three and eight months of pregnancy. Infection from dogs can lead to abortion storms while herds where congenital transmission takes place will normally suffer sporadic abortions.

Infected animals are infected for life and will have a greater chance of aborting, or passing the parasite on to their heifer calves. Neospora can be detected in the foetus or in blood from the cow or heifer. There is no vaccine available here, so control involves restricting the access of pets and wildlife to animal's feed and removing infected animals from the breeding herd. It is not advisable to breed from the female calves of Neospora positive animals.

Silage-associated infections:

Mycotic abortion is caused by a fungus and usually occurs as sporadic abortions between three and seven months of pregnancy. The majority of these infections come from poorly preserved fodder, and much more rarely from bedding. *Listeria* and *Bacillus* are bacteria which are also found in silage, especially where soil has been picked up during harvesting

BVD causes a range of problems, including abortion. Though BVD-related abortion can occur at any stage of pregnancy it is more common in the early stages, while surviving calves may be deformed or persistently infected with BVD (a PI animal).

Tissue tagging of the foetus is a good way to check whether BVD has caused the abortion.

Control involves eliminating PI animals from the herd, as these animals are an overwhelming source of infection – this is the basis of the current AH1 eradication programme. Vaccination can give increased protection from the disease **but is not effective if PI animals are left in the herd**, especially if left in contact with breeding stock.

IBR / Bovine herpesvirus-1 can cause abortion. It may be transmitted by the semen of infected bulls. As infection is much more common than disease, it is difficult to interpret blood tests.

Q fever (*Coxiella burnetti*) is caused by a bacteria-like organism (*Coxiella burnetti*) that most readily affects sheep and goats, causing abortion. It may transfer and cause abortion in cattle. It also affects humans.

Key question

Does abortion affect the cow?

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; the foetus and afterbirth for post mortem examination and culture.
- Hygienic precautions should be taken, especially handling the products of abortion and any discharge from aborting cows, as most of the infectious diseases which cause abortion in cattle can also cause severe illness in exposed persons.
- Hygienic disposal of contaminated material; thorough cleaning and disinfection
- Closely monitor other pregnant cows to ensure that this is not an "abortion storm"

Note that there is a legal requirement (legislation 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 or send specimens for laboratory diagnosis.

How to

Prevent re-occurrence of abortion storm in future years

Vaccinate cows where there is a definite diagnosis of salmonellosis or leptospirosis

Significant diseases in beef cattle

Key question



How do I deal with retained placentas and womb infections after calving?

Infection of the uterus after calving, known as endometritis or metritis, may lead to severe illness, or mild disease which goes unnoticed but impairs fertility by making the womb unsuitable for the embryo to implant often results.

- Prevent infection at calving by ensuring good hygiene of calving facilities and equipment.
- Check high risk cows (twins, difficult calving, etc.) after calving. Infection may be detected by a discharge from the vulva, on handling or by ultrasound scanning.
- Veterinary attention should be sought as these infections are difficult to cure. Retained foetal membranes, where the placenta is still attached to the uterus after 24 hours, will greatly increase the chance of metritis or endometritis.
- Observe the animal for signs of sickness. Consult your vet if this occurs. Removal by hand is no longer recommended. When the placenta has been lost, observe the cow for metritis described above.

5 What are the regulatory controls on specific infectious diseases of cattle?

Some infectious diseases of cattle are zoonotic (i.e. transmissible from animals to man), e.g. bovine tuberculosis (TB). Other infectious diseases have the ability to spread rapidly throughout the cattle population and cause very significant economic losses, e.g. foot-and-mouth disease. Both categories of disease are subject to national and international regulations and these are particularly important when it comes to the export trade in live cattle and beef. The World Organisation for Animal Health (OIE) is responsible for listing infectious diseases of livestock that should be subject to specific control measures and for prescribing the measures that are to be used by its 178 member countries across the globe. In addition, member states of the European Union are bound to comply with various pieces of legislation dealing with specific diseases of animals.

In the case of OIE-listed diseases which are known to occur in Ireland (endemic), the Department of Agriculture, Food and the Marine (DAFM) will most likely have a control or eradication scheme in place to ensure continued market access – this has been the case for bovine tuberculosis (TB), brucellosis, and BSE.

For OIE-listed diseases that do not normally occur in Ireland (exotic), DAFM will have made provision to ensure that they cannot be readily introduced or that if introduced, they can be rapidly detected and eliminated (e.g. Foot-and-Mouth disease, Bluetongue, etc.). Animal Health Ireland was established in 2009 to promote and develop an alternative industry-led approach to national control of economically-significant diseases of livestock – an industry-led approach. To date it has established programmes for the control of BVD, Johne's Disease, IBR and subclinical mastitis (the "Cell Check" programme) in cattle.

Section 7

Calving and the Newborn Calf

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 can I best care for the new-born calf?

Calving and the Newborn Calf

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 (see chapter on replacement heifers).
- Choose an easy calving sire, particularly for heifers.
- Make sure your cows and heifers are not too fat or too thin at calving.
- 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.

2 How can I best care for the new-born calf?

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 ensure it receives 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.

See chapter Managing Colostrum

- Calves should suckle the cow until they are full as soon as possible after birth.
- In situations where this is not feasible, research at Teagasc, Grange has shown that feeding the calf 5% of its birth weight (e.g. ~2 litres of colostrum for a 40 kg calf), within one hour or so of birth, with subsequent suckling of the dam (or a second feed) 6 to 8 hours later, ensures adequate passive immunity.



In young calves there is a high risk of diseases such as scour and pneumonia. See chapter on calf diseases.

Animal Health Ireland has produced a series of leaflets on calving management and calf health available at www.animalhealthireland.ie.

Section 7

Managing Colostrum

by Mark McGee and Bernadette Earley



Introduction

The health of suckler calves depends on minimising their exposure to, and maximising their defence against, disease. Colostrum (beestings) is the first and most important line of defence for the calf and, a timely, adequate intake of quality colostrum is essential. Colostrum provides food but also maternal antibodies to protect the young calf against the infections that it is likely to encounter in early life.

- ① What is colostrum?
- ② Why is consuming colostrum critical for calf health and survival?
- ③ What are the main factors affecting colostrum yield & quality?
- ④ What are the main factors affecting calf immune status?
- ⑤ When should you decide whether or not to hand-feed colostrum to a newborn beef calf?
- ⑥ What volume of colostrum should be fed to a newborn beef calf?

Managing Colostrum

① What is colostrum?

- Colostrum (or “beestings”) is the first milk that the cow produces after calving.
- Colostrum contains antibodies from the mother necessary to protect the calf from disease. Antibodies and other protective mechanisms in colostrum help to maintain the calf’s health and reduce mortality rates by helping to eliminate bacteria and viruses.
- Colostrum is also a concentrated source of energy and nutrients, with levels of protein, lactose, fat, and vitamins A and E, much higher than found in milk.

② Why is consuming colostrum critical for calf health and survival?

- Calves are born with a very poorly developed immune system. Until their own immune system is fully functional, at about 1 to 2 months of age, calves are dependant on the passive immunity provided through absorption of antibodies in colostrum from the cow.
- Calves that don’t receive enough colostrum are more susceptible to neonatal infections and disease and, in extreme cases, death.
- The antibodies present in the cow’s colostrum relate to disease organisms in the local environment and also to specific vaccines the cow received for control of organism(s) known to be responsible for calf infection on the farm e.g. *E. coli*, rotavirus and coronavirus.

③ What are the main factors affecting yield and quality of colostrum?

Colostrum yield

Yield of colostrum is very variable between beef suckler cows but is generally **higher** in:

- Beef × dairy cows than beef × beef or purebred beef breed cows.
- Beef breeds with greater milk yield potential.
- Older cows compared to heifers (first-calvers).
- Cows that are adequately fed during late pregnancy compared to those that are severely feed restricted during this time – this especially applies to first-calvers and very thin cows.

Colostrum quality (antibody concentration)

- Within most suckler beef cow breed types, colostrum yield rather than colostrum antibody concentration is the primary limiting factor.
- Antibody concentration (quality) in colostrum from suckler beef cows is generally much higher (up to double) than in dairy cows, but relatively similar for beef and beef crossbred cows.
- Unlike dairy breeds, where colostrum antibody concentration is usually much lower for first-calvers compared to older cows, this doesn’t occur to the same degree with beef suckler cow breed types.
- Antibody concentration (quality) is similar between quarters (teats) of the udder and is also similar within a quarter, that is, as the quarter is milked / suckled out for the first time.
- The antibody concentration of second milking colostrum is only half that of first milking colostrum. This highlights the importance of first-milking colostrum.
- Pre-partum leakage of colostrum from the udder results in low antibody concentrations.

Colostrum antibody mass (i.e. colostrum volume x antibody concentration) is more important than either colostrum yield or antibody concentration alone.

④ What are the main factors affecting calf immune status?

Passive immunity in suckler calves depends primarily on the colostrum antibody mass consumed, coupled with the absorption capacity of the calf. Factors affecting these parameters impacts on the immune status of beef calves.

- The antibodies in colostrum must get into the calf's blood via absorption from the small intestine.
- It is vital that sufficient colostrum is consumed as soon as possible after birth because the **ability of the calf to absorb antibodies starts to decline after birth**. This happens progressively after 4 to 6 hours, and ceases around 24 hours after birth.

Key Point

The earlier a calf suckles (or is fed), the greater the level of immunoglobulin absorption.

Key Facts

Immune status is generally higher in calves from:

- The suckler herd than the dairy herd.
- Beef x dairy cows than from beef crossbred cows.
- Cow beef breed types with higher milk production potential than from cows with lower milk production potential.
- Older cows than heifers (first-calvers).
- Cows adequately fed before calving compared to those severely feed restricted (e.g. straw-only diet) before calving.

⑤ When should you decide whether or not to artificially feed colostrum to a newborn beef calf?

Checklist

Factors to consider before making a decision:

- Is the calf too weak to suckle soon after birth?
- Has the cow abandoned the calf or refused the calf access to suckle soon after birth?
- Has the calf experienced a difficult birth or was it exposed to environmental conditions that might interfere with its ability to suckle?
- Has the cow sufficient colostrum for the calf?

If you answered yes to any of these questions, you may need to hand-feed colostrum to the calf. Colostrum may be fed to calves using a nipple bottle or a stomach tube (oesophageal feeder). A stomach tube is particularly useful where the calf is unable or unwilling to suckle. However, training/experience is required in using this device.

⑥ What volume of colostrum should be fed to a newborn beef calf?

- Calves should suckle the cow until they are full as soon as possible after birth.

In situations where this is not feasible, research at Teagasc, Grange has shown that feeding the calf 5% of its birth weight (e.g. ~2 litres of colostrum for a 40 kg calf), within one hour or so of birth, with subsequent suckling of the dam (or a second feed) 6 to 8 hours later, ensures adequate passive immunity.





Section 7

Dehorning/Disbudding, Castration

by Bernadette Earley



Introduction

Beef cattle are disbudded/dehorned in order to reduce animal injuries and damage to hides, improve human safety, reduce damage to facilities and facilitate transport and handling.

Castration decreases the management problems associated with aggressive and sexual behaviour of bulls.

- ① What is the best age to disbud calves?
- ② What are the legislative requirements aimed at ensuring humane disbudding of calves?
- ③ What are the main methods used for disbudding of calves versus dehorning older animals?
- ④ What are the legal requirements when castrating animals?
- ⑤ What are the main methods used for castrating bulls?
- ⑥ Is there any advantage in delaying castration of cattle?

Dehorning/Disbudding, Castration

Where it is necessary to dehorn beef cattle, seek guidance from a veterinary practitioner as to the optimum method and timing for the type of cattle and production system.

① What is the best age to disbud calves?

Where practical, calves should be disbudded while horn development is still at the horn bud stage as the horn buds are not yet attached to the skull. Consequently, the procedure involves less tissue trauma and is less stressful. Disbudding is significantly less stressful than dehorning of older cattle.

- Use a cauterisation method (i.e. a heated disbudding iron) at one-two weeks to remove the horn buds.
- A custom-built calf dehorning crate will minimise stress to the calf and ensure optimum safety to the operator.

② What are the legislative requirements aimed at ensuring humane disbudding of calves?

Disbudding of calves is carried out to comply with Regulations under the Diseases of Animals Act, (1966) which prohibits the sale or export of horned animals. Disbudding procedures must be carried out in compliance with the Animal Health & Welfare Bill (2014).

Currently the legislation concerning dehorning of cattle requires that once calves are over two weeks of age disbudding may only be performed using with local anaesthesia. It is illegal to disbud a calf over two weeks old without using a local anaesthetic.

- Veterinary advice is that all calves should be treated with a local anaesthetic when disbudding.
- Local anaesthetic may be obtained on prescription from veterinary surgeons.
- Disbudding calves correctly is unlikely to produce regrowth/'stumps' preventing welfare problems and possible rejection at marts later in life.
- Cattle cannot be marketed with horns. Marts will be guided by the document "Dealing with horns on cattle best practice" when accepting or rejecting animals for sale. http://www.agriculture.gov.ie/media/migration/animalhealthwelfare/animalwelfare/horned_cattle_best_practice.pdf

③ What are the main methods used for disbudding of calves versus dehorning older animals?

Methods of disbudding at the horn bud stage include removal of the horn buds with a knife, or thermal cauterisation of the horn buds.

Ensure that:

- A cauterisation method (i.e. using a heated disbudding iron) is used at one to two weeks to remove the horn buds.
- A custom-built calf dehorning crate is used to minimise stress to the calf and for optimum safety to the operator.
- Chemical paste to cauterise the horn buds is not recommended.
- Once horn development has commenced horn cutting or sawing at the base of the horn close to the skull is needed.
- Producers should seek guidance from veterinarians on the availability and advisability of analgesia/anaesthesia for dehorning of cattle, particularly in older animals, where horns are more advanced.
- Operators performing either disbudding of calves or dehorning of older cattle should be trained and competent in the procedures used, and be able to recognise the signs of complications.



Castration

4 What are the legal requirements when castrating animals?

In Ireland, use of anaesthesia is required for surgical/ Burdizzo castration of cattle over six months of age (Animal Health & Welfare Bill (2014)). Rubber ring castration (or use of other devices for constricting the flow of blood to the scrotum) without use of anaesthesia can only be performed in calves less than seven days of age (Oireachtas (Ireland), 1965)]. Where anaesthesia is required for castration, the procedure must be performed by a veterinary practitioner.

5 What are the main methods used for castrating bulls?

Techniques used to castrate male cattle include the application of rubber rings or tightened latex bands, surgical removal of the testicles, and use of a Burdizzo instrument to crush the testicular cords.

Surgical castration

Knife cut

There are two principal surgical techniques for castrating male cattle that are performed by a veterinary practitioner. The first technique involves excision of the distal one-third of the scrotum with a scalpel or sharp castration knife, to expose the testicles by descent through the scrotal incision. In the second technique, the lateral scrotal walls are incised with a scalpel or a Newberry knife to expose the testicles in a vertical fashion. The advantage of the Newberry knife is that both the lateral walls and the median septum are simultaneously incised, thereby enhancing wound drainage. Proper surgical hygiene must be observed during the castration procedure to avoid any unnecessary cross-contamination, infections or sepsis. Concurrent clostridial immunisation is recommended.



Newberry knife

Emasculator

Burdizzo castration is based on the principle that crushing destroys the spermatic cord carrying blood to the testicles but that the skin of the scrotum remains intact. Each spermatic cord is crushed twice (second crush below the first) for 10 seconds each along the neck of the scrotum with the Burdizzo to ensure completeness of the castration procedure. The Burdizzo must be in good condition. The jaws must be parallel and close uniformly across their width so pressure will be even across the jaws. Leave the Burdizzo slightly open when not in use.

With the Burdizzo technique, the testicle is left to atrophy in the scrotum, and because of the lack of open wounds the potential for haemorrhage or infection is minimised. Infection or maggot infestation is rare.



Burdizzo and Bander Instruments

Banding castration involves the application of a specially designed elastic band with the aid of an applicator around the neck of the scrotum, proximal to the testicles. This will cause ischaemic necrosis of the testicles, eventually leading to testicular atrophy and sloughing of the scrotum. Small rubber rings are used for calves less than one month of age (rubber ring castration), and for older calves, a heavy wall latex band is used along with a grommet to securely fasten the tubing at the appropriate tension. Tetanus has been reported in banded calves; therefore animals should receive tetanus prophylaxis to minimise the risk.

Proper immunization controls tetanus risk and Tetanus toxoid (not anti-toxin) must be used. It is important to read and follow vaccine instructions carefully and to vaccinate animals at least one-month before carrying out the procedure and again administer a booster vaccine on the day of banding.

Dehorning/Disbudding, Castration

⑥ Is there any advantage in delaying castration of cattle?

There is a general perception among producers that delaying castration could extend the production advantages of keeping animals as bulls beyond puberty or weaning. After puberty, bulls always grow faster than castrates, but the live-weight advantage is largely lost when the bulls are ultimately castrated.

A number of studies have shown no advantage in delaying castration up to 17 months of age in terms of slaughter weight or carcass weight at 22 months.

Key Point

Do not try to castrate animals until you have been taught and are guided by someone experienced in the proper techniques.



Section 7

Managing Weaning

by Bernadette Earley and Mark McGee



Introduction

Weaning breaks the maternal-offspring bond and removes milk from the calf's diet. This is stressful for the calf and happens at a time when other stress factors, e.g. change of environment (outdoors to indoor winter housing), change of forage diet (grazed grass and to conserved forage usually with concentrate supplementation), and transport/marketing may be encountered.

- ① Why is it so important to reduce weaning stress?
- ② What are the guiding principles for weaning management?
- ③ What are the main animal health risks at and post-weaning?
- ④ What are the key housing requirements for weaned calves?

Managing Weaning

① Why is it so important to reduce weaning stress?

Stress has a negative effect on the immune system, making calves more susceptible to disease. For the recently-weaned calf, susceptibility to pneumonia or bovine respiratory disease can be a particular problem.

② What are the guiding principles for weaning management?

Weaning procedure

Avoid abrupt weaning of all animals at the one time. Gradual weaning is better. Calves should be weaned in at least two separate groups with each cow group being removed at a minimum interval of five days.

Feeding concentrates pre-weaning.

Research at Teagasc Grange has shown that single-suckled beef calves supplemented with concentrates prior to weaning were less immune-compromised, started consuming meal faster when housed indoors, and spent more time lying down (rather than standing and walking) post-weaning compared with non-supplemented calves.

At pasture: Introduce concentrates one month prior to weaning and gradually increase the allowance with the intention of having the calf consuming one kg/day at weaning time. Continue to feed the concentrates for at least two weeks after weaning.

Indoors: Allow the calves access to cows in an adjacent pen and offer the calves forage *ad lib* while simultaneously increasing the concentrate allowance gradually over a two-week period to one kg/day. After this period, calves' access to cows can be ended.

Avoid additional stressors at weaning.

e.g. calves should be castrated at least four weeks prior to weaning date, or at least two weeks after the calf has been weaned.

There may also be advantages in delaying housing of recently weaned calves.

③ What are the main animal health risks at and post-weaning?

Weanling pneumonia

- Clinical signs: Early diagnosis is essential for treatment success and frequent observation is recommended post weaning and after housing. Initial signs of pneumonia can be non-specific for respiratory disease such as being 'off form', dullness, reduced feed intake and lack of gut-fill. Other signs may include fever (over 39.5 degrees C), increased respiratory rate, watery discharge from the nose and eyes. Later signs include purulent nasal discharge, and severe respiratory distress. By the time these are noted the disease is advanced. If you suspect weanling pneumonia consult your local veterinary practitioner for advice on diagnosis and treatment.
- Causes: Pneumonia is usually caused by a range of pathogens, both viral (Bovine Respiratory Syncytial Virus (BRSV), Bovine Parainfluenza 3 (BPI3), and Infectious Bovine Rhinotracheitis (IBR)) also known as (Bovine herpes virus 1 (BoHV-1)) and bacterial (*Pasteurella multocida*, *Mannheimia haemolytica*, *Histophilus somni*, *Mycoplasma bovis*). However, pneumonia is a classical multi-factorial disease, and it is the combination of these infectious agents with inappropriate management and husbandry factors that causes outbreaks of the disease. In addition the BVD virus can suppress the immune system and lead to pneumonia.
- Unfavourable environmental conditions and stress usually lead to viral infection of the lungs which is then followed by bacterial infection. Bacterial infection causes the main damage to the lungs which can be irreversible and lead to ill-thrift or death if treated too late or not long enough.

Treatment

- Preventing pneumonia by managing weaned calves as detailed above is preferable to treating outbreaks. Antibiotics are ineffective against viral infections. However, where bacterial involvement is suspected antibiotic treatment is required. Anti-inflammatory drugs may also be useful.

- The most important factor for treatment success is to start treatment very early in the course of the disease. The next most important factor is to ensure treatment is long enough – your veterinary practitioner will advise on the course of therapy required. They can also advise on the need to treat all animals within the group.
- Vaccinations: calves should be vaccinated where specific problems arise and according to label recommendations. Veterinary advice should be sought for a suitable vaccination programme and the widest protection will be achieved where the programme includes the three most common respiratory viruses ((BRSV), (BPI3), (IBR or BoHV-1)). Vaccinations help reduce the probability of disease but cannot solely be depended upon for prevention. The management system pre- and post-weaning will assist the successful outcomes of a bovine respiratory disease vaccination programme.

Other considerations

- A review of current housing and environment is recommended if there is a risk of weanling pneumonia.
- Isolation of individual sick animals is recommended.
- Plan a programme for purchasing weanlings where stress is minimised and where purchased groups are acclimatised outdoors or in open buildings before winter housing.

Stomach worms and hoose

Calves should be treated for stomach worms and hoose during the grazing season and for *Ostertagia* Type II worms at housing using effective anthelmintics administered according to product recommendations.

Calves with pre-damaged lungs from lungworm infestation also have a higher risk of developing pneumonia.

Grass tetany

Cows can be in danger of getting hypomagnesaemia (grass tetany) immediately after weaning as a result of stress. Feed calcined magnesite (60g/cow/day) for 4 to 5 days after weaning.



4 What are the key housing requirements for weaned calves?

- All houses should be adequately ventilated allowing for an adequate supply of fresh air thus prohibiting conditions for viral growth and spread, allowing heat dissipation and preventing the build-up of carbon dioxide, ammonia or slurry gases.
- Surfaces should be even and non-slip to avoid unnecessary underfoot conditions.
- There should be sufficient space for all animals to feed comfortably at the same time. The feed trough should be sufficiently large so that animals have adequate access to feed at all times.
- Housed stock should have freedom of movement and ample floor space for lying, grooming and normal animal to animal interactions. High stocking densities may have an adverse effect on growth rate, feed efficiency, carcass weight and behaviour (e.g. locomotion, resting, feeding and drinking).



Section 7

Animal Welfare

by Bernadette Earley



Introduction

Animal welfare is concerned with the wellbeing of the animal and can be studied through observations of animal behaviour and physiology. Animal welfare complements the objectives of beef assurance schemes that demonstrate the production of safe beef to consumers and food-chain stakeholders through welfare-friendly management practices. Good farm animal welfare is an integral part of Irish beef farming which is largely grass-based and extensive. Irish agriculture and Irish farmers operate to a very high standard of animal welfare. Animal welfare is strongly regulated in Ireland through the Department of Agriculture, Food & the Marine (DAFM) cross-compliance inspection system, which all Irish farmers have to comply with.

- ① How will I achieve best animal welfare practices in my herd?
- ② What are the most important environmental requirements of farm animals to attain optimal welfare?
- ③ What measures can be used on farms to assess animal welfare?
- ④ What is the role of the stockperson in ensuring optimum animal welfare?

Animal Welfare

1 How will I achieve best animal welfare practices in my herd?

The concept of the 'Five Freedoms and Provisions' (Farm Animal Welfare Council www.fawac.ie) is a guide to achieving best animal welfare practices:

Freedom from hunger and thirst - providing fresh water and the right amount of feed to keep animals healthy.

Freedom from discomfort - making sure that your animals have the right kind of environment, including shelter and somewhere comfortable to rest.

Freedom from pain, injury and disease - preventing your animals from getting ill and making sure that animals are diagnosed and treated rapidly should they fall ill.

Freedom to express normal behaviour - making sure that your animals have adequate space and proper facilities.

Freedom from fear and distress - making sure that animals' conditions and treatment avoid mental suffering.

2 What are the most important environmental requirements of farm animals to attain optimal welfare?

The main environmental requirements of farm animals are comfort, security, hygiene and freedom to perform behaviours.

Comfort	Thermal - neither too hot nor too cold. Physical - a suitable resting area. Space for grooming, limb-stretching and exercise.
Security	of food and water supply, from death or injury due to predation, aggression, floods etc. from fear of predation or aggression.
Hygiene	to reduce the risk of disease, to avoid the discomfort of squalor.
Behaviour	to permit coping behaviours, to allow animals to acquire security through experience and adaptation to the normal sights and sounds of farm activity.



3 What measures can be used on farms to assess animal welfare?

In general, two broad categories of parameters can be used for practical welfare assessment on-farm.

“Environmental” parameters:

These are specific standards for housing and management systems.

Housing standards include, for example, adequate space allowance, feeder space, number and flow rates of drinkers, floor types, etc. Husbandry and management standards may include such factors as specific ages and/or techniques for castration and processing, and appropriate training for stockpersons.

“Animal-Based Parameters”. These include measures of the animals' reactions or responses to the production system. Cow replacement rate, herd fertility indices and calf survival indices (in breeding herds); Bodyweight-for-age (average daily gain) for the breed, cross or gender; Body condition scores (BCS); Records of deaths; Veterinary treatments; Incidence of disease and injury.

4 What is the role of the stockperson in ensuring optimal animal welfare?

The stockperson is key to ensuring optimal animal welfare. Specific stockpersonship skills may be developed on-farm, working with an experienced person, or by following a course offered by a suitable training organisation. Wherever possible, the training should lead to formal recognition of competence. Without competent, diligent, stockpersonship animal welfare will be compromised.

Checklist



A competent stockperson should be able to:

- Recognise whether or not the animals are in good health. Signs of ill health include: loss of appetite, listlessness, cessation of cuddling, discharge from eyes or nostrils, dribbling, persistent coughing, lameness, swollen joints, scouring, rapid loss of condition or emaciation, excessive scratching, abnormal skin conditions or other unusual conditions.
- Understand the significance of a change in the behaviour of the animals.
- Know when veterinary treatment is required.
- Implement a planned herd health programme (e.g. preventative treatments, vaccination programmes if necessary).
- Implement appropriate animal feeding and grassland management programmes.
- Recognise if the general environment (indoors or outdoors) is adequate for the promotion of good health and welfare.
- Have management skills appropriate to the scale and technical requirements of the production system.
- Handle animals with care, avoiding undue stress.

Footnote

Farm Animal Welfare Advisory Council (FAWAC)
The Farm Animal Welfare Advisory Council (FAWAC) was established in 2002 as an advisory body to the Minister (DAFM), bringing together, for the first time in Ireland, representatives of the principal stakeholders from animal welfare organisations, farming bodies, Government Departments (North and South), the veterinary representative body and representatives from education and research. The FAWAC provides a valuable forum, bringing together a diverse range of interests and enabling representatives to meet, exchange divergent views and reach consensus on the broad mandate of challenges facing farm animal welfare. All members have a common purpose and share the view that animal welfare is an issue of very high importance. It has been particularly successful in publishing a series of welfare guideline booklets across a wide range of animals and activities which can be found on the website www.fawac.ie

Herding

- Daily routines should be carried out calmly and consistently with the aim of accustoming the animals to the normal sights and sounds of farm activity. Farm animals have a natural fear of novelty. Once the sights and sounds become routine, animals acquire a sense of security.
- A good stockperson will individually inspect all animals at least once per day. Particular categories of animals will require more frequent inspection, e.g. young calves or cows in late pregnancy.
- Formal training and/or experience working under the supervision of a competent stockperson is strongly recommended where inexperienced persons are taking over responsibility for animal husbandry on a farm.
- Common veterinary activities (e.g. dosing, injecting, and castration) should not be attempted without direct appropriate supervision until the stockperson is competent to carry out these activities.
- Stockpersons already involved in animal management/ husbandry should keep themselves updated in technological developments that can prevent or correct welfare problems.

Handling of animals

- Animals must be handled with care and patience. When restraint is needed it should be minimised in degree and duration. Particular care is needed in handling the calving cow and the newborn calf. Care in handling of bulls is of utmost importance, particularly from the operators' safety viewpoint.

