

Managing an infectious disease outbreak

Information leaflet for Irish farmers, advisors and vets

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BIOSECURITY CONTROL PROGRAMME

THIS GUIDE IS PART OF A SERIES OF LEAFLETS ON VARIOUS ASPECTS OF BIOSECURITY

1. Understanding Infectious Diseases
2. Bioexclusion: Keeping Infectious Diseases Out of Your Herd
3. Purchasing Stock: Reducing Disease Risks
4. Preventing Disease Spread within Your Farm – Biocontainment
5. Managing an Infectious Disease Outbreak

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BIOSECURITY CONTROL PROGRAMME



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INTRODUCTION

Healthy livestock are one of the most valuable assets on modern Irish livestock farms, the importance of which is only set to grow as on-farm productivity increases. When diseases are uncontrolled they threaten the health and productivity of stock. Infection may originate from either outside or within a farm. There are several simple practices to prevent infection coming onto farms and to reduce spread within a herd. The commonly used term for these practices is biosecurity. Actions which are taken to prevent disease entry are called **BIOEXCLUSION**, and actions which are taken to reduce spread within a herd are called **BIOCONTAINMENT**.

Further information about excluding diseases and general biocontainment practices is available from the Animal Health Ireland website [click here](#).

Despite the precautions a herdowner may take, a breach in bio-exclusion could occur, resulting in the rapid spread of infection within a herd and leading to infected or sick animals and in some cases mortalities.

During a disease outbreak it is important to separate apparently healthy animals from sick animals, from animals in other age groups, and animals of unknown disease status, e.g. an aborted cow. Sick animals should be isolated immediately, in an area away from other stock. The '*Preventing Disease Spread within Your Farm - Biocontainment*' leaflet contains information on the day-to-day management of animals to reduce the risk of disease spread within a herd which is especially applicable to the management of animals in an isolation area. Avoid exposing animals to severe stresses and ensuring they have access to adequate feed and water during an outbreak. This can reduce the impact of the outbreak. Stress can lead to a further compromised immune system, making effective **BIOCONTAINMENT** more difficult.

This leaflet describes the steps necessary for managing an infectious disease outbreak on a farm.

What makes an effective ISOLATION facility?

An effective isolation facility is able to physically separate clinically sick animals from the other animals on a farm.

An isolation area is 'a farm within a farm'. It doesn't have to be a fixed and purpose-built construction but can expand and contract with the major cattle activity at the time. As long as the area does not allow physical contact or share the same airspace, feed and water troughs, or slurry storage with healthy animals, it is suitable as an isolation facility. The way in which the isolation area is managed is more important than the specific type of building or field. Residual feed, waste milk or colostrum from the isolation facility should not be used in the main herd. For diseases which are spread by contaminated dung, any soiling or contamination of the environment which could occur from slurry or when sick animals are being moved to the isolation area should be dealt with as it is a disease risk.



WHAT IS THE AIM OF MANAGING AN OUTBREAK?

The immediate aim of managing an outbreak is to minimise the associated losses due to disease.

Production losses can result from the death of stock during an outbreak, or subsequent underperformance arising from reduced fertility, increased feed consumption or the need for more frequent treatments. By having a contingency plan and then responding quickly, a farmer and their veterinary practitioner are better able to diagnose the specific disease and take steps to limit the spread of infection during a disease outbreak. It will also increase the chances of successfully treating the affected animals. A contingency plan should also consider the necessary precautions to safeguard human health and to ultimately reduce the level of disease to manageable levels, or eradicate the disease from the farm, if this is feasible.

Follow the steps in Figure 1 below to prepare for, and manage any infectious disease outbreak.

- 1** **BE PREPARED** - have a plan of action developed in case of an outbreak
- 2** **LIMIT THE OUTBREAK** - remove affected animals from the immediate environment of other susceptible animals and seek veterinary advice early
- 3** **IMPLEMENT SHORT TERM CONTROLS**
- 4** **PUT IN PLACE A LONG-TERM MANAGEMENT PLAN** - if disease has become established, or develop an eradication plan

Figure 1. Steps for the successful control and management of an outbreak

1. BE PREPARED - have a plan of action developed in case of an outbreak

Biosecurity practices that are incorporated into a farm animal health management plan will have a major influence on the likelihood that an infectious disease will enter a farm and become established, potentially leading to an outbreak of disease. Having a contingency plan will assist a farmer to quickly re-establish effective disease controls in the face of an outbreak.

Planning for the possibility of an outbreak is critical in reducing the speed with which a disease may spread during an outbreak and its impact on the herd or group of animals. While planning farmers should:

1. Identify isolation facilities.
2. Manage animals in separate groups or sub-groups.
3. Observe animals to help early recognition of any changes in normal behaviour or feeding patterns.



1. Identify isolation facilities

Clearly identify suitable isolation areas. As a minimum, these should have sufficient floor or yard space, water and feeding points, and be located away from the main foot traffic areas of the farm. For more information about isolation facilities see leaflet – ‘Preventing disease spread within your farm’ – BIOCONTAINMENT.

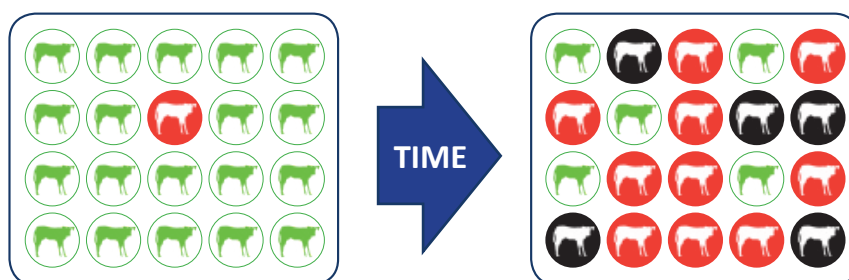
2. Manage animals in separate groups

A large number of animals in any one group increases the risk of infection spread within the group and may have negative consequences should there be a disease outbreak. This is particularly relevant to young animals where there is the potential for calves to be introduced into established groups, as more calves are born. In general, managing animals by age group, or production cycle, in separate groups or subgroups within larger management groups has benefits for several aspects of disease control.

Creating a number of smaller subgroups or separately managed groups may help to prevent the spread of infection that can lead to an outbreak.

As an example, the use of smaller groups as a general management practice to reduce the likelihood of an outbreak caused by the introduction of a single infected animal is illustrated in Figure 2 below.

Outbreak of scour 20 CALVES IN 1 GROUP



Outbreak of scour 20 CALVES IN 5 SEPARATE GROUPS

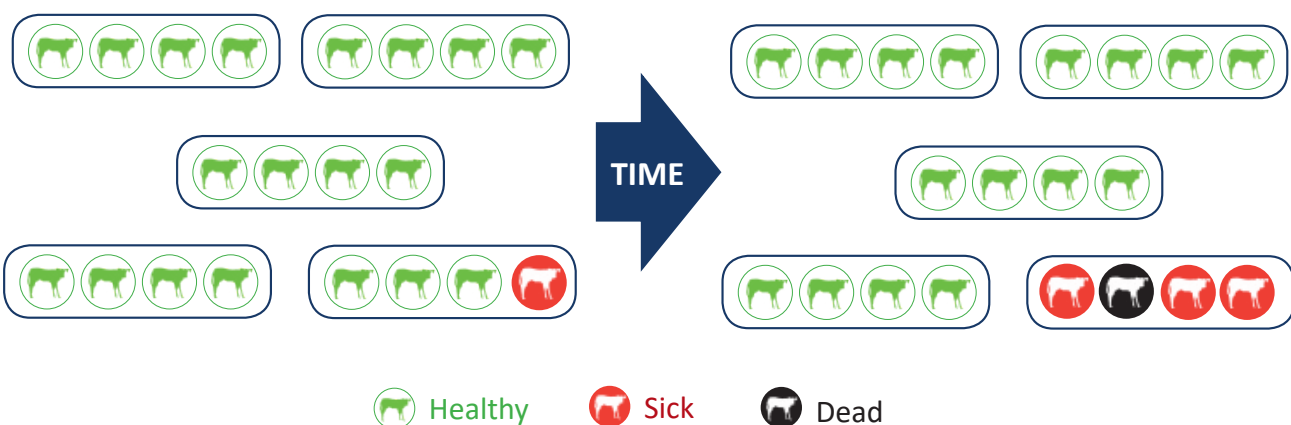


Figure 2. The effect of different grouping strategies (20 calves in one group or 20 calves in five separate groups) on the impact of a disease outbreak

3. Observe animals to assist early recognition

Recognition of infectious disease at the earliest possible stage can help to limit the scale of infection spread and reduce the likelihood of a disease outbreak. Farmers should ensure that all persons tasked with checking animals do so regularly, thoroughly and know which signs to look for such as sudden drops in production or behavioural changes. Time spent observing animals especially during and after feeding is time well spent. Good lighting is essential since the early signs of some diseases can be quite subtle and not readily seen in dull conditions. Increased frequency of observation is recommended after changes in management, housing, calving, recent disease outbreaks and after new animals have been introduced to the group or regrouped on the farm.



Not all diseases will cause dramatic clinical signs or sudden drops in production and infected animals may show a variety or range of symptoms. Some animals will be clearly affected and this is known as **CLINICAL DISEASE**, whereas some infected animals may not show clinical signs and are described as having **SUB-CLINICAL DISEASE**. Often the clinically diseased animals are only the tip of the iceberg. Animals may be clinically affected in one group and subclinical in another within the same farm. Sub-clinical disease is only detectable by diagnostic testing or monitoring farm records which may show a drop in production parameters. Keeping farm records is important as these assist farmers monitor key performance indicators (KPI) such as six week in-calf rate, milk yield, weight gain, calving dates, and somatic cell count. When reviewed regularly, KPIs can be used to monitor health and identify significant changes in animal performance some time before the first signs of the presence of an infectious disease.

Along with any increases in herd mortality, if signs of disease as described in Table 1 are present seek veterinary advice and consider the potential for a disease outbreak.

Sub-clinical Disease	Clinical Disease
Signs	Signs
- Poor fertility performance measured by reduced conception rates - Growth rates below target - Increased somatic cell count - Changes in herd antibody status - Lower than expected herd milk production - Reduced feed conversion efficiency - Poor response to routine husbandry treatments, for example parasite control	- Increased temperature (fever) - Dullness/depression - Reduced feed intake - Decrease in milk production - Coughing/increased respiratory rate - Nasal discharge - Diarrhoea - Abortions - Lameness - Mastitis - Hair loss - Weight loss

Table 1. Indications of an infectious disease outbreak

Once an infectious disease is suspected in an animal, all animals in the same management group should be checked for similar signs of disease. It is important to pay particular attention to hygiene to avoid further spread of disease through contact of healthy animals with contaminated clothing and equipment. It is useful to take rectal temperatures since some animals with an infectious disease may show fever ($>39.5^{\circ}\text{C}$) before other clinical signs appear.

2. LIMIT THE OUTBREAK

a. Remove affected animals from the immediate environment of other susceptible animals

Once abnormal signs or unusual behaviour in an animal housed as part of a group of animals is observed, the affected animal should be isolated and veterinary advice sought to determine the cause of the problem as soon as possible. This will ensure earlier treatment and effective controls are promptly put in place.



b. Veterinary diagnosis of the problem

As many infections have similar clinical signs (e.g. diarrhoea), early involvement of the veterinary practitioner will help with an accurate diagnosis and give farmers access to the best advice on the most appropriate action to limit the spread of infection within a group of animals. Having an accurate diagnosis early in an outbreak can be very cost effective as it reduces the money spent unnecessarily on inappropriate treatment and control measures. Veterinary practitioners are often able to make an initial tentative diagnosis before any test results are available, based on a herd's history. Records of sick animals and post-mortem investigations of aborted fetuses or animals that have died will greatly aid in making a final diagnosis. A veterinary practitioner is able to discuss the appropriate tests to diagnose and pinpoint the causes of a disease outbreak with the herdowner.

3. IMPLEMENT SHORT-TERM CONTROLS

a. Have a short-term control plan in place

Each outbreak will require a tailored short-term control plan outlining the treatments required and quarantine/isolation strategy. As soon as any unusual signs are noticed, and even before the veterinary practitioner has examined the affected animal, rigorous isolation should be applied based on the principles of biocontainment. Once a diagnosis has been made, a treatment plan should commence and farm biocontainment practices reviewed and if necessary, modified to more effectively limit the spread of infection in the short-term.

b. Continue to isolate affected animals

Once an outbreak is recognised one of the most critical aspects of limiting the spread of the disease is to continue to keep healthy animals away from the source(s) of infection. Most of the time the infection will be transmitted from 'carrier' animals through either direct contact or indirectly by infected material. Being able to **ISOLATE** infected animals from healthy ones will allow you to limit the spread from infected animals most effectively. Stopping the spread of disease in this way is one of the key aspects of **BIOCONTAINMENT**.

Which animals should be isolated?

Depending on the number of sick animals and the likely speed at which infection may spread, isolation may involve 'pulling out' individual sick animals into an isolation area as they are recognised, or it may mean isolating a whole group of animals where the disease has been identified. Infections that spread quickly before the animals show obvious clinical signs often result in whole groups needing to be isolated. This might mean keeping some apparently healthy animals with sick animals, since they are likely to be already infected and in the early stages of the disease. A veterinary practitioner can provide advice on the best approach.

c. Initiate treatment

Animals with clinical signs, or sub clinical infection, are fighting disease and require high levels of care to aid recovery. As part of the treatment plan there should be ad-lib access to clean water and feed. Adequate space, bedding and ventilation will help reduce stress and speed the animal's recovery. Separate equipment and handling facilities for feeding, cleaning and treatment should be used to treat the sick animal and their use limited to the isolation area. Equipment should be cleaned and disinfected after each use to reduce cross contamination between groups of animals.

Administer any medications as prescribed by the veterinary practitioner, carefully following the instructions provided. Ensure there are suitable handling facilities to give treatments and to collect samples, if required. Make certain there is adequate lighting to allow for the observation of sick animals. In terms of treatment and management, animals in isolation should be dealt with last to minimise the risk of any biocontainment breakdowns.

d. Managing sick and affected animals

Only the person responsible for the sick animal should enter the isolation area, and should wear protective clothing. Ensure there is a footbath at the entry to the area and that this is always used prior to entry and upon exit from the isolation area.

It is good practice to work with healthy animals before working with sick ones to avoid the risk of transferring infection from the sick to the healthy group.

e. Monitoring animals during a disease outbreak

Daily records of the health of all 'at risk' animals should be kept during an outbreak. This should include recording temperatures, behaviour and appetite and checking for any new cases, or additional abnormal signs in the sick animals. Record the numbers of new cases identified each day and the date of entry animals entering the isolation area.

Once animals start to recover, veterinary advice should be sought on the length of time a recovered animal should be withheld from the main herd to prevent a reoccurrence of the outbreak. Recovered animals should not be returned to the healthy group. Be aware that some 'recovered' animals will remain as 'carrier' animals after signs of disease have disappeared. Never put ill-thriving stock back into another younger group 'to give them a chance'. They may spread disease to younger, more vulnerable animals.

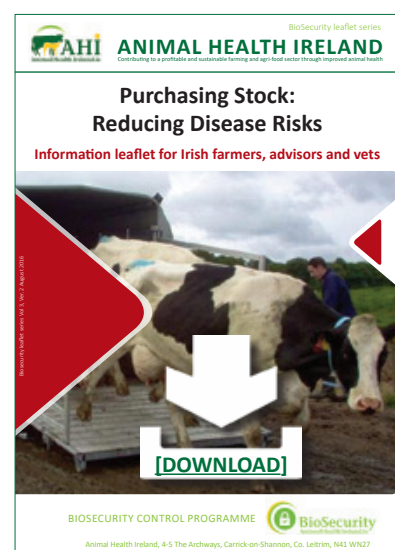
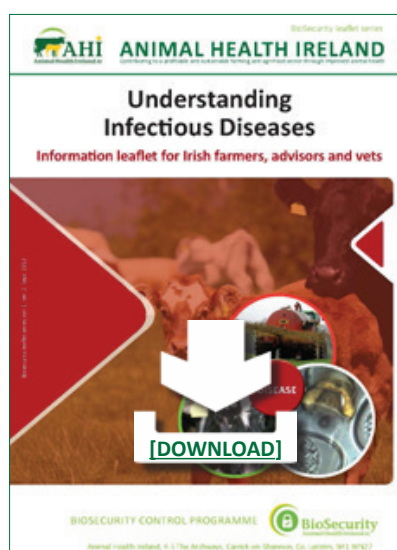


SUMMARY

Short-term control measures may vary from outbreak to outbreak, but some general points to assist infection control:

- Maintain a strict isolation policy and try to minimise the introduction of animals during an outbreak.
- To help the healthy animals stay healthy, minimise stress and avoid routine procedures such as dehorning/castration until after the outbreak.
- Limit the number of people who work with and treat sick animals.
- Follow Biocontainment practices to avoid the further spread of infection.
- Particular attention should be given to washing hand, boots and clothing which should be disinfected when entering and leaving both the healthy and the isolation animal groups.
- Observe healthy animals routinely to check for signs of disease.

Having an understanding of how infectious disease works and a broad understanding of BIOCONTAINMENT practices will help implement short term controls more effectively. See the AHI leaflets 'Understanding Infectious Diseases', 'Bioexclusion: Keeping Infectious Diseases out of Your Herd' and 'Purchasing Stock: Reducing Disease Risks' and 'Preventing Disease Spread within Your Farm' for further information.



4. LONGER-TERM CONTROLS

During an outbreak a farmer's attention is focussed on the provision of additional care for sick animals. Once an outbreak is contained and the number of animals affected during the outbreak is reducing, farmers should consider developing a longer term control programme to avoid the possibility of another disease outbreak.

A veterinary practitioner can assist a farmer determine whether a plan should aim to eliminate the disease from the farm (e.g. IBR) or, for some diseases that are challenging to control (e.g. Johne's disease), to improve BIOCONTAINMENT and control measures on the farm to reduce the risk of another outbreak occurring. Such a plan can prevent the losses due to costly outbreaks in the future.

Test results confirming the presence of diseases such as IBR or Johne's disease should be discussed with the veterinary practitioner who can provide advice about animal health control plans.

Dealing with premature births or abortions

Most infections which cause abortions run their course within two weeks, but the interval between a cow getting infected with an agent that can cause abortion and the actual abortion can be longer. Often, by the time she aborts it may not be possible to detect the infecting organism. Thus, although the diagnostic rate for infectious diseases in cases of abortion is low (33%), this does not mean that only one third of abortions are infectious in origin. If a cow aborts it should always be assumed that it is as a result of infection. In addition, one cannot predict if this is the start of an abortion 'storm'. Act quickly to reduce the risk to other animals and to enhance the diagnostic potential by sending samples to a recognised veterinary laboratory.

If a cow aborts or gives birth prematurely they should always be managed accordingly:

- Identify the cow that aborted– if not visually obvious ask the veterinary practitioner to handle the group of cows to identify the aborted one and to sample her. A critical short term control measure is isolation of affected animals.
- Discuss with the veterinary practitioner the legal requirements for notification and testing following an abortion.
- Always wear personal protective clothing when handling aborted material.
- Ensure that no other animals have access to cleanings, as these and other obstetrical waste (even those from normal births) have the potential to harbour infectious agents, e.g. Neospora, leptospira, or salmonella, some of which are zoonotic (infect humans). All such material should be disposed of in a manner where other animals, especially dogs and foxes, cannot access such material.
- All dead foetuses (abortions, stillbirths) must be tissue tag tested for BVD. Take a sample and submit it for testing in the usual way. A submitted foetus also contributes to the national herd health surveillance conducted by the Regional Veterinary Laboratories.
- Remove the aborted material (foetus and cleaning) by placing it in a strong plastic bag. Tie this and place it in a second strong bag and tie it again. It is then suitable to be submitted to the nearest Regional Veterinary Laboratory for diagnostic testing (recommended), accompanied by a submission letter from the veterinary practitioner or disposal to the knackery.
- Wash and disinfect the area where the abortion occurred.
- Immediately isolate the aborting cow, - especially from other pregnant cattle, for at least 3 weeks until vaginal discharges have ceased and lab results are received.
- Monitor other pregnant cows – inspect pregnant cow groups at least once a day and isolate any cows showing signs of imminent abortion.
- Discuss with the veterinary practitioner to decide whether to cull or retain the cow which has had an abortion and review Herd Health Plans in light of laboratory results.

Additional information about managing the risk of infection spread can be found in Preventing disease spread on your farm-Biocontainment

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