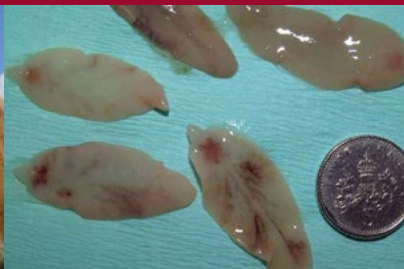


Abattoir post-mortem conditions guide



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Better Returns Programme

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Introduction

Disease conditions recorded at post-mortem inspection often lead to financial loss of the carcase value. Accurate post-mortem data provides valuable information on the health and welfare status of livestock. This data should be used by producers to inform current and future health and welfare farm strategy, to help reduce production losses throughout the supply chain.

Under the EU Food Hygiene Regulation, cattle and sheep sent to approved abattoirs, are subject to ante and post-mortem inspection before their meat and/or offal are sold for human consumption. The Food Standards Agency (FSA) carries out these inspections, which aim to identify any abnormalities that may be of concern to the health and welfare of the animals and the public. These inspections can lead to meat and/or offal being declared unfit for human consumption. Findings from these inspections are fed back to producers to help them to alter their animal health plan as necessary. This information flow is called collection and communication of inspection results (CCIR).

To improve the accuracy of post-mortem data, the FSA in collaboration with AHDB, rationalised the list of conditions used at the point of inspection for sheep and cattle. The new lists, launched in May 2016, focus on conditions with identifiable lesions, which are of true importance to public health, animal health and welfare, and for which interventions are available to address them.

The overview provided in this booklet aims to help farmers better understand the conditions inspected post-mortem and to use the data, along with their vets, to identify and address problematic areas, especially those where animals do not show any symptoms. This booklet gives a brief description of the condition, the impact it has on animals and their carcase, together with a description of symptoms, risk factors and, most importantly, intervention methods to address the condition.

It is good practice to discuss the post-mortem inspection results with your vet, when developing a strategy to manage herd or flock health.

Good use of post-mortem data can lead to better returns by improving productivity and minimising the losses of saleable meat and offal.




Ouafa Doxon

Collection and Communication of Inspection Results Project Manager (CCIR)



Abscess (neck, forequarter, hindquarter)

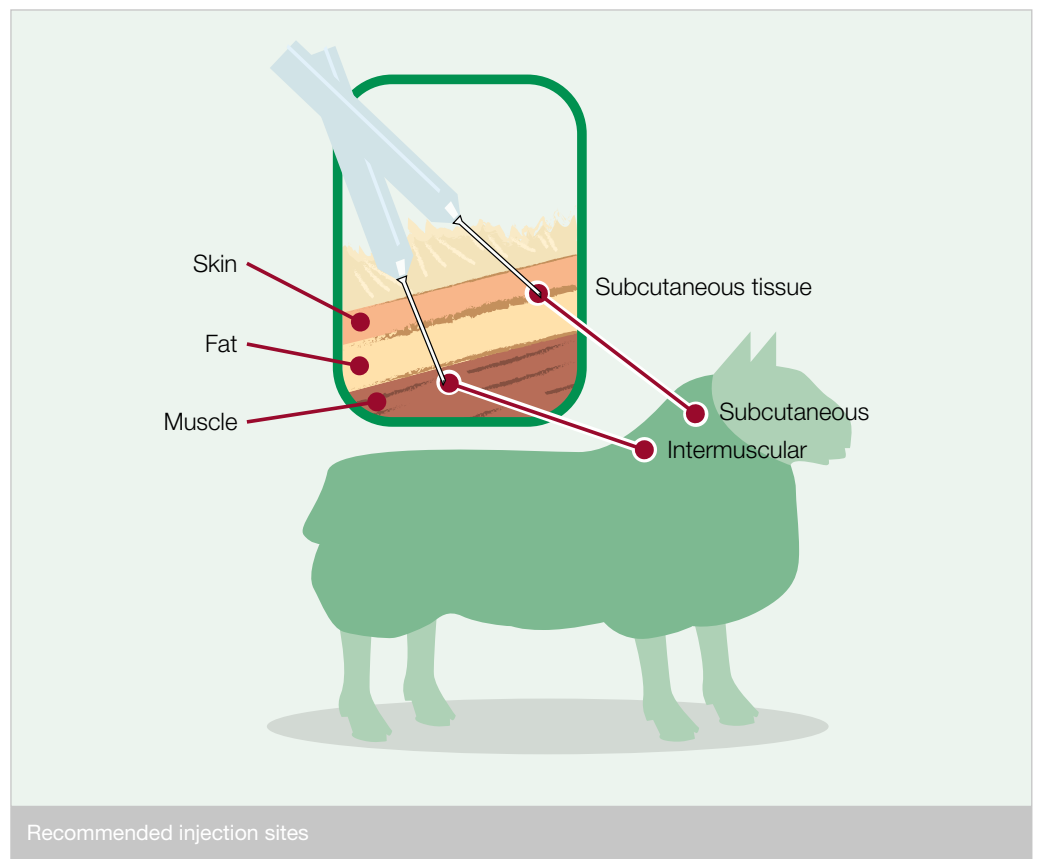
Cattle/sheep

<p>Cause</p>	<p>Abscesses are collections of pus in confined tissue spaces, usually caused by bacterial infection.</p> <p>One of the common causes for abscesses is poor needle practice. Abscesses can form at injection sites and can be exacerbated by the use of dirty needles.</p>	 <p>Example of an abscess in the flank of a cattle carcass</p>
<p>Cost to industry</p>	<p>In 2015, in England over 1.2% of sheep carcasses and around 6.5% of cattle carcasses contained abscesses. Meat yield is reduced as abscesses have to be cut out of the carcass.</p>	
<p>Impact in live animals</p>	<p>Symptoms include local pain, tenderness, warmth and swelling (if abscesses are near the skin layer). If abscesses are deep, ill health symptoms may occur including weight loss, fever and fatigue. This would affect livestock performance.</p>	
<p>Impact on carcasses</p>	<p>Abscesses can lead to loss of yield due to trimming and possible downgrading of the primal or carcass. However, when abscesses are deep they may not be visible or detected at inspection point. Meat containing injection sites may enter the food chain which, if it contains scar tissue or calcified abscesses, can compromise the eating experience as meat surrounding the site lesion may be tough.</p> <p>However, if the abscess is not contained and multiplies within the body, pyaemia (blood poisoning) will develop, leading to the carcass and its offal being rejected as unfit for human consumption.</p>	
<p>How to use post-mortem data</p>	<p>The location of abscesses provided at post-mortem are predominantly those associated with needle injection sites. The post-mortem report should enable producers to identify poor injection practices.</p>	
<p>How the disease is spread</p>	<p>An abscess is a response of the body's immune system to an invading pus-forming bacteria. White blood cells meet at the infected site to attack the bacteria by digesting it. As the white blood cells digest the bacteria, surrounding tissue dies, producing a cavity. This then fills with pus containing a mixture of dead tissues, white blood cells and bacteria.</p> <p>When the body's immune response destroys the bacteria contained in the pus, the abscess remains localised and may in due course be calcified. However, if the infection cannot be contained and the bacteria continues to multiply, the abscess will grow until the pus finally escapes. As a result, the bacteria will enter the bloodstream forming multiple abscesses in the body. This is a condition known as pyaemia.</p>	
<p>Risk factors</p>	<p>Poor injection practice, especially the use of dirty needles.</p>	

Control

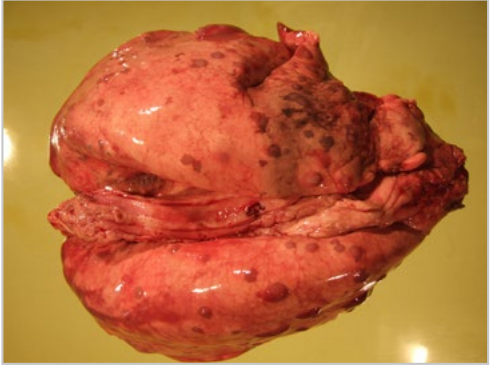
For best results the following key guidelines should be observed:

- Always use a clean, sterile syringe and needle. Never insert a used needle into a medicine bottle, if injecting multiple animals at once, use a multi-injection gun with a recognised sterilisation system
- Avoid injecting animals through dried on muck, always choose the cleanest injection site possible and avoid injecting animals that are wet
- Before injecting, check the expiry date and read and follow the directions of the product to be used. Adhere to the stated withdrawal periods to ensure stock are not marketed too soon after the injection has been given
- Use the correct size of needle according to the size of the animal and site of injection
- Ensure the animal is adequately restrained before attempting the injection.








Abscess (lung)

Sheep

<p>Cause</p>	<p>Lung abscesses are often caused by secondary opportunistic bacteria such as <i>arcanobacterium pyogenes</i> and <i>staphylococcus aureus</i> following previous lung damage. Abscesses are collections of pus in confined tissue spaces, usually caused by bacterial infection.</p>	
<p>Cost to industry</p>	<p>Chronic respiratory disease can cause economic loss to the industry as it could lead to poorer livestock performance.</p>	
<p>Impact in live animals</p>	<p>Some of the symptoms associated with lung abscesses are similar to those observed with pneumonia and include:</p> <ul style="list-style-type: none"> • Increased breathing rate and effort • Weight loss • Coughing • Nasal discharge. 	
<p>Impact on carcasses</p>	<p>Some of the impacts observed include:</p> <ul style="list-style-type: none"> • Affected lung is rejected • Lower carcass weight. 	
<p>How to use post-mortem data</p>	<p>Lung abscesses can be indicative of a number of respiratory conditions. However, the level and frequency of its reporting should trigger further investigations, in particular when other respiratory conditions have also been reported.</p>	
<p>How the disease is spread</p>	<p>Following viral infections, lesions may get infected with bacteria causing abscesses. <i>Please see section on abscesses.</i></p>	
<p>Risk factors</p>	<p>Lung abscesses in older rams tend to be associated with extensive periods of housing post-birth and during the first winter.</p>	
<p>Controls</p>	<p>Some of the controls applied to reduce the risk of pneumonia could be used to manage the risk factors of lung abscesses. This includes the environment, where building design and ventilation systems play a crucial part in the health and performance of the animal. Good housing, which should be dry, draught free, comfortable and well ventilated, can reduce the risk of respiratory disease.</p>	

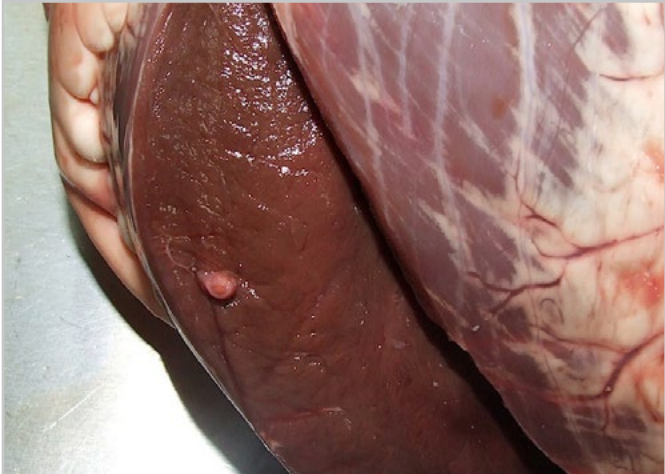
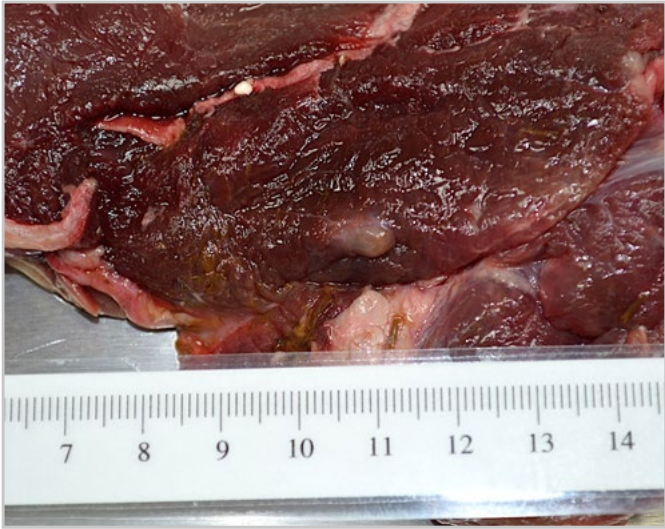
Bruising

Cattle/sheep

<p>Cause</p>	<p>Bruising occurs when the tissues are damaged and blood vessels are ruptured, leading to discoloration.</p> <p>It is difficult to establish from the bruise how long before slaughter it occurred. However, the location of bruises on the carcass can give a clue to their cause. For example, a hip bruise is commonly caused by cattle pushing through a gate.</p> <p>Typically, bruising happens in yards and handling systems, due to poor facility design or handling techniques. It may also occur:</p> <ul style="list-style-type: none"> • During loading and unloading • During transport, if stock are loaded too tight or loose or the floor is slippery • Mixing of cattle, especially horned cattle, with unfamiliar dehorned cattle. 	 <p>Example of bruising on a beef carcass</p>	
<p>Cost to industry</p>	<p>Bruised carcasses can lead to economic loss as they deter buyers who see the carcass as unappealing. Losses also occur as a result of trimming which, subject to its severity, not only reduces carcass weight and therefore payment, but may also exclude it from certain high value markets.</p>	 <p>Trimming as a result of wool pull</p>	 <p>Lamb carcass showing bruising due to wool pull</p>
<p>Impact in live animals</p>	<p>Bruising can be used as an indicator of poor handling, which needs to be modified to maximise animal welfare and producer returns.</p>		
<p>Impact on carcasses</p>	<p>Subject to the depth and localisation of the bruise, trimming may have to be carried out. As a result, the carcass may be downgraded, reducing the economic value of the whole carcass.</p> <p>Bruising can often be seen alongside a condition known as DFD (Dark, Firm, Dry) meat. This is caused by pre-slaughter stress and as the term suggests, results in a darker meat with undesirable meat quality characteristics.</p>	 <p>Meat showing no DFD</p>	 <p>DFD meat</p>
<p>How to use post-mortem data</p>	<p>It is difficult to identify when bruising occurs. The level and extent of bruising reported should alert producers to review their systems.</p>		
<p>Risk factors</p>	<p>Risk factors include handling, loading, transit and unloading, as well as appropriate stocking densities.</p>		
<p>Control</p>	<p>Appropriate handling of stock to reduce the risk of bruising. This includes ensuring handling systems are free from protruding elements as well as the appropriate use of handling aids. Careful handling of sheep will minimise wool-pull, particularly on spring lambs which bruise very easily.</p> <p>Ensure that staff handling livestock have an awareness and understanding of handling effects on animal welfare. The use of sticks and goads should be avoided.</p> <p>Ensure transport stocking densities are adhered to and internal partitions used as required to restrict movement and flooring should be non slip.</p>		

Cysticercus bovis (beef measles)

Cattle

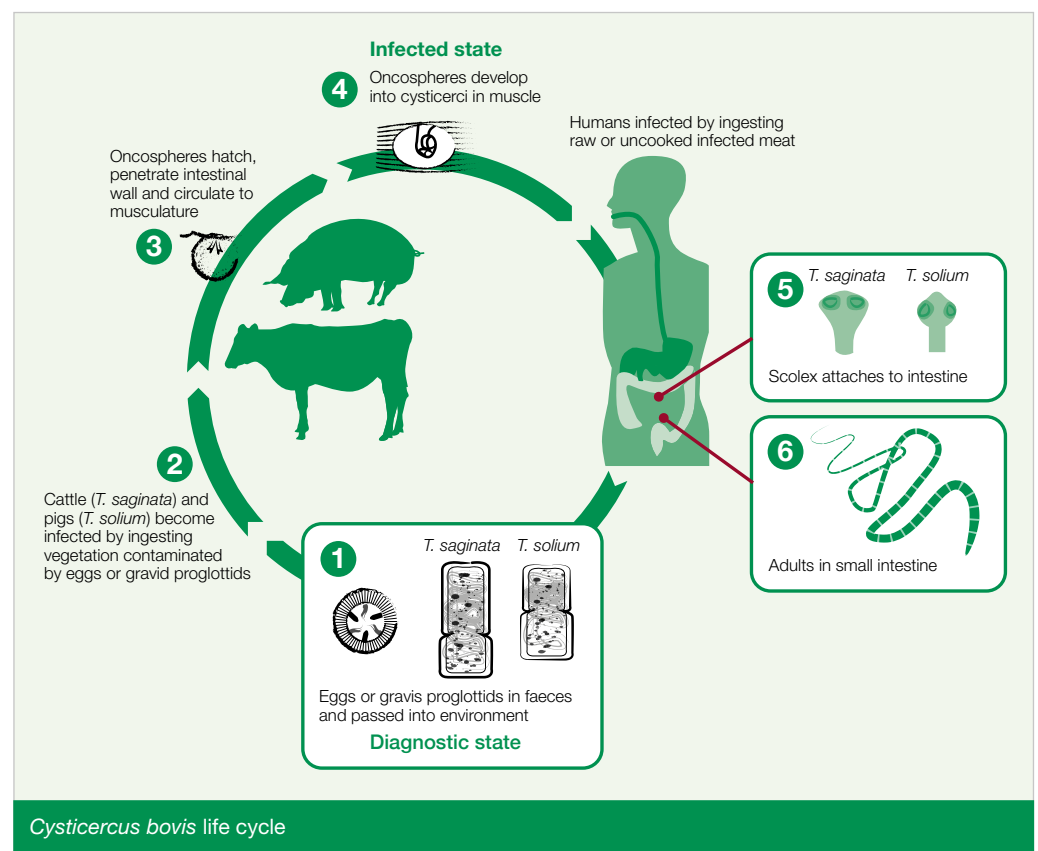
<p>Cause</p>	<p><i>Cysticercus bovis</i> (<i>C. bovis</i>), also known as beef measles, is caused by the larval stage of the human tapeworm <i>Taenia saginata</i>. Cattle get infected from ingesting food and water contaminated with eggs passed from humans. Infection of humans with the adult tapeworm, known as taeniasis, occurs via the consumption of beef that has been insufficiently cooked or frozen to kill the <i>cysticerci</i>.</p>	 <p>Infected heart with <i>Cysticercus bovis</i></p>
<p>Cost to industry</p>	<p>Due to the public health implication, this parasite causes a significant economic loss through condemnation of infected meat and offal and trade restrictions for endemic regions. Carcasses with visible cysts are either downgraded or condemned, depending upon the amount and type of visible cysts.</p>	
<p>Impact in live animals</p>	<p>Cattle infected with <i>C. bovis</i> show no clinical symptoms.</p>	
<p>Impact on carcasses</p>	<p><i>C. bovis</i> causes small cysts in the muscles of cattle, the most commonly affected parts are the heart, tongue, diaphragm and muscles of the jaw. In cattle, <i>C. bovis</i> appears as small whitish cysts filled with fluid that contain an immature worm. They are the size of a pea and infected beef can have dozens of such cysts. Carcasses and offal of heavily infected animals with viable cysts (generalised infections) are condemned. In the case of lightly infected cattle (localised infections) the affected organ or parts of the carcass are rejected as unfit for human consumption and the rest of the carcass must undergo a freezing treatment that deactivates the cyst. Some processors may opt to debone the carcasses before starting the freezing treatment.</p>	 <p>Example of cysts in the heart</p>
<p>How to use post-mortem data</p>	<p>Since cattle do not display sign of infection, post-mortem data is used to demonstrate the exposure of cattle to viable eggs at some point in the production cycle.</p>	

How the disease is spread

Cattle become infected through the ingesting of food or water contaminated with eggs or gravid segments of *Taenia saginata*. Contamination of feed can happen through defecation of humans on the pastures but also through irrigation that has been contaminated with human sewage. The eggs can remain infective for more than six months.

Once ingested by cattle, the young larvae hatch out of the eggs in the gut, go through the intestinal wall, reach the bloodstream and migrate to a muscle where they encyst. The cysts need 10–12 weeks to complete development. The cysts may remain infective for humans for up to one year.

Humans become infected when eating insufficiently cooked meat contaminated with cysts. Once in the human gut, the cysts release the young tapeworm, which attaches to the gut's wall and start producing segments. Within 5–12 weeks the tapeworms mature and start shedding eggs.



Risk factors

The risk of exposure to infective eggs from human faeces/sewage includes grazing on land that has:

- Human faecal contamination, especially land adjacent to pathways or public roads
- Overflowing domestic sewage systems
- Irrigation with inadequately treated reclaimed sewage water
- Bird movements to and from a nearby sewage treatment works which can pick up tapeworm eggs from the sewage treatment works and transfer them into the farm.

Control

Although beef measles is not harmful for cattle, prevention is important to avoid transmission to humans and carcass condemnation at slaughter.

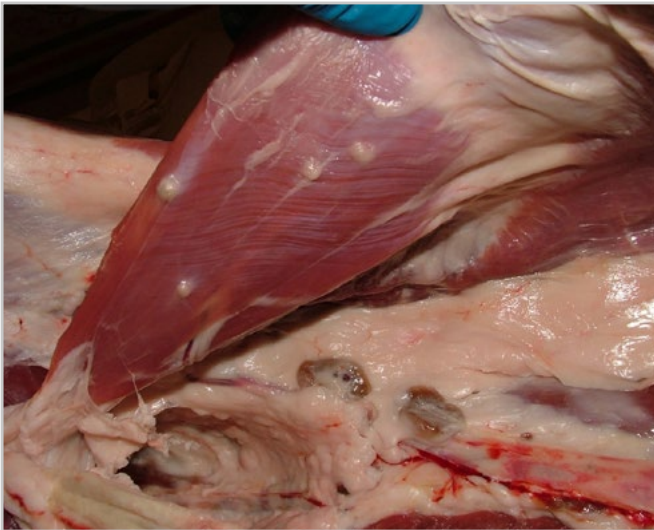

Currently there are no vaccines available that would protect cattle against *C. bovis*.

Prevention is by avoiding the contamination of cattle feed or water with human faeces.



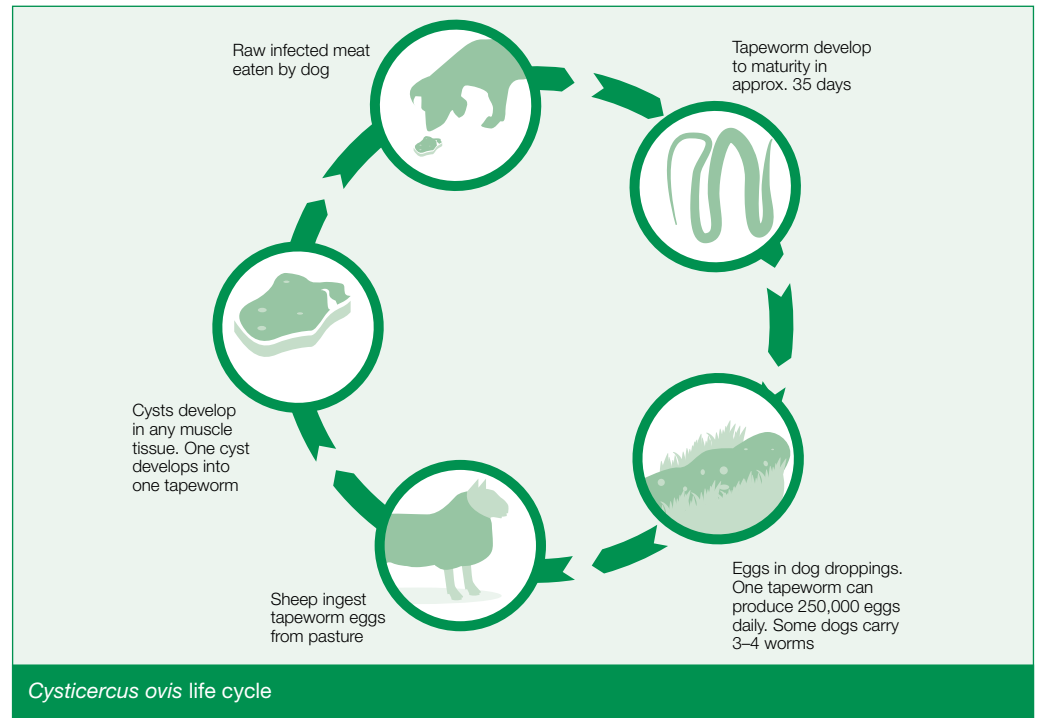
Cysticercus ovis (sheep measles)

Sheep

<p>Cause</p>	<p>Sheep measles refers to the cystic (larval) stage of a dog or fox tapeworm. The cystic stage in sheep is called <i>Cysticercus ovis</i> (<i>C. ovis</i>) and the adult tapeworm stage in dogs and foxes is called <i>Taenia ovis</i>.</p>	 <p>Cysts characteristic of <i>C. ovis</i></p>
<p>Cost to industry</p>	<p><i>C. ovis</i> leads to significant losses as generally its presence can lead to total rejection of the carcass. In 2015, <i>C. ovis</i> was estimated to cost the sheep industry over £4.1 million.</p>	
<p>Impact in live animals</p>	<p><i>C. ovis</i> usually does not impact on sheep so no signs of ill health will be seen on farm.</p>	
<p>Impact on carcasses</p>	<p>Sheep measles cysts are usually found in the heart. In more severe cases, cysts can be found in muscle tissues such as the diaphragm and masseter muscle. The cyst is oval and a white/cream colour, older cysts become hard (calcified). Only the affected part(s) is rejected if a cyst is localised (found in less than three different sites). The whole carcass and associated offal are rejected as unfit for human consumption if cysts are found in three or more different locations in the whole animal (offal/carcass).</p>	 <p>Cysts characteristic of <i>C. ovis</i></p>
<p>How to use post-mortem data</p>	<p>Since infected animals are asymptomatic, the post-mortem report will provide valuable information on the presence of the tapeworm on farm and the effectiveness of any health plan.</p>	

How the disease is spread

The most widespread cycle that exists is between dogs (including foxes) and sheep. When dogs are fed fresh offal or scavenge infected sheep carcasses containing cysts, they become infected without ill effect. Dogs then contaminate the pasture with their faeces, where the eggs are then scattered by wind and water. Sheep are re-infected as they graze.



Risk factors

The risk of exposure to infective eggs includes grazing on land that has been contaminated with infected dogs' faeces. Dogs are a key risk as they carry the tapeworm without showing any sign of infection.

Control

There is no treatment for sheep. To prevent or eliminate the risk of being exposed to the cyst, its life cycle must be broken.

This can be achieved by:

- Regularly worming all working and visiting dogs for tapeworm
- Consider fencing off public footpaths
- Not feeding dogs with raw offal or allowing them to scavenge on carcasses
- Dispose of dead sheep rapidly and effectively to stop scavenging
- Picking up dog faeces should be encouraged.

The only suitable tape wormer for treating dogs is praziquantel, which is found in many dog wormers. Great care must be taken when treating infected dogs and in disposing of their faeces for three days post-treatment.



To reduce the risk of unsuccessful treatments, wormer should be used appropriately and monitored to identify early sign of anthelmintic resistance.

Good hand washing hygiene reduces the risk of infection especially after handling dogs.

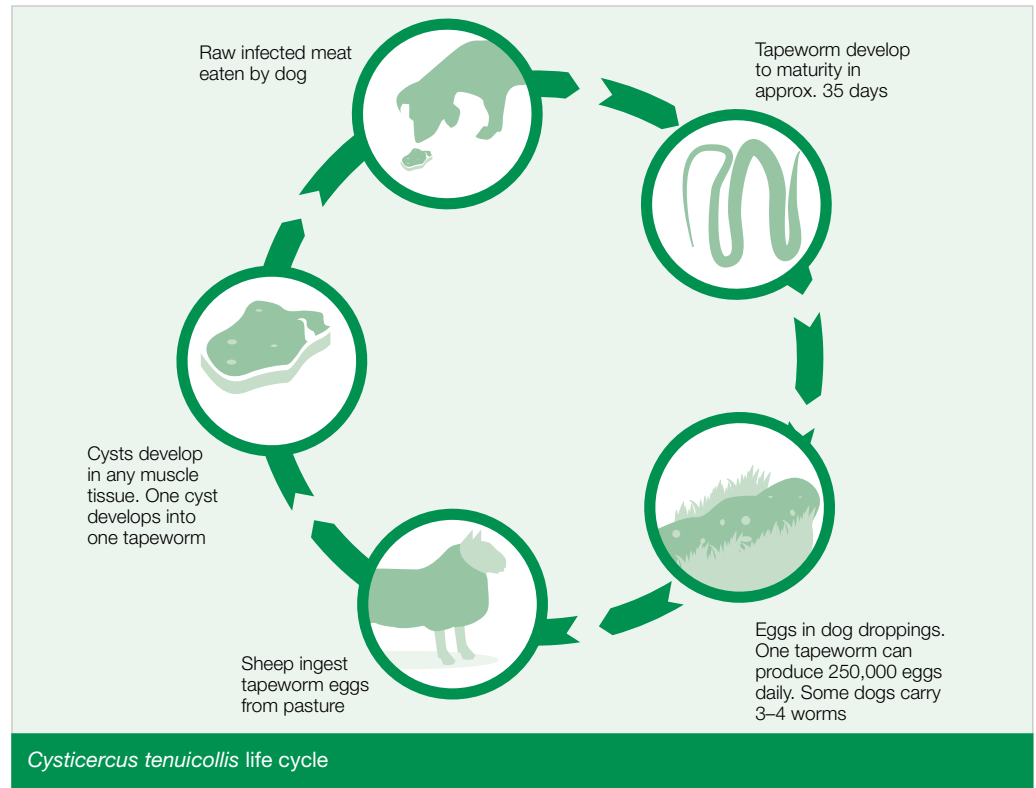


Cysticercus tenuicollis (sheep bladder worm)

Sheep

<p>Cause</p>	<p><i>Cysticercus tenuicollis</i> (<i>C. tenuicollis</i>) is the larval stage of the dog or fox tapeworm <i>Taenia hydatigena</i>. Sheep get infected from ingesting food or water contaminated with eggs passed in carrier faeces.</p>	 <p>Serpentine tracks indicative of <i>C. tenuicollis</i></p>
<p>Cost to industry</p>	<p>This parasite causes economic loss to the industry as it leads to poorer livestock performance. Loss of appetite results in longer finishing periods, increased feed costs and loss in value for not reaching target specification. In 2015, it was estimated to cost the sheep industry in England nearly £400,000.</p>	
<p>Impact in live animals</p>	<p>Some of the symptoms observed includes loss of appetite leading sheep to become weaker and more vulnerable to other infection, poor body condition and weight loss.</p>	
<p>Impact on carcasses</p>	<p><i>C. tenuicollis</i> forms pockets full of fluid containing one tapeworm head. Infested animals may have a dozen or more pockets. Several months after infection the cysts die and scar. The cysts are mainly found in the liver and on the surface of abdominal organs. Presence of <i>C. tenuicollis</i> usually leads to the infected organ/part being rejected. As a result of lower appetite, lower carcass weights are also observed.</p>	 <p>Liver with <i>C. tenuicollis</i> or bladder worm cyst</p>
<p>How to use post-mortem data</p>	<p>Based on the symptoms displayed on farm by sheep, it is difficult to establish with certainty the presence of the tapeworm <i>Taenia hydatigena</i>. The post-mortem report should be used to confirm the presence of the tapeworm on farm and inform future dog worming plans.</p>	
<p>How the disease is spread</p>	<p>The most widespread cycle that exists is between dogs (including foxes) and sheep. When dogs are fed fresh offal or scavenge on infected sheep carcasses containing cysts, they become infected without ill effect. Dogs then contaminate the pasture with their faeces, where the eggs are scattered by wind and water. Sheep are re-infected as they graze. The cycle is completed when final hosts (dogs) consume tissues with infected cysts.</p> <p>When the eggs are swallowed, the embryos through the intestinal wall invade the liver by burrowing through it. This causes distinctive tenuicollis tracks in the liver. Occasionally, small caseous/calcified degenerated cysts may be found in the liver.</p>	

How the disease is spread



Risk factors

The risk of exposure to infective eggs includes grazing on land that has been contaminated with infected dogs' faeces. Dogs are a key risk as they carry the tapeworm without showing any sign of infection.

Control

There is no treatment for sheep. To prevent or eliminate the risk of exposure, the cyst life cycle must be broken. This can be achieved by:

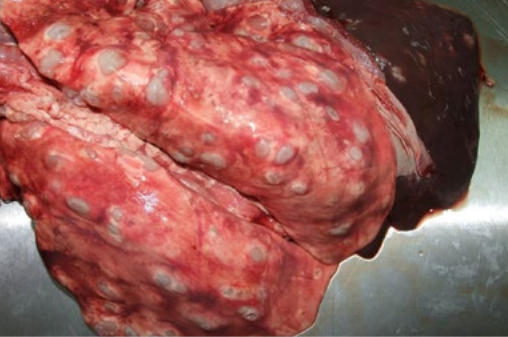

- Regularly worming all working and visiting dogs for tapeworms
- Consider fencing off public footpaths
- Not feeding dogs with raw offal or allowing them to scavenge on carcasses
- Dispose of dead sheep rapidly and effectively to stop scavenging
- Feeding dry dog food to dogs
- Picking up dog faeces should be encouraged.

The only suitable tape wormer for treating dogs is praziquantel, which is found in many dog wormers. Great care must be taken when treating infected dogs and in disposing of their faeces for three days post-treatment. To reduce the risk of unsuccessful treatments, wormer should be used following recommended instructions. Good hand washing hygiene reduces the risk of infection especially after handling dogs.



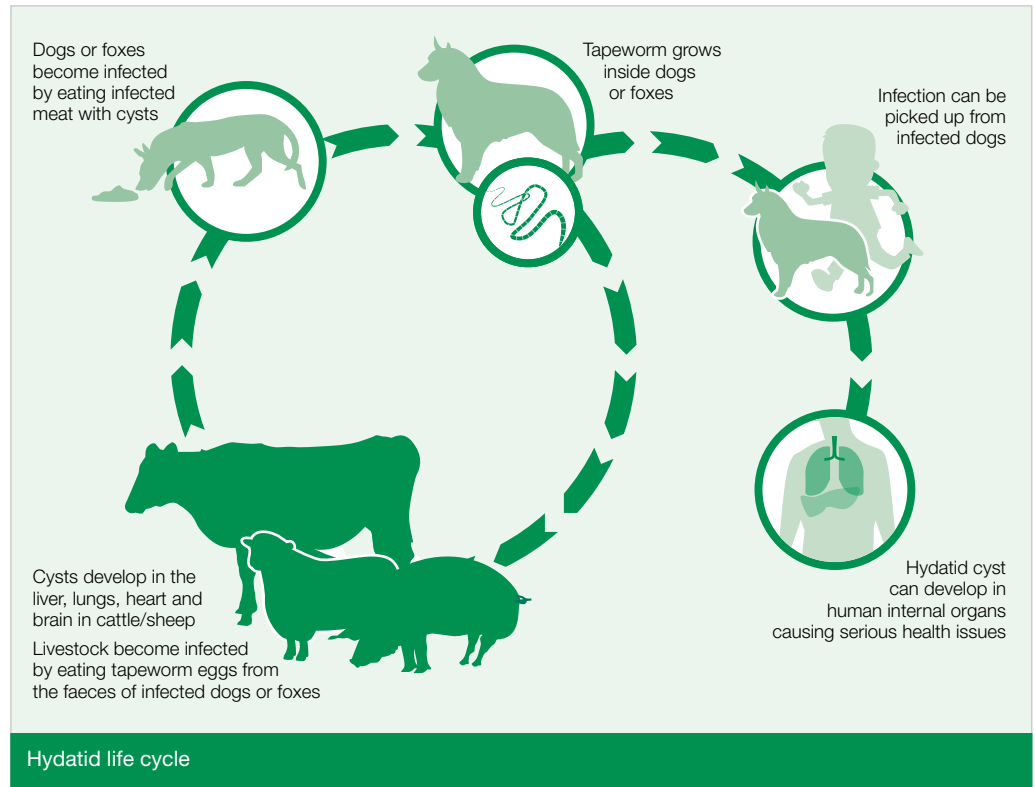
Hydatid cyst

Cattle/sheep

Cause	<p>Hydatid disease in cattle and sheep is caused by the tapeworm <i>Echinococcus granulosus</i> (<i>E. granulosus</i>), which lives in the intestines of dogs and other carnivores including foxes.</p>	 <p>Cyst in the lung</p>
Cost to industry	<p>Hydatid cyst generates economic loss as it usually leads to production losses.</p>	
Impact in live animals	<p>Hydatid cysts can interfere with the function of the organ where they encyst, leading to poor growth and reduced milk production. Often no symptoms are seen, as the cysts grow slowly and infected animals are slaughtered before the cysts cause disease problems.</p>	
Impact on carcasses	<p>When present, fluid filled cysts of the larvae tapeworm are usually found in the liver, lungs and other internal organs.</p> <p>Hydatid cysts impact the value of the carcass in the following ways:</p> <ul style="list-style-type: none"> • Condemnation of the affected organs • Poor carcass weight • Poor meat yield • When hydatid cyst, together with emaciation is observed, the whole carcass is rejected. 	 <p>Example of hydatid cyst in liver</p>
Public health risk	<p>Hydatid disease (<i>Echinococcosis</i>) is an important zoonose that can be fatal if untreated. In humans it usually develops in the liver or lungs, leading to liver or lung deficiency. Rarely, cysts form in bones causing spontaneous fractures or in the brain causing neurological signs. Cysts in the body occasionally rupture and cause severe allergic reactions in humans.</p>	
How to use post-mortem data	<p>Infected animals often do not display symptoms. A post-mortem report will confirm the presence of the tapeworm <i>Echinococcus granulosus</i> on farm and inform dog worming strategy.</p>	

How the disease is spread

The most widespread cycle that exists for *E. granulosus* is between dogs and sheep. When dogs are fed fresh offal or scavenge on infected sheep carcasses containing cysts, they become infected without ill effect. Dogs then contaminate the pasture with their faeces, where the eggs are scattered by wind and water. Cattle and sheep are re-infected as they graze. The cycle is completed when final hosts (dogs) consume tissues with hydatid cysts or contaminated with cyst fluid.



Risk factors

The key risk is dogs or foxes as they carry the tapeworm without showing any sign of infection.

Control of the disease in animals

To prevent or eliminate hydatid tapeworm infections in dogs, its life cycle must be broken. This can be achieved by:


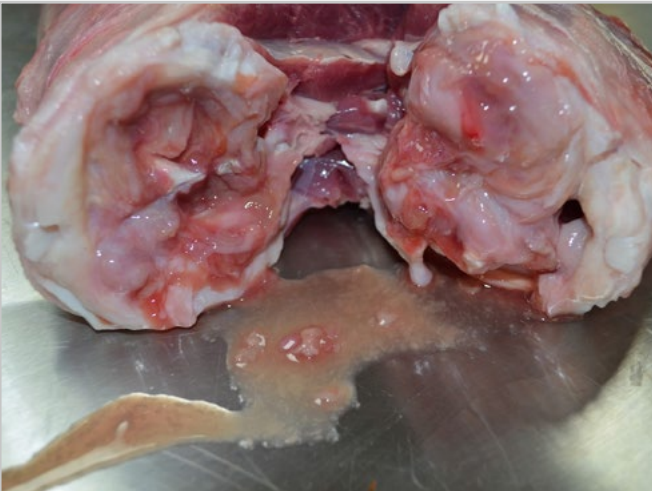
- Regularly worming all working and visiting dogs for tapeworms
- Consider fencing off public footpaths
- Not feeding dogs with raw offal or allowing them to scavenge on carcasses
- Only pet food should be fed to dogs
- Picking up dog faeces should be encouraged.

The only suitable wormer for treating dogs is praziquantel, which is found in many dog wormers. Great care must be taken when treating infected dogs and in disposing of their faeces for three days post treatment. To reduce the risk of unsuccessful treatments wormer should be used as advised. Good hand washing hygiene reduces the risk of infection especially after handling dogs.



Joint lesions

Cattle/sheep

<p>Cause</p>	<p>Arthritis means inflammation in one or more joints. In sheep, it is usually the result of bacterial infection. When a joint is inflamed due to bacteria, the condition is referred to as septic arthritis.</p> <p>There are two important ways that bacteria can invade joints: following a traumatic injury, especially a penetrating wound to the joint; and via the bloodstream.</p> <p>Arthritis usually causes lameness and visible swelling of at least two joints in the legs. Young lambs are most susceptible to arthritis infection.</p>	 <p>Swollen cattle feet</p>
<p>Cost to industry</p>	<p>Arthritis causes production losses in cattle and sheep. Treatment costs also occur and subject to the stage of the disease, it may result in the premature sale of affected animals.</p>	
<p>Impact in live animals</p>	<p>Arthritis causes lameness and painful dysfunction of the joint. If the process is active or acute, the surrounding tissues of the joints become swollen and warm. In chronic arthritis the joint becomes hard and stiff thus reducing mobility.</p> <p>Cattle and sheep may show a reluctance to walk and increase time spent lying down. Sheep will often walk with a short-stepping, shuffling gait. Reduced appetite leading to weight loss may also be observed because of the pain.</p> <p>Cattle and sheep will usually recover. However, those that remain chronically lame and in poor condition should be humanely destroyed.</p>	
<p>Impact on carcasses</p>	<p>Based on the severity of arthritis, the affected joint is rejected but if there is evidence of systemic infection the whole carcass may be rejected.</p>	 <p>Arthritis in sheep</p>
<p>How to use post-mortem data</p>	<p>Post-mortem data should be used to confirm the occurrence of joint lesions on farm.</p>	

How the disease is spread

Once bacteria invade the joint, they attach to the lining of the joint where they multiply causing inflammation. In response, the lining of the joint thickens and roughens, creating an ideal environment for the bacteria to grow.

As a defence, the synovial tissue of the joint releases chemicals into the joint fluid, breaking down the cartilage at the ends of the bones. Once the cartilage barrier is broken, the infection is then free to spread under the bone, causing extreme pain, especially with movement.



Arthritis in sheep

Risk factors

- Unhygienic conditions at lambing or calving time leading to infection through the navel
- Poorly designed buildings, with sharp corners leading to traumatic arthritis
- Water-logged gateways with old bricks and stone provide an ideal environment for bacteria, leading damaged animals' feet to become infected.

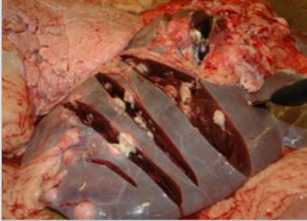

Control

- Colostrum helps calves and lambs to acquire the maternal antibodies to fight infection against the risk of septic arthritis
- Good hygiene practices to reduce the risk of navel infection
- When treating, follow product guidelines and vet instructions to ensure products are used appropriately.



Liver abscess

Cattle

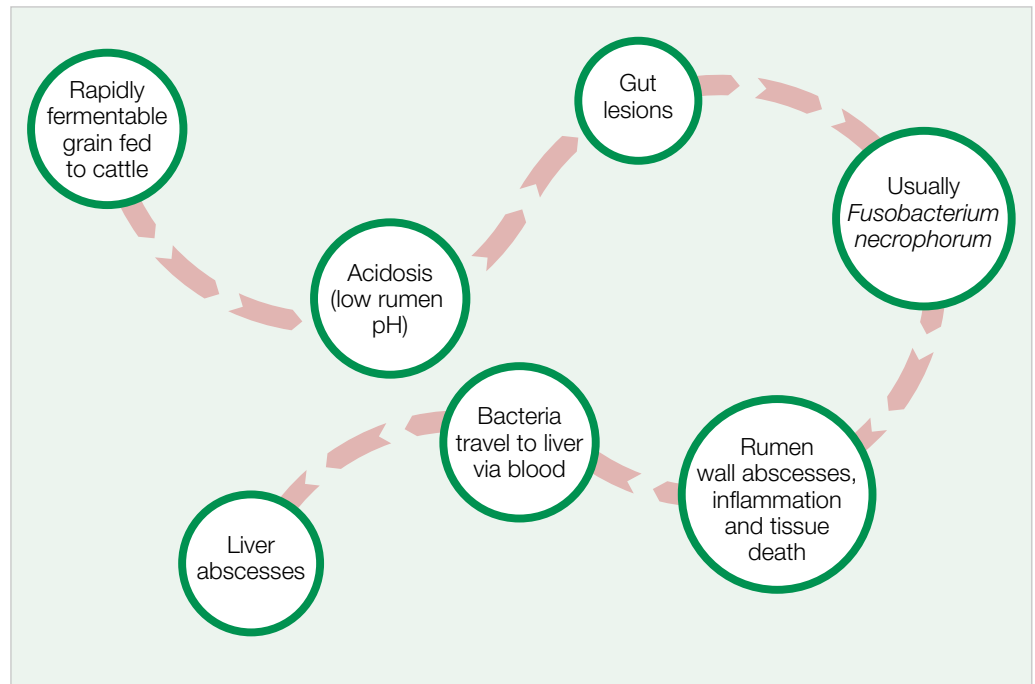
Cause	<p>Liver abscesses are often associated with acidosis in finishing cattle. Acidosis occurs when the acid load in the rumen increases due to high levels of rapidly fermentable starch and sugar in the ration.</p>	 <p>Liver showing severe abscesses likely to be due to acidosis</p>
Cost to industry	<p>Liver abscesses have an economic consequence as it usually leads to poorer livestock performance with reduced meat yield.</p>	
Impact in live animals	<p>Some of the following symptoms may be seen when the condition is at an advanced stage:</p> <ul style="list-style-type: none"> • Reduced feed intake • Poor body condition and weight loss • Unexplained diarrhoea • Raised temperature • Pulse rate and respiratory rate may rise • Lethargy • Pneumonia • Bleeding from the nose • Death in extreme cases. 	 <p>Steer showing reduced weight gain</p>
Impact on carcasses	<ul style="list-style-type: none"> • Liver is rejected • Lower carcass weight • High level of carcass trimming, due to abscess adhesion to the diaphragm and surrounding organs • In some instances, condemnation of the entire viscera. 	
How to use post-mortem data	<p>Due to the large range of symptoms it is difficult to establish for certain when cattle suffered from rumen acidosis. Post-mortem data will help to inform producers whether acidosis is occurring on the farm, when a review of feeding management should be made.</p>	

How the disease is spread

Direct transfer from a roughage regime to a finishing regime with poor feed trough management increases the risk of acidosis. It usually happens when the pH of the rumen falls below 5.5.

This has two effects:

1. The rumen stops turning over, leading to loss of appetite and weight loss.
2. Acidity level increases, creating the right environment for acid-producing bacteria to take over. Bacteria travel to the liver, via the blood, where they create abscesses.



Risk factors

Key factors causing acidosis are high levels of carbohydrate in feed and its texture and method of feeding as well as poor trough management.

Control

A balanced ration containing sources of fibre and readily fermentable carbohydrates.

A source of long fibre such as straw can be particularly helpful. This combined with feed trough management, should reduce the risk of acidosis.

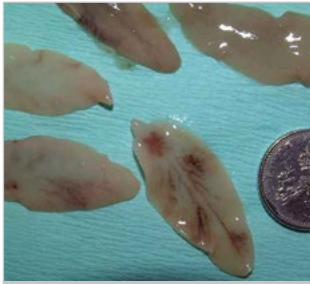

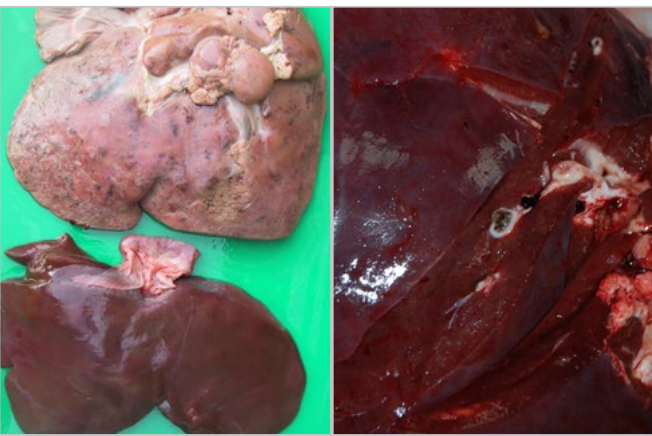
Tips to avoid acidosis:

- Do not grind cereals into fine particles – crack the grain
- Offer moist cereals like crimped or treated grains
- Always have a source of long fibre, eg straw available in racks to provide structural fibre – intakes are likely to be 0.5–1.5kg/day
- Never let ad-lib feed hoppers run out so animals gorge on high energy feeds when they are filled up
- If not feeding cereals ad-lib, feed in small meals throughout the day. Avoid individual meal size greater than 2.5kg/head/feed for dry cereals.



Liver fluke

Cattle/sheep

<p>Cause</p>	<p>Liver fluke (<i>Fasciola hepatica</i>) is a flat leaf-like parasite found in the tissue and bile ducts of the liver. Adults are around 3cm but cause severe damage to the animal they infect, costing farmers millions of pounds each year, due to lowered production.</p> <p>Disease can result from the migration of large numbers of immature flukes through the liver, or from the presence of mature (adult) flukes in the bile ducts, or both.</p> <p>Once the mature fluke pass their eggs the liver function starts to recover, with an extensive level of fibrous historic scarring of the tissue as a result of the parasitic infestation.</p>	 <p>Flatworm <i>Fasciola hepatica</i> (liver fluke)</p>
<p>Cost to industry</p>	<p>Liver fluke is estimated to cost English producers around £24 million per year. On farm cost per cattle is estimated at £87 and £5.56 for each sheep case.</p>	
<p>Impact in live animals</p>	<p>Animals infected with liver fluke typically have poor performance, lose weight and become anaemic.</p> <p>Other key signs of fasciolosis include:</p> <ul style="list-style-type: none"> • Reduced milk yield • Occasional deaths due to acute or untreated chronic infections increasing susceptibility to other infection. 	 <p>Beast showing poor body condition</p>
<p>Impact on carcasses</p>	<ul style="list-style-type: none"> • Infected livers are rejected • Poorer carcass classification • Lower carcass weight. 	 <p>Livers showing infestation with fluke</p>
<p>How to use post-mortem data</p>	<p>Diagnosis of liver fluke is not simple, as it can be mistaken for other conditions. The level of liver fluke recorded provides evidence that fluke is present, even when clinical signs are absent.</p> <p>The reporting of fluke as mature/immature provides valuable information on the type of flukicide to use. Liver fluke take approximately 12 weeks to mature and not all flukicides are effective against all immature stages. Therefore, it is important to speak to the vet in order to get the right flukicide that reflects the development stage of the fluke being targeted.</p>	

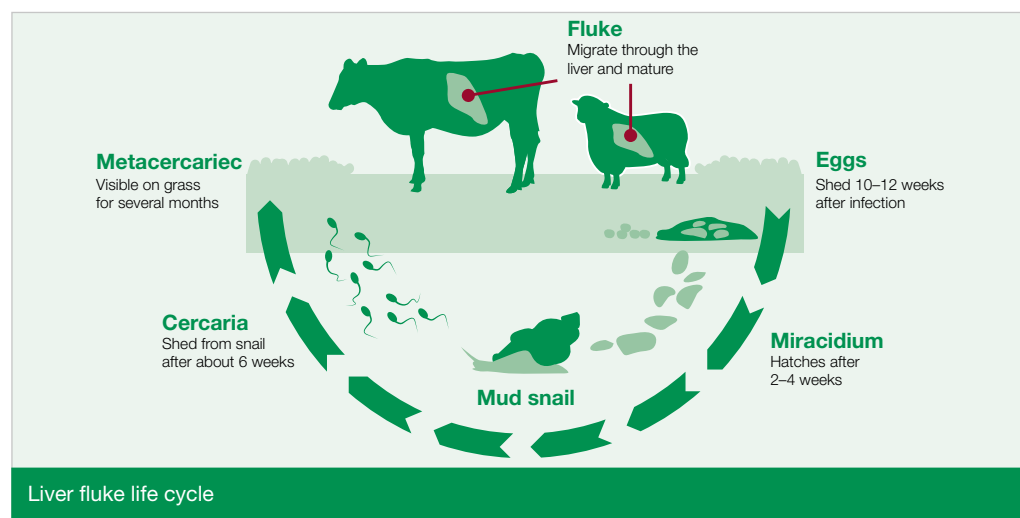
How the disease is spread

The whole liver fluke life cycle takes about 20 weeks, part of which involves an intermediate host, which is a small mud snail.

Within two weeks of being excreted, the eggs hatch into microscopic-like tadpoles. They find the mud snail, the host. The flukes develop and multiply within the snail over a period of six weeks or more, after which they leave the snail to attach to the surrounding vegetation.

Once ingested by grazing cattle/sheep, the immature flukes travel to the liver over an estimated period of eight weeks. They then migrate into the bile ducts, where they spend their adult lives.

After 12 weeks inside the animal, the cycle is completed when the mature fluke produce eggs. Liver fluke can live for up to two years in cattle unless they are destroyed by a flukicide.



Risk factors

Wet muddy areas

Mud snails are found around the edges of ponds, streams, rivers or tractor ruts in muddy fields.

Warm and wet summer weather

Warm, wet summers facilitate the reproduction of mud snails and the development of the fluke.

Epidemiology

Liver fluke is a seasonal disease, with late summer/autumn presenting a high risk to pasture being infected with active cysts, resulting in disease in cattle/sheep over the winter period.

Control

Control of liver fluke should be tailored to an individual farm, based on the history of all stock regardless of age and species. A treatment plan for the whole year should be developed in collaboration with the farm vet. A good programme should include both the use of flukicides and grazing strategies to avoid heavily contaminated pasture.

Before implementing a control programme it must be established if fluke infection is present and fluke-free pastures should be identified.

Quarantine of bought-in stock (sheep and cattle) from potential fluke areas, as well as roundworms, should be observed to reduce the risk of introducing fluke on to the farm.

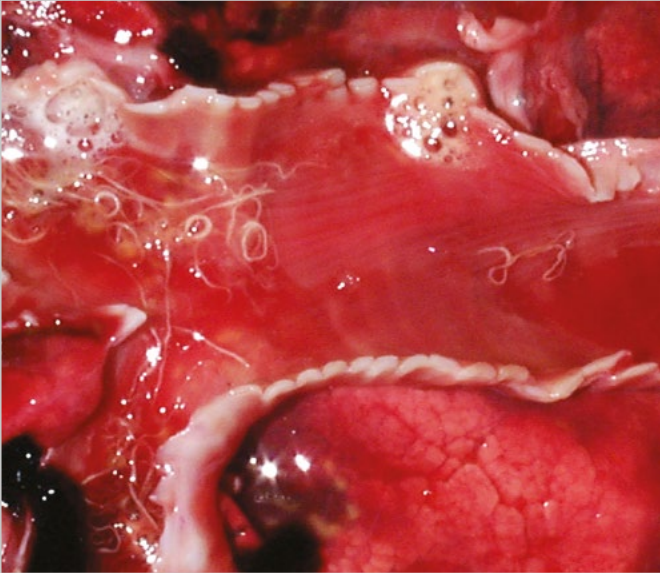

Triclabendazole is widely used to control fluke in sheep, which has reportedly led to some resistance in the UK, however, triclabendazole is the only product effective against fluke of two days and older in sheep.

While the resistance has only been reported in fluke population in sheep it should be noted that the same parasite also affects cattle.



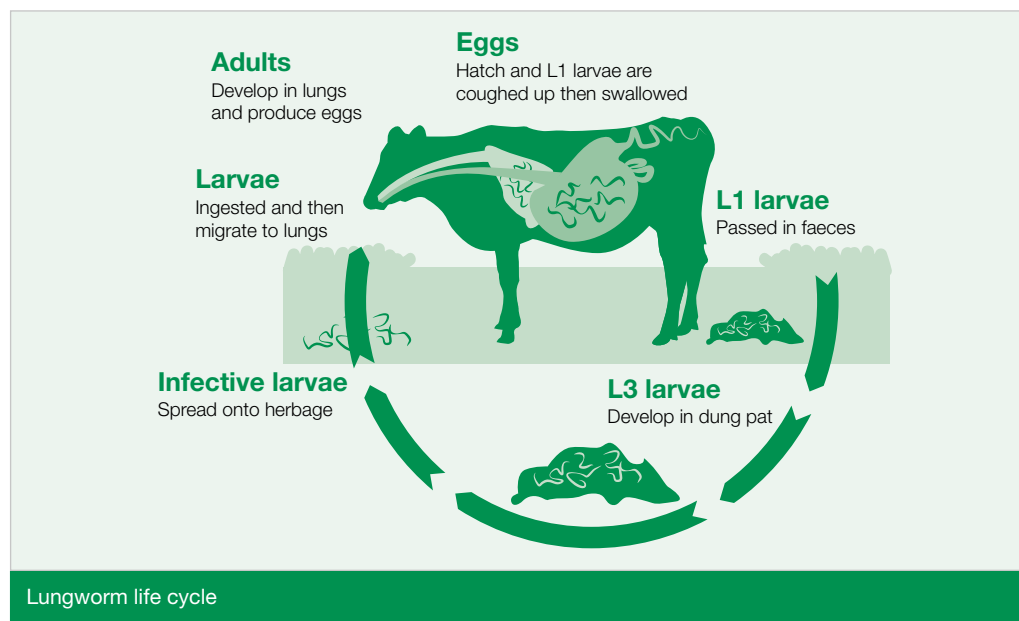
Lungworm (parasitic bronchitis, dictyocaulosis, 'husk', 'hoose')

Cattle/sheep

<p>Cause</p>	<p>Parasitic bronchitis (husk), is a parasite infection of the respiratory tract caused by the thread-like worm <i>Dictyocaulus</i> spp. Infection usually occurs mid-late summer with typical infection sites being the trachea and bronchi of the lungs.</p> <p><i>Dictyocaulus viviparus</i> is commonly found in cattle, and <i>Dictyocaulus filarial</i> in sheep. Other sheep lungworm such as <i>Muellerius capillaris</i> and <i>Prostrongylus rufescens</i> are also found during inspection.</p>	 <p>Cattle infected lung</p>
<p>Cost to industry</p>	<p><i>Dictyocaulus</i> spp. in sheep and cattle lead to important economic loss. It has been reported that severe lungworm outbreaks in growing cattle cost on average £50 to £100 per head.</p>	
<p>Impact in live animals</p>	<p>First-year grazing cattle develop symptoms in late summer and autumn, whereas older animals may show symptoms earlier in the year.</p> <p>The most characteristic clinical sign of lungworm infection is widespread coughing within a herd. It causes reduced weight gain and milk yield.</p> <p>Other symptoms include:</p> <ul style="list-style-type: none"> • Loss of condition • Increase in respiratory rate • Difficulty breathing • Death occurs in heavy infections. <p>Similar impacts are observed in sheep. However, in extreme cases lung oedema and emphysema can also be present.</p>	 <p>Laboured breathing</p>
<p>Impact on carcasses</p>	<ul style="list-style-type: none"> • The affected lung is rejected • Poor carcass condition • Lower weight of carcasses • Lung worm infection can lead to a secondary infection such as pleurisy. 	
<p>How to use post-mortem data</p>	<p>As infected animals do not always show obvious symptoms, the post-mortem should be used to identify early risk of lungworm on farm and develop a suitable strategy for its management.</p>	

How the disease is spread

Animals become infected through the ingestion of infective larvae from pasture. The larvae develop in the faeces and after a week or less, move onto the grass, either through their own activity, helped by rainfall, or by attaching to the spores of fungi that also grow on faeces. Once eaten by the animal, the larvae penetrate the animal's gut and travel to the lungs, where they mature into adults over a period of about three weeks. Adult female worms then start laying eggs and the cycle is complete. The life cycle of lungworms takes a minimum of about four weeks.



Risk factors

Wet summers

This provides favourable conditions for the larvae to thrive.

Heavy stocking densities

All infected animals are a source of contamination of pasture. However, not all infected animals will display symptoms. It is important therefore to manage the density of the herd to minimise the risk of cross contamination.

Lack of immunity due to low exposure to infective larvae

Calves that had little exposure to the infective larvae have not acquired immunity and therefore are likely to become infected as adults if introduced to contaminated pasture.

New purchased stock

Bought-in stock may introduce lungworm onto a farm.

Control

Lungworm infections in herds or flocks are mostly controlled by vaccination or anthelmintics.

Farms with a previous history of lungworm should consider vaccination of calves as part of herd health planning with a vet.

It is important to keep detailed records of grazing patterns and anthelmintic treatments in order to tailor the best lungworm control programme for a given situation.

Bought-in stock should be previously vaccinated to prevent introducing lungworm to husk-free herds.

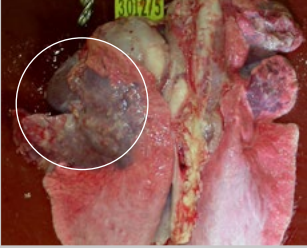

Worming treatment can also be considered as most wormers kill lungworms.

Consult the vet for the best control of lungworm specific to your farm.

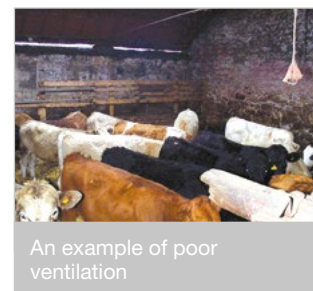


Pneumonia/pleurisy

Cattle

Cause	<p>Pneumonia (or bovine respiratory disease complex (BRD)) causes inflammation of the lung tissue and airways. It is commonly caused by a range of viruses and bacteria.</p> <p>Pleurisy is the inflammation of the pleura, which is a membrane that covers the lungs, heart and walls of the chest cavity. Pleurisy can be caused by the same pathogens as pneumonia.</p>	 <p>Lungs with evidence of pneumonia infection (circled)</p>
Cost to industry	<p>Pneumonia is the most common cause of death and poor performance in young cattle from weaning to 10 months of age.</p> <p>Pneumonia can lead to reduced feed conversion efficiency and lifetime performance. Cattle may also fail to achieve growth targets.</p> <p>It is estimated that pneumonia costs the UK cattle industry £50 million a year. The estimated cost per affected animal is between £30–£80, however, this could increase to £500 or more if the animal dies.</p>	
Impact in live animals	<p>Pneumonia symptoms are similar to those observed for pleurisy. This can include:</p> <ul style="list-style-type: none"> • Reduced feed intake • Raised temperature (above 39.5°C or 103°F) • Increased breathing rate and effort • Head down, looking depressed • Coughing • Nasal discharge • Increased susceptibility to other diseases • Death. 	 <p>Example of cattle with nasal discharge</p>
Impact on carcasses	<ul style="list-style-type: none"> • Affected lung is rejected • Reduced carcass weight • Pneumonia can spread to the pleura causing pleurisy • Pneumonia can lead to a secondary generalised infection developing. If this is the case, the whole carcass and its offal are rejected as unfit for human consumption. 	
How to use post-mortem data	<p>Level of pneumonia and pleurisy reported should be used with the vet to review the herd health plan, checking the effectiveness of current control strategies and ensuring all veterinary and management factors have been considered to reduce the incidence of respiratory disease in future.</p>	
How the disease is spread	<p>Pneumonia can be caused by several different viruses and bacteria that are airborne and easily spread from infected animals to susceptible calves. It occurs when the immune system of the animal is weakened by a range of stressors such as poor nutrition, stress of weaning, mixing with other cattle, transport, veterinary procedures and concurrent disease.</p> <p>The main viruses involved are:</p> <ul style="list-style-type: none"> • Respiratory syncytial virus (RSV) • Parainfluenza type 3 virus (PI3) • Infectious bovine rhinotracheitis virus (IBR) • Bovine viral diarrhoea virus (BVD). 	

<p>How the disease is spread</p>	<p>The main bacteria involved are:</p> <ul style="list-style-type: none"> • <i>Mannheimia haemolytica</i> (known as <i>Pasteurella haemolytica</i>) • <i>Pasteurella multocida</i> • <i>Mycoplasma</i> spp. • <i>Histophilus somnus</i>.
<p>Risk factors</p>	<p>Animal factors</p> <p>Fast growing cattle can have relatively smaller lungs in comparison to the size of their body, which may affect their resistance to respiratory infection.</p> <p>Environmental factors</p> <p>Environmental factors and management are important in the control of pneumonia. Cattle housing is a key focus area, as it can influence both the animals and the pathogens responsible for the disease. Inadequate ventilation increases the risks of respiratory disease.</p> <p>Pathogens</p> <p>Pneumonia is not only caused by external infection but often the pathogen can lie dormant in the animals awaiting a trigger to activate it, often this will be a form of stress.</p>
<p>Control</p>	<p>Disease can be reduced by avoiding overcrowding and the mixing of cattle of different origins and different ages. To prevent or control pneumonia the three identified risk factors above must be tackled together:</p> <p>Animals</p> <ul style="list-style-type: none"> • Colostrum is essential in building the calf's resistance to the disease • Ensure the correct nutrition requirements of the calves are met at every developmental stage • The accumulation of stress in a calf's life lowers its development. It is essential to plan ahead to the weaning phase to reduce stress • Bought-in animals are a potential source of infection. They should be quarantined and monitored for signs of disease for a minimum of 21 days. <p>Environment</p> <p>Building design and ventilation systems play a crucial part in the good health and performance of the animal. Good housing, which should be dry, draught free, comfortable and well ventilated, can reduce the risk of respiratory disease.</p> <p>Pathogens</p> <p>A number of vaccines are available that fight the main causative agents of respiratory disease. However, not all are covered by vaccines so it is important to inform the vet of post-mortem data to decide the best form of action moving forward.</p>

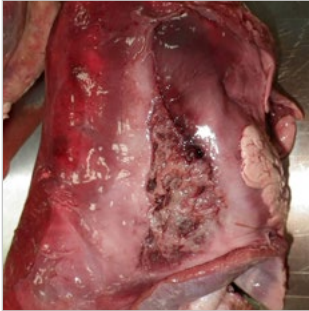
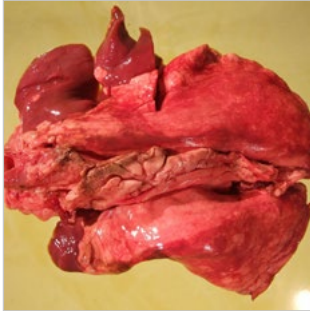



An example of poor ventilation



Pneumonia/*Mycoplasma*-like and *Pasteurella*-like

Sheep



<p>Cause</p>	<p>Pneumonia can be described as the inflammation of the lung tissue and airways. It can be caused by a range of infectious agents including bacteria, parasites and viruses. <i>Pasteurella</i>-like and <i>Mycoplasma</i>-like pneumonia are the result of bacterial infection.</p>	 <p><i>Pasteurella pneumonia</i></p>	 <p><i>Mycoplasma pneumonia</i></p>
<p>Cost to industry</p>	<p>Pneumonia, in particular <i>Pasteurella pneumonia</i>, is associated with a high mortality rate, causing significant loss to industry.</p>		
<p>Impact in live animals</p>	<p>Pneumonia, in particular <i>Pasteurella pneumonia</i> is the most common cause of death and poor performance in sheep. Similar symptoms as those for <i>Mycoplasma pneumonia</i> are observed for <i>Pasteurella pneumonia</i>. It causes poor performance and some of the symptoms observed include:</p> <ul style="list-style-type: none"> • Reduced appetite • Increased breathing rate and effort • Looking depressed • Loss of condition • Coughing • Nasal discharge • Death. 		
<p>Impact on carcasses</p>	<ul style="list-style-type: none"> • Affected lung is rejected • Lower weight of carcase • Pneumonia can become infected and spread to the pleura causing pleurisy • Pneumonia can lead to a secondary generalised infection to develop. If this is the case, the carcase and its offal are rejected as unfit for human consumption. 	 <p>Rejected lung due to pneumonia</p>	

How to use post-mortem data	The type of pneumonia recorded at post-mortem should enable producers to identify the appropriate treatment to use to fight infection on farm. For instance, <i>Pasteurella</i> requires <i>Pasteurella</i> pneumonia specific treatment.
How the disease is spread	Pneumonia can be the result of a bacterial infection such as <i>Pasteurella</i> or <i>Mycoplasma</i> infection. The infective agents are airborne and easily spread from infected animals to susceptible animals through contamination of the air, feed, water and equipment. Infection tends to occur when the immune defence of the animal is weakened by other pathogens.
Risk factors	<p>Animal</p> <p>It is not until 12 months old that the lungs and immune system are fully developed.</p> <p>Environment</p> <p>This is in reference to the conditions of the housing of the animal, which could influence the animals and pathogens responsible for the disease.</p> <p>Pathogens</p> <p>Pneumonia is not only caused by external infection but often the pathogen could lie dormant in the animals awaiting a trigger such as stress to activate it.</p>
Control	<p>To prevent or control pneumonia, the three identified risk factors must be tackled together.</p> <p>Animals</p> <ul style="list-style-type: none"> • Colostrum is essential in building the lamb's resistance to the disease • Ensuring the correct nutrition requirements are met at every developmental stage • The accumulation of stress may impact on an animal's immunity to pneumonia. It is essential to plan ahead key changes to farming practices to reduce stress • Bought-in animals are a potential source of infection. Their introduction to the farm should be closely monitored. <p>Environment</p> <p>Building design and ventilation systems play a crucial part in the health and performance of the animal. Good housing, which should be dry, draught free, comfortable and well ventilated, can reduce the risk of respiratory disease.</p> <p>Pathogens</p> <p>Prevention of <i>Pasteurella</i> pneumonia can be achieved by the use of specific <i>Pasteurella</i> vaccines before known risk periods.</p>



Traumatic pericarditis

Cattle

Cause	<p>This heart condition is caused by ingestion of wire or other pieces of metal or solid plastic into the rumen of the beast. Ruminal movements can cause the wire to penetrate through the stomach, leading to the penetration of the pericardium and/or liver, causing pericarditis.</p> <p>Cattle commonly ingest foreign objects, because they do not discriminate against metal materials in feed and do not completely masticate feed before swallowing.</p>	 <p>Bovine traumatic pericarditis</p>
Cost to industry	<p>The costs associated with this condition are surgery and veterinary medicine to remove the foreign body. Replacement costs of an animal can also occur in the event of culling or sudden death.</p>	
Impact in live animals	<p>Some of the impacts in live animals observed include:</p> <ul style="list-style-type: none"> • Loss of appetite • Fall in milk production • The animal stands with an arched back and moves reluctantly • Appears dull and depressed. May stand away from the herd • Signs of abdominal discomfort and swelling • In extreme cases, death. 	
Impact on carcasses	<ul style="list-style-type: none"> • Infected organ is rejected • Lower carcass weight as a result of loss appetite • Often traumatic pericarditis can lead to a systemic infection causing the entire carcass and associated offal to be rejected as unfit for human consumption. 	 <p>Example of traumatic pericarditis</p>
How the condition arises	<p>Swallowed metallic objects, such as nails or pieces of wire, fall directly into the reticulum or pass into the rumen and are subsequently carried over the rumino reticular fold into the front upper part of the reticulum by ruminal contractions. Contractions of the reticulum promote penetration of the wall by the foreign object. Perforation of the wall of the reticulum allows leakage of the stomach content and bacteria, causing peritonitis. The object can penetrate the diaphragm and enter the thoracic cavity (causing pleurisy and sometimes pulmonary abscessation) and the pericardial sac (causing pericarditis, sometimes followed by myocarditis). Occasionally, the liver or spleen may be pierced and become infected, resulting in abscessation, or septicaemia can develop.</p>	 <p>Perforation of the rumen by a piece of wire</p>
Risk factors	<p>Incorporation of wire into silage clamps from tyres. Pastures near sites where buildings have recently been constructed, burned, or torn down increase the risk of exposure to tyres, nails and metallic objects.</p>	
Control	<p>Care should be taken to remove worn tyres with exposed wire when sheeting down the silage clamps. Care should also be taken when building work is carried on or near pasture, to avoid common metal object such as nails from being ingested.</p> <p>As a preventive measure magnets can be given to cattle, once ingested they lodge in the reticulum and collect metal debris.</p>	

Total rejection/condemnation

Cattle and/or sheep

The table below refers to conditions that lead to total condemnation of carcase and its offal. A localised condition is restricted by the animal's defence mechanisms to a certain area or organ, as opposed to a generalised condition where the disease has spread to the whole body. Most of the conditions that lead to total condemnation are the outcome of conditions described in this booklet.

Abnormal odour-uraemia	<ul style="list-style-type: none"> Abnormal odour is often the result of feed, medication or a metabolic disorder Odour in meat associated with specific feed particularly apply to cattle. For example, cattle with access to onions and garlic will produce meat with these strong odours Veterinary medication with aromatic compounds can taint the meat if administered just before they were slaughtered. The odour may also trigger additional sampling to ensure that the withdrawal period of the medication has been met Ketosis is a disease caused when fat is rapidly broken down to produce energy, most often seen in early lactation. The ketones produced during this process can result in an odour similar to that of nail varnish. Ketosis reflects problems with nutritional management Inspection result should trigger a review of diet formulation for the class of stock affected.
<i>Cysticercus bovis</i> (generalised)	<ul style="list-style-type: none"> Please see section on <i>Cysticercus bovis</i> page 8.
<i>Cysticercus ovis</i> (generalised)	<ul style="list-style-type: none"> Please see section on <i>Cysticercus ovis</i> page 10.
Emaciation/generalised oedema	<ul style="list-style-type: none"> Emaciation is a wasting condition usually caused by disease. The muscle and fat tissues become depleted, while any remaining fat becomes jelly-like. The animal experiences severe weight loss Emaciation is usually associated with chronic conditions and parasitic infection such as liver fluke but also poor teeth and lack of nutrition may be causes Oedema and emaciation often occur together. Oedema is the excessive accumulation of fluid in tissues, triggered by a disease that encourages the leaking of excess fluid from the blood vessels The post-mortem inspection report for that batch of livestock should be reviewed in order to find potential clues to the primary cause of emaciation. For instance, has liver fluke also been reported?
Hydatidosis	<ul style="list-style-type: none"> Please see section on hydatid cyst page 14.
Immature cattle	<ul style="list-style-type: none"> The slaughter of calves younger than two weeks of age for human consumption is prohibited.
Jaundice	<ul style="list-style-type: none"> Jaundice occurs when the yellow pigments of the bile gain access to the bloodstream and are spread throughout the body giving the carcase a yellowish colour Jaundice can be the result of cirrhosis in the liver due to a blockage of the bile duct by fluke infestation or stones. Plant poisoning and chronic copper poisoning can also trigger jaundice Some of the clinical signs reported include yellow pigmentation of the gums and inner eye Two of the factors associated with jaundice are liver fluke infection and high intake of copper. These and other risk factors should be explored following the identification of jaundice on inspection results.



Total rejection/condemnation

Cattle and/or sheep

<p>Navel ill/joint ill for young animals</p>	<ul style="list-style-type: none"> • Navel ill or joint ill is usually the result of an infection of the navel (umbilical cord). Navel ill tends to be confined to the navel area. Joint ill occurs when the infection from the umbilical cord spreads to other parts of the body and organs via the bloodstream and settle in joints making them stiff and painful • The risk of infection can be reduced if calving areas are kept clean and freshly bedded and the navel is dry before moving the calf to another pen or pasture • Disinfecting the navel eg with iodine, can lower the risk of infection. Bulls' navels carry a higher risk of infection than heifers, as they tend to dry slower and therefore can benefit from two or three applications of disinfectant to the navel to reduce the risk. Colostrum intake will also help calves resist navel ill • Please see section on joint lesions page 16.
<p>Polyarthritis</p>	<ul style="list-style-type: none"> • Polyarthritis occurs when multiple joints are affected by a blood-borne infection • Please see section on joint lesions page 16.
<p>Multiple abscesses/pyaemia</p>	<ul style="list-style-type: none"> • Pyaemia is when pus-forming bacteria enter the bloodstream and form multiple abscesses throughout the body. Access is usually gained through a lesion such as footrot, an injection site or trauma • The regular reporting of pyaemia and abscesses should trigger an investigation on farm to identify possible causes. Often abscesses are linked with injection practices • Please see section on abscesses page 4.
<p>Septicaemia/fever</p>	<ul style="list-style-type: none"> • Septicaemia is a bacterial infection of the bloodstream, this is also known as blood poisoning • Bacterial infection may enter the body through various routes, for instance, via the navel in a newborn calf, the digestive tract or the lungs as a result of pneumonia. Often, septicaemia tends to develop when there is another infection somewhere in the body.
<p>Tuberculosis (generalised suspect)</p>	<ul style="list-style-type: none"> • Tuberculosis is a chronic disease of cattle, but also affects sheep and goats. Bovine tuberculosis is caused by <i>Mycobacterium bovis</i>, which is a zoonotic disease • If the lesions, which usually appear in the lymph nodes, are localised then only the infected part is rejected. However, if it is generalised, the entire carcass and associated offal are rejected • The common route of infection in cattle is through the respiratory tract, as the bacteria are airborne. Lesions then develop in the lungs and associated lymph nodes. Transmission can also occur via ingestion, causing lesions in the digestive tract and/or associated lymph nodes. Young calves can be infected by drinking contaminated milk • Some of the clinical signs in cattle include coughing and progressive emaciation.

Post-mortem conditions lists

SHEEP

- Abscess – forequarter
- Abscess – hindquarter
- Abscess – neck
- Abscess – lung
- Bruising – traumatic
- Bruising – wool pull
- *Cysticercus ovis*
- *Cysticercus tenuicollis*
- Fluke – immature
- Fluke – mature
- Historic scarring
- Hydatid cyst/s
- Joint lesions
- Lungworm
- *Mycoplasma*-like pneumonia
- *Pasteurella*-like pneumonia.

Total rejection/condemnation:

- *Cysticercus ovis* (generalised)
- Emaciation/generalised oedema
- Hydatidosis
- Jaundice
- Multiple abscesses/pyaemia
- Polyarthritis
- Septicaemia/fever
- Tuberculosis (generalised suspect).

CATTLE

- Abscess – forequarter
- Abscess – hindquarter
- Abscess – neck
- Bruising
- *Cysticercus bovis*
- Fluke – immature
- Fluke – mature
- Hepatic scarring
- Hydatid cyst/s
- Joint lesions (including arthritis)
- Liver abscesses
- Lungworm
- Pleurisy
- Pneumonia
- Traumatic pericarditis.

Total rejection/condemnation:

- Abnormal odour-uraemia
- *Cysticercus bovis* (generalised)
- Hydatidosis
- Immature cattle
- Jaundice
- Multiple abscesses/pyaemia
- Navel ill/joint ill for young animals
- Oedema/emaciation
- Septicaemia/fever
- Tuberculosis (generalised suspect).



Further reading

BRP Publications

Manual 3 – Improving cattle handling for Better Returns
Manual 6 – Improved beef housing for Better Returns
Manual 8 – Worm control in sheep for Better Returns
Manual 9 – Controlling worms and liver fluke in cattle for Better Returns
Manual 9 – Minimising carcass losses for Better Returns
Manual 10 – Controlling external parasites for Better Returns
BRP Understanding cattle and carcasses for Better Returns
BRP Understanding lambs and carcasses for Better Returns
BRP Cattle and sheep parasite control product guide
BRP Beef diseases directory
BRP Sheep diseases directory
BRP Reducing liver fluke
BRP+ Better management of bovine respiratory disease (BRD/Pneumonia)

Andy Grist

Grist, A., 2011. Ovine meat inspection: anatomy, physiology and disease conditions. Nottingham University Press.
Grist, A., 2008. Bovine meat inspection: anatomy, physiology and disease conditions. Nottingham University Press.

Control of Worms Sustainably (COWS)

COWS – Control of liver and rumen fluke in cattle
COWS – Control of lungworm in cattle

Sustainable Control of Parasites in Sheep (SCOPS)

scops.org.uk/vets-manual

NADIS

NADIS Traumatic Reticulitis and Heart Conditions in Cattle

OIE World Organisation for Animal Health

OIE *Terrestrial Manual* 2008, CYSTICERCOSIS
web.oie.int/eng/normes/MANUAL/2008/pdf/2.09.05_CYSTICERCOSIS.pdf

OIE What is Echinococcosis or Hydatidosis?
oie.int/doc/ged/D13941.PDF

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