

REGIONAL VETERINARY LABORATORIES REPORT

July 2024

Regional Veterinary Laboratories (RVLs) carried out necropsy examinations on 335 carcasses and 33 fetuses during July 2024. Additionally, 1,466 diagnostic samples were tested to assist private veterinary practitioners with the diagnosis and control of disease in food producing animals. This report describes a selection of cases investigated by the Department of Agriculture, Food and the Marine's (DAFM) veterinary laboratories in July 2024.

The objective of this report is to provide feedback to veterinary practitioners on the pattern of disease syndromes at this time of the year by describing common and highlighting unusual cases. Moreover, we aim to assist with future diagnoses, encourage thorough investigations of clinical cases, highlight available laboratory diagnostic tools, and provide a better context for practitioners when interpreting laboratory reports.

Cattle

Pneumonia, enteritis, and blackleg were the most common diagnoses at necropsy in cattle in the RVLs during July 2024.

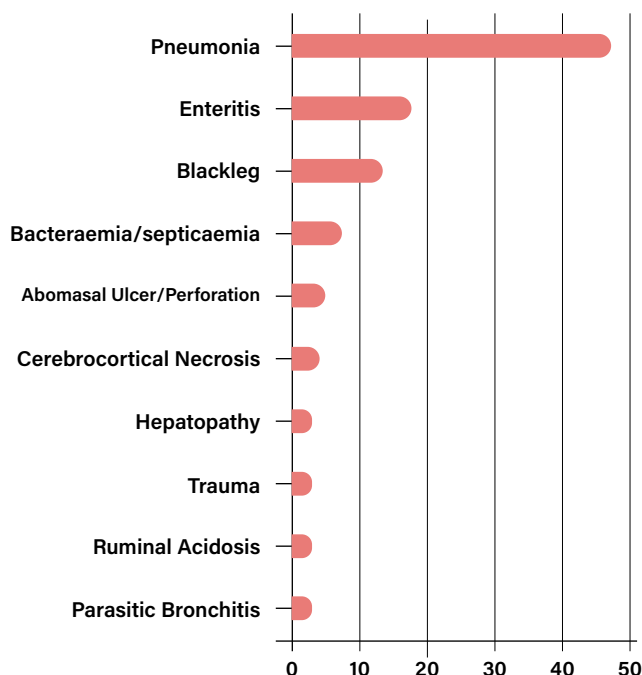


Table 1: The most common diagnoses in cattle submitted for necropsy in July 2024.

Gastrointestinal Tract

Coccidiosis

Two calves, approximately five months old, were submitted as summer scour suspects. Both had very liquid intestinal contents with raised multifocal coalescing erosive and proliferative lesions on the intestinal mucosa of the ileum. The small intestine contents were blood-tinged in sections. No significant agents were detected on culture or McMaster; however, there had been recent treatment which likely affected results. On histopathology, there was severe chronic/active enteritis, with multifocal crypt abscessation and large numbers of coccidia visible. Coccidiosis was diagnosed and a review of control was advised. A major challenge in diagnosis of this condition is that there is much enterocyte destruction prior to oocyst formation, and faecal examination of individual animals may yield disappointing results. It is important to remember that the absence of oocysts on McMaster is not evidence of the absence of pathogenic coccidia. Peak of clinical signs may not coincide

with peak oocyst shedding. Clinical signs of diarrhoea may precede oocyst output and/or may continue after the number of oocysts decrease. Samples from a representative number in the group is recommended rather than individual sampling.



Figure 1: Chronic enteritis in a calf from which coccidia oocysts were detected. Photo: Aideen Kennedy.

Parasitic gastroenteritis and parasitic bronchitis

A five-month-old calf was submitted to Kilkenny RVL with a history of sudden death; three cohort animals had also died. The post-mortem revealed a severe pneumonia with caudal bullous over-inflation and 'ground glass' emphysema, there were a large number of lungworms seen in the airways. The mucosal surface of the abomasum was roughened with a Moroccan-leather appearance. The contents of the large intestines were loose. 9,000 trichostrongyle eggs per gram (EPG) were detected in the faecal sample; this, together with the finding of large numbers of lungworm, suggests that the control of parasitism on this farm required immediate review.



Figure 2: Abomasal mucosa with roughened appearance associated with hyperplastic gastric glands in a calf with extremely high trichostrongyle egg count. Photo: Maresa Sheehan.

Haemorrhagic abomasal ulcer

A cow was submitted to Kilkenny RVL with a history of collapse and death. There was a large clot in its abomasum associated with a bleeding abomasal ulcer.



Figure 3: A haemorrhagic abomasal ulcer, the bleeding blood vessel is outlined in blue. Photo: Maresa Sheehan.

Intestinal volvulus

A nine-week-old heifer calf was submitted to Limerick RVL, the calf was found dead with bloat and a "twisted gut" was suspected. An intestinal volvulus, or torsion along the long axis of the mesenteric root was revealed, both the large and small intestines were inflamed and distended with bloody watery contents. The rumen contained wet, green, porridge-like contents with a pH of 5.2 (normal rumen pH 5.5-7.0) and the lungs were pale in colour.



Figure 4: Intestinal volvulus involving both the large and small intestines, which are inflamed and distended. Photo: Brian Toland.

Abomasitis

A three-year-old Friesian cow was submitted to Limerick RVL with a history of milk drop, inappetence and passing bloody faeces with no response to treatment. Necropsy disclosed a severe necrotic abomasitis with marked oedema of the abomasal wall and dark red watery contents. One possible differential diagnosis, abomasal volvulus, was not identified. *Escherichia coli* was cultured and results for fungal growth and *Clostridia sordellii* and *Clostridia septicum* were negative. *Clostridium perfringens* Beta Toxin was detected in intestinal contents by enzyme-linked immunosorbent assay (ELISA). Histopathology of the abomasum revealed a multifocal, necrotising, fibrinosuppurative abomasitis with gram positive cocci and rods present. Beta toxin positive and gram-positive rods identified suggestive of *C. perfringens* enterotoxaemia which can be responsible for severe intestinal damage.



Figure 5: Necrotic abomasitis in a cow. Photo: Brian Toland.

Mycotic rumenitis

Sligo RVL examined the carcass of a two-week-old calf which had been noticed with severe diarrhoea and polydipsia of water rather than milk. The calf was then bucket-fed with milk and oral rehydration therapy. On post-mortem examination, severe dehydration was noticed. There were white adhesions and milk present in the rumen. There was severe abomasal ulceration. *Candida* sp. was cultured from the rumen. Yeasts were cultured from faeces. On histopathology of the rumen, there was diffuse, acute, severe necrotising fungal rumenitis with abundant hyphae and pseudohyphae and bacterial colonies present. The liver presented with multifocal acute necrotising hepatitis and mild reactive portal inflammatory infiltration. While the initial cause of the diarrhoea was not fully elucidated, fungal rumenitis can occur after bucket- or bottle-feeding or drenching with milk, due to the milk being deposited in the rumen rather than in the abomasum as a result of insufficient oesophageal groove closure.

Respiratory Tract



Figure 6: Well-demarcated cranioventral necrotising bronchopneumonia in the lung of a calf. Photo: Rebecca Froehlich-Kelly.

Pneumonia

The carcass of a three-month-old calf which had been noticed with prolonged ill-thrift and pneumonia was submitted to Sligo RVL. The farmer had lost a further six animals. Post-mortem examination revealed pneumonia with well-demarcated, severe multifocal necrosis of the right cranioventral lung lobe. Gross findings are typical of *Mycoplasma bovis* involvement.



Figure 7: Cranioventrally-distributed pneumonia. Photo: Brian Toland.

Limerick RVL examined a four-month-old heifer calf, from a calf to beef system, that did not respond to treatment for pneumonia. Post-mortem examination revealed consolidation of over 50 per cent of the lungs, cranioventrally-distributed, with visible and palpable small abscesses on the surface and in the body of the lungs. Lymph nodes were markedly enlarged. *Trueperella pyogenes* was cultured and there were very strong positives on polymerase chain reaction (PCR) for *Mycoplasma bovis*, *Pasteurella multocida* and *Histophilus somni*.



Figure 8: Lungworms (*Dictyocaulus viviparus*) visible in the lower airways. Photo: Alan Johnson.

Parasitic bronchitis

A six-month-old Limousin-cross weanling, with a recent history of respiratory distress, was presented to Limerick for necropsy. Three dead weanlings had been reported in the previous five days. It was from a large dairy herd of 250 cows, and the calves were vaccinated against clostridial diseases and viral pneumonia. On gross post-mortem examination, there was a lobular-type pneumonia, with emphysema over the middle lobes. A large number of lungworm larvae were visible in the lower airways. No significant bacterial pathogens were isolated.



Figure 9: 'Ground glass' emphysema in a case of lungworm (*Dictyocaulus viviparus*) infection. Photo: Aideen Kennedy.

A six-month-old weanling with respiratory symptoms was submitted to Kilkenny RVL. Two others in the group had died. On examination, the lungs were very heavy and there was a gross interstitial pneumonia with multifocal

'ground glass' emphysema. Large numbers of lungworms (*Dictyocaulus viviparus*) were visible in the airways. Almost 9,000 trichostrongyle eggs per gram were recorded on McMaster results. A review of parasite control, including lungworm control, on the farm was recommended.

Poisonings



Figure 10 : Jaundiced liver in a case of copper poisoning. Photo: Brian Toland.

Copper poisoning

Limerick RVL examined a five-month-old Friesian heifer calf that did not respond to treatment; the calf was at grass on 2.5kg of meal, presented with inappetence, inflamed nose and vulva, and dark-coloured urine. Leptospirosis was suspected. Main findings at necropsy were an orange discolouration of the liver with a distended gall bladder, kidneys were enlarged with a dark brown colour, and there was no urine present in the bladder. Copper concentration in the liver tissue was 4.23mmol/kg. Histopathology using a Rubeanic acid stain revealed copper in the cells of the portal tracts and central vein areas of the liver, and a diagnosis of copper toxicity was made. The source of copper was not identified and blood testing of cohorts was advised.



Figure 11: Enlarged, dark-brown kidneys in a case of copper poisoning. Photo: Brian Toland.

Musculoskeletal

Blackleg

In July 2024, Sligo RVL diagnosed several cases of blackleg in bovine animals. In one case, a three-month-old calf was affected. It had been observed sick and lying separate from the group with lameness in the left hind leg. On post-mortem examination, there was extensive swelling of the musculature around left hip and inguinal area, descending along medial and cranial leg as far as tarsus. There was a focal area of dry emphysematous myositis in gluteal muscles with severe intermuscular haemorrhage and subcutaneous oedema. No trauma noted to bones or joints. *Clostridium chauvoei* was detected by fluorescent antibody technique (FAT). In a second case, an 18-month-old heifer was affected which had been noticed sick before death. On post-mortem examination, there were multifocal areas of dry gangrenous myositis and haemorrhagic oedema which emitted a characteristic sweet, sickly smell upon incision.

Miscellaneous



Figure 12: A mediastinal mass diagnosed as a lymphoma on histopathology. Photo: Aideen Kennedy.

Lymphoma

A two-year-old dairy heifer had a history of ill-thrift for approximately three weeks before being euthanised and was submitted to Kilkenny RVL for necropsy. On gross examination, there was a large mediastinal mass – approximately football-sized. It was firm and nodular. There were multiple variably-sized, randomly-distributed white lesions on the liver, most noticeable on the capsular surface but extending throughout the parenchyma. Histopathology revealed a lymphoma with metastasis to the liver. The animal returned a negative result to enzootic bovine leukosis on serology.



Figure 13: Multifocal masses on the liver due to metastasis of a lymphosarcoma. Photo: Aideen Kennedy.

Sheep

Parasitic gastroenteritis, pneumonia, and Jaagsiekte were the most common diagnoses at necropsy in sheep in the RVLs during July 2024.

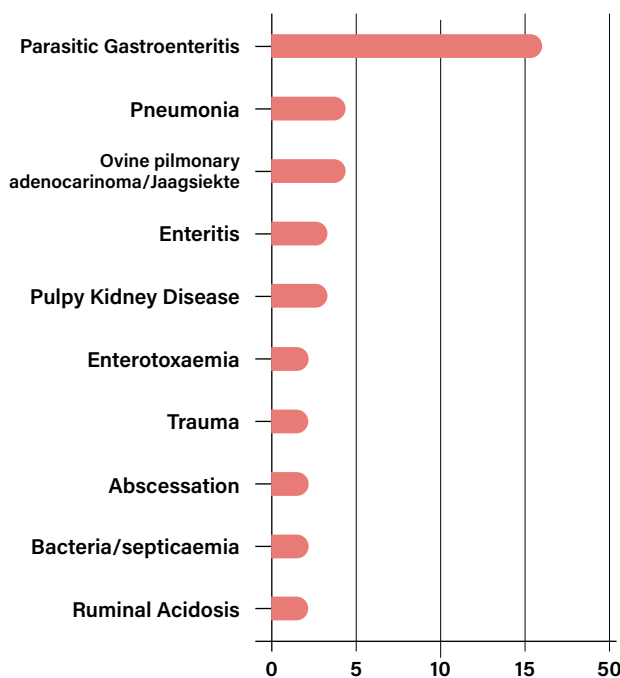


Table 2: The most common diagnoses in sheep submitted for necropsy in July 2024.

Gastrointestinal Tract

Haemonchosis

A two-month-old lamb was submitted to Limerick RVL with a history of respiratory signs and of having deteriorated very quickly. On external examination, the mucous membranes were white in colour, and opening into the abdomen revealed ascites and subcutaneous oedema. The abomasum was filled with dark-red liquid and multifocal pinpoint ulcers on the abomasal mucosa with oedema of abomasal folds and a heavy burden of *Haemonchus contortus* worms present. Small intestine mucosa was inflamed with watery brown contents; a trichostrongyle egg count of 30,000 EPG and severe levels of coccidia oocysts

were detected on parasitology. Lungs, liver, and kidneys were very pale in colour. A diagnosis of acute haemonchosis and severe coccidia infection were made. Clinical signs of acute infection include abnormal breathing and heart rates, collapse, and sudden death, as seen in this case. There is little effective immunity to *H. contortus*, so adults are at risk of disease too. Control and prevention relies on regular faecal egg counts, pasture management, and strategic anthelmintic use. The adult female worm can release between 5,000 and 10,000 eggs per day and diarrhoea is not a typical clinical sign associated with haemonchosis. Advice was given for submission of faecal samples from untreated cohorts for further faecal egg counts and coccidia.



Figure 14: High numbers of *Haemonchus contortus* visible on the abomasal mucosa. Photo: Aideen Kennedy.

A ewe was submitted to Kilkenny RVL; it was the fourth death in the flock. On necropsy, the mucous membranes were very pale. There were large numbers of *H. contortus* parasites in the abomasum. On McMaster examination, there was over 13,000 trichostrongyle eggs per gram. Examination of cohorts for signs of anaemia and a review of parasite control was recommended.

Clostridial enterotoxaemia

A four-month-old lamb was found dead and submitted to Kilkenny RVL. There had been two prior deaths in the flock. On necropsy, there was a fibrin clot in the pericardial sac, the lungs were congested. The rumen contained a frothy content with some undigested grain and the pH was marginally low. The epsilon toxin of *C. perfringens* was detected by ELISA in the intestinal contents and enterotoxaemia was diagnosed. A review of vaccination protocols was advised.

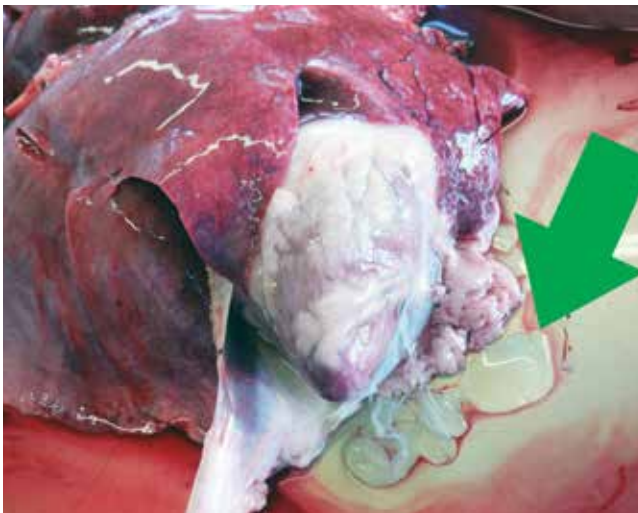


Figure 15: Fibrin clot escaping from the pericardium (arrow) in a case of clostridial enterotoxaemia. Photo: Aideen Kennedy.

Respiratory Tract

Sligo RVL examined the carcase of a two-year-old ram which had been found dead without any prior signs of illness. On post-mortem examination, the left lung was completely effaced by a large abscess. There was chronic pleuritis. There was peritonitis on the liver with pale areas throughout the parenchyma. *T. pyogenes* was cultured from lung and liver. Ovine pulmonary adenocarcinoma (OPA) or Jaagsiekte virus was detected from lung tissue by PCR. Pulmonary abscessation was the most significant finding and was diagnosed as cause of death; however, there was underlying infection, with Jaagsiekte sheep retrovirus the causative agent of OPA.

Miscellaneous



Figure 16: Skin lesions in the case of a lymphosarcoma in a ewe: presenting as several raised nodules in and under the face. Photo: Rebecca Froehlich-Kelly.

Lymphoma

The carcase of a four-year-old ewe was submitted to Sligo RVL after euthanasia. In the previous three weeks, several cutaneous growths and erosions had been noticed; these had increased progressively and the animal deteriorated. On post-mortem examination, there were multiple, non-

encapsulated, infiltrative, white fleshy masses in various sizes up to 10 cm in diameter throughout the body and affecting all organs.



Figure 17: Multiple masses in the abdomen, adhering in multiple locations to intestinal loops in a case of a lymphosarcoma in a ewe. Photo: Rebecca Froehlich-Kelly.

On histopathology of several organs, the findings were similar. There were unencapsulated masses consisting of expansive sheets of round cells invading and compressing surrounding tissue. A lymphosarcoma was diagnosed.



Figure 18: Multiple masses in both kidneys in case of a lymphosarcoma in a ewe. Photo: Rebecca Froehlich-Kelly.

Alpaca

A 20-year-old alpaca failed to respond to treatment and was euthanised and submitted to Kilkenny. Pneumonia was evident on post-mortem examination, approximately 30 per cent of the lungs were consolidated cranioventrally. There was undigested grain in the stomach contents and the pH was acidotic. On histology, there was a marked suppurative bronchopneumonia. *E. coli* was cultured from the lungs; however, recent treatment may have affected culture results.

Avian



Figure 19: A swelling on the ventral neck revealed to be an impacted crop. Photo: Brian Toland.

A four-month-old Copper Maran pullet from a backyard flock was submitted to Limerick RVL with a history of sudden-onset breathing difficulties, mouth open and gaping. A diet of layers' pellets, apple cider, lettuce, broccoli, and grass had been fed. On external examination, there was a firm, tennis ball-sized swelling on the ventral aspect of the neck in the region of the oesophagus and crop. Incision revealed a mass of compacted long grass and meal. The size and location of the mass pressing against upper airways would account for breathing difficulties and a diagnosis of progressive asphyxiation was made due to the obstruction. Chickens/hens do not have teeth to break down food by chewing but instead have mechanical breakdown within the digestive system. Chopping broccoli and lettuce to make it easier to digest was advised.



Figure 20: Impacted material found in the crop of a Copper Maran pullet. Photo: Brian Toland.