



**Animal &
Plant Health
Agency**



Great Britain small ruminant quarterly report, disease surveillance and emerging threats

Volume 28: Quarter 2 – April to June 2024

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Introduction and overview

This quarterly report reviews disease trends and disease threats in Great Britain (England, Scotland and Wales) for the second quarter of 2024, April to June. It contains analyses carried out on disease data gathered from the Animal and Plant Health Agency (APHA), the Veterinary Services division of Scotland's Rural College (SRUC) and partner postmortem providers and intelligence gathered through the Small Ruminant Species Expert networks. In addition, links to other sources of information, including reports from other parts of the APHA and the Department of Environment, Food and Rural Affairs (Defra) agencies, are included. A full explanation of [how data is analysed](#) is provided in the annexe available on GOV.UK.

APHA's Emerging and Endemic Disease Alert System (EEDAS)

This is a component of the communications from our scanning surveillance network and a new system that the APHA uses to keep you up to date with significant disease alerts and information, projects, publication of reports and other items. This is independent of the notifiable disease alert system. To receive these notifications please respond to siu@apha.gov.uk, providing your preferred:

- email address you would like us to use
- mobile telephone number if you wish to receive text alerts

We hope that you find this EEDAS messaging system to be beneficial, and any suggestions or feedback are welcome.

Issues and trends

Weather

Further details to the monthly summaries below can be found at the [Met Office climate summaries](#) and the [Met Office UK temperature, rainfall and sunshine anomaly graphs](#).

April: the weather was unsettled, wet and dull with below average sunshine hours. The mean temperature was average, but all counties recorded over 100% of the average rainfall. Scotland and northern England were particularly wet, recording 160% and 176%, respectively, of the average April rainfall.

May: the UK experienced its warmest May on record, in a series going back to 1884. The first half of the month saw average rainfall, but amounts increased for most areas by the end of the month, resulting in the UK recording 116% of the average May rainfall. Much of this was concentrated in England, especially northern England, which saw 155% of its average May rainfall.

June: the temperature was cooler than average, with temperatures in the first 2 weeks below average and above average for the last 2 weeks. England and Wales both recorded just over half of their average rainfall. Scotland was only slightly below average with provisionally 98% of the typical rainfall, and northern Scotland was the only region to end the month with above average rainfall, recording 132% of the average rainfall.

The wet weather will increase suitable habitat for the intermediary host of both liver fluke and rumen fluke and may cause an increase in incidence. The nature of these diseases is such that increases will only be seen a few months later.

Industry

Agriculture and Horticulture Development Board (AHDB) lamb market updates

- Prices: for the week ending 29 June, [the GB deadweight new season lamb Standard Quality Quotation \(SQQ\)](#) averaged 747 pence per kilogram (p/kg). Prices peaked at 893p/kg at the end of May, before steadily falling away throughout June, following the key demand period.
- Production: clean sheep slaughter in June sat at 866,000 head, down 19% on the same month of the previous year. Sheep meat production in the UK totalled 20,500 tonnes in June. Average carcass weights decreased throughout the quarter, to sit at 19.8kg in June, down 1.3kg from April.
- Trade: [year to date \(Jan-May 2024\)](#) imports of sheep meat totalled 26,800 tonnes, up 40% on the same period of the previous year. We saw increased volumes of sheep meat imported from Australia and New Zealand, particularly in March to support demand from religious festivals. Imports from New Zealand were impacted by wet weather in 2023, reducing their export capacity, resulting in a low base for comparison. Exports have increased to 31,200 tonnes for the year to date (January to May 2024), down 8% on the same period of 2023. These exports totalled at a value of £241 million.
- Demand: in the 12 weeks to the 7 July, [spend on lamb in retail](#) increased by 5.5% year-on-year, and volumes grew by 1.0% (+160 tonnes). Prices paid rose by 4.4% on average across all lamb cuts and products. Primary lamb volumes decreased by -3.7% year-on-year. However, volume increases were seen in total steaks (5.1%), mince (0.8%) and diced or cubed (13.4%) due to an increase in shopper numbers. Leg roasting joints also saw volumes purchased increase by 1.2% due to an increase in volumes purchased per buyer.

Acknowledgment for this update: Becky Smith, AHDB.

Bluetongue serotype 3 (BTV-3)

No bluetongue cases were confirmed in the UK in this quarter. Bluetongue virus is a notifiable disease. Suspicion of bluetongue virus in animals must be reported to the Animal and Plant Health Agency on 03000 200 301 in England, on 03003 038 268 in Wales, and to the local Field Services Office in Scotland.

The government published their [Bluetongue disease control framework set out on GOV.UK](#) on 23 May 2024.

Further guidance and information are available on the [Ruminant Health & Welfare site, Bluetongue: information and guidance for livestock keepers \(GOV.UK\)](#) and on [Bluetongue: how to spot and report it \(GOV.UK\)](#).

Schmallenberg

Following acute infection (that is mostly subclinical in sheep) during the autumn of 2023, Schmallenberg virus was confirmed as the cause of deformed lambs and calves being born from December 2023 onwards. [Surveillance findings in sheep and cattle](#) and an [updated Schmallenberg disease guide](#) have been published. The total number of confirmed cases up to the end of June 2024 was 2 in goats, 262 in sheep and 103 in cattle.

Unusual diagnoses

Perivascular wall tumour in a 6-week-old lamb

A solid subcutaneous mass from the prescapular region of a 6-week-old lamb was received for histopathological examination, which identified it as a neoplasm of mesenchymal origin. The morphological appearance and arrangement of the cells suggested it was a perivascular wall tumour, and a myopericytoma or a haemangiopericytoma were considered as the most likely. There are no documented cases of perivascular wall tumours in sheep, however, they are frequently seen in dogs, and occasionally in cats and horses. These tumours are usually solitary, often multilobulated and most commonly arise around the joints of limbs, although they have been described in other regions. They can be circumscribed, or infiltrative, and typically surgical removal is curative. However, when infiltrative, these tumours can invade along fascial planes, leading to frequent recurrences with increased malignancy.

Dandy Walker Malformation and suspected Dwarfism

The carcass of a neonatal lamb was submitted to Starcross Veterinary Investigation Centre to investigate the birth of around 20 lambs with “large bellies”. Affected lambs were

reportedly weak and lethargic and died within a few days. The gross findings in the submitted lamb included a truncated cervical spinal column, kyphosis of the thoracic spine with reduced thoracic volume, hypoplasia of the left lung, shortened long bones, a globular-shaped heart, and hypoplasia of the cerebellum.



Figure 1: Gross appearance of a lamb with Dandy Walker Malformation. Note the likely truncation of the spinal column, particularly the cervical area.

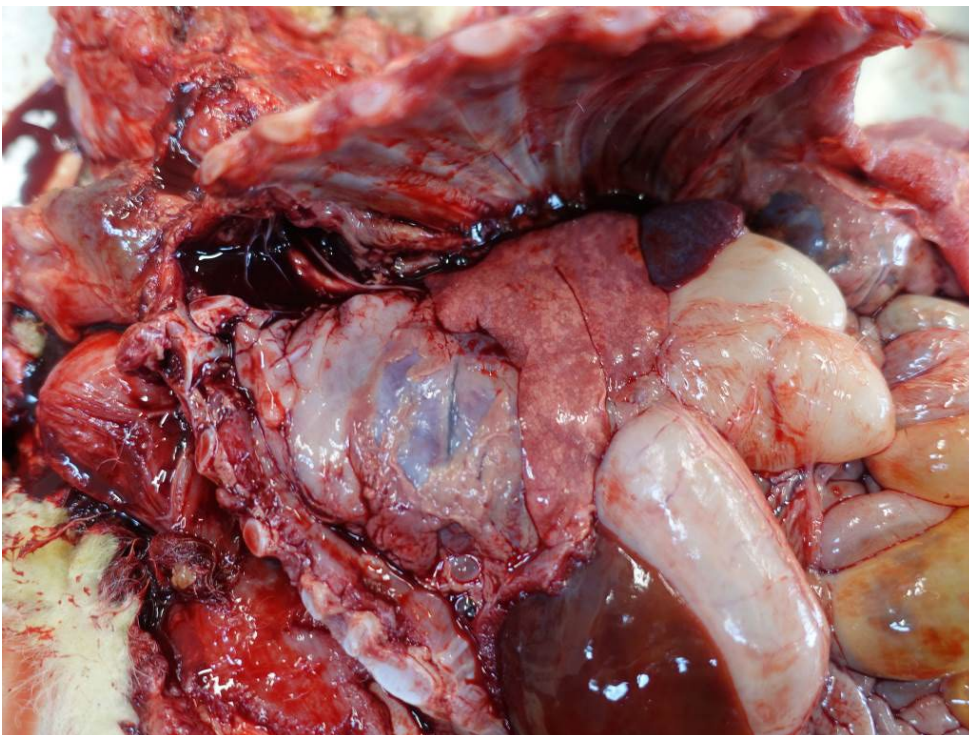


Figure 2: Hypoplasia of the left lung in a lamb with Dandy Walker Malformation.

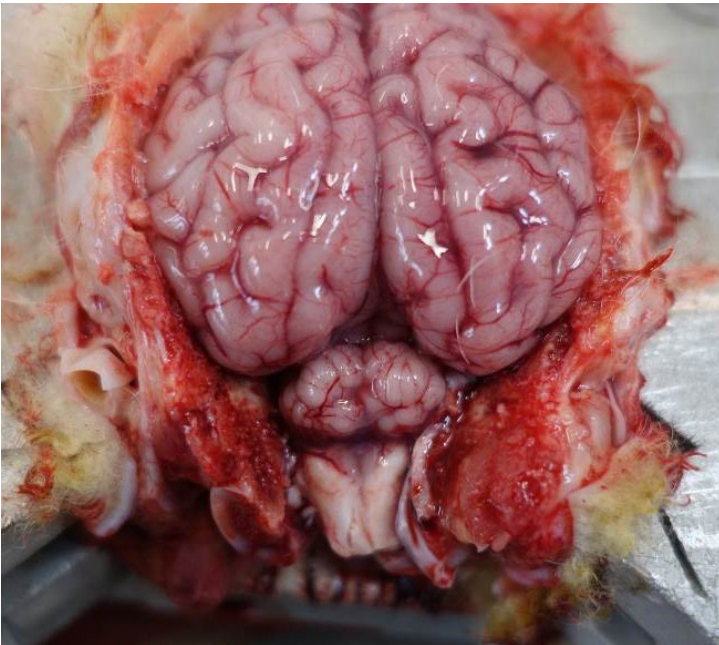


Figure 3: Hypoplasia of the cerebellum in a lamb with Dandy Walker Malformation.

Histopathology of the brain identified agenesis of the cerebellar vermis, consistent with Dandy-Walker malformation, which has been previously reported in the UK in both sheep (Pritchard and others, 1994) and cattle (Jeffrey and others, 1990). The skeletal changes were more unusual and were similar to those described in spondyloepiphyseal dysplasia congenita or hypochondrogenesis in humans, both of which are forms of dwarfism arising from fundamental defects in collagen synthesis. Despite histopathological examination of additional tissues, this diagnosis could not be definitively confirmed. A genetic basis to these abnormalities was suspected.

Cerebellar Abiotrophy

A problem of recumbency and inability to stand in neonatal lambs was investigated by the euthanasia and submission of a typical case. Joint ill was initially suspected by the submitting veterinary surgeon. Gross examination was unremarkable, which pointed towards a primary neurological condition, and brain and spinal cord were submitted for histopathological evaluation to investigate further. This identified changes in the cerebellum, including subnormal weight and Purkinje neuronal degeneration and loss, consistent with a diagnosis of Cerebellar Abiotrophy (CA). This condition has been reported in several breeds of sheep including Welsh Mountain, Charolais, Wiltshire, Merino, Corriedale, and Border Leicester and is thought to have a genetic basis.

Atlanto-occipital joint malformation

Malformation of the occipital condyles and the atlanto-occipital joint, causing focal compressive injury to the spinal cord, was diagnosed in an 11-month-old Hebridean lamb. This was the second lamb from this flock to develop progressive ataxia, leading to falling

over, circling, and recumbency. Postmortem examination identified a misshapen atlas and an asymmetrical skull, with the right side being smaller than the left side. The cerebral hemispheres were similarly asymmetrical and appeared to have an area of compressed tissue on either side. Occipital condyle dysplasia has been described in Jacob lambs and the genetic basis of this condition is believed to be linked to the polycerate (4-horned) phenotype (Johnson and others, 1994; Lee and others, 2017). This diagnosis was potentially significant and would appear to be the first case described in the Hebridean breed. Further genetic investigations and discussions with the Hebridean Sheep Society were recommended.

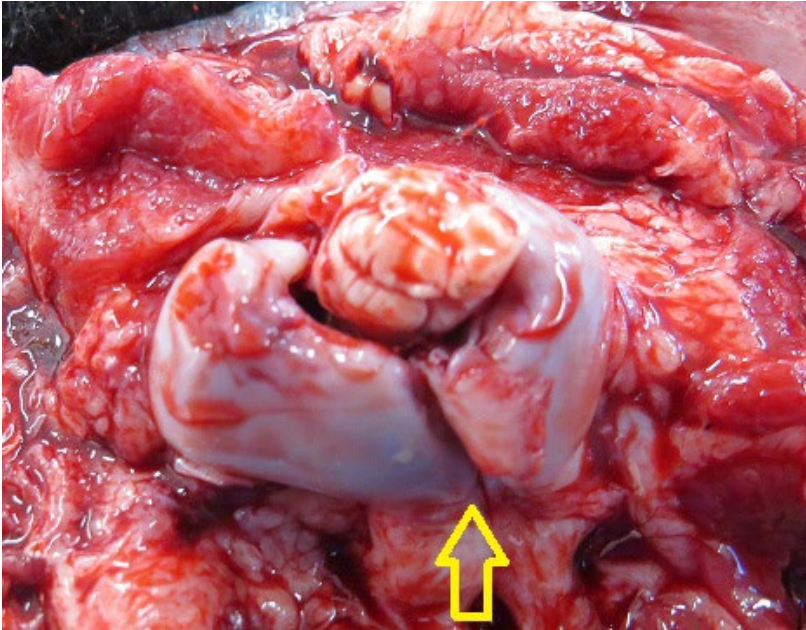


Figure 4: Incomplete and misshapen atlas (arrow) in a lamb with atlanto-occipital joint malformation.



Figure 5: Asymmetrical appearance of the cerebral hemispheres in a lamb with Atlanto-occipital joint malformation.

References

Pritchard GG, Jeffery M, Welchman D de B, Windsor RS and Morgan G. 'Multiple cases of Dandy-Walker malformation in three sheep flocks' *Veterinary Record* 1994: 135(7) 163-164.

Jeffrey M, Preece BE and Holliman A. 'Dandy-Walker malformation in two calves' *Veterinary Record* 1990: 126(20) 499-501.

Johnson GC, Turk JR, Morris TS, O'Brien D and Aronson E. 'Occipital condylar dysplasia in two Jacob sheep' *The Cornell Veterinarian* 1994: Jan 1;84(1):91-8.

Lee AM, Fletcher NF, Rowan C and Jahns AH. 'Occipital condylar dysplasia in a Jacob lamb (*Ovis aries*)' *Open Veterinary Journal* 2017: 7(2):126-131. doi: 10.4314/ovj.v7i2.8. Epub 2017 May 20. PMID: 28652978; PMCID: PMC5471745.

Goat disease surveillance dashboard outputs

Table 1: Great Britain scanning surveillance five most frequent goat submission diagnoses in quarter 2 (Q2) of 2024, Q2 of 2023, and Q2 for 2015 to 2024

	5 most frequent diagnoses Q2 2024	5 most frequent diagnoses Q2 2023	5 most frequent diagnoses Q2 2015 to 2024
1	Parasitic Gastroenteritis (PGE)	Johne's Disease	Parasitic Gastroenteritis (PGE)
2	Johne's disease	Parasitic Gastroenteritis (PGE)	Johne's Disease
3	Clostridium perfringens type D infection	Coccidiosis	Clostridium perfringens type D infection
4	Coccidiosis	Clostridium perfringens type D infection	Coccidiosis
5	Hypocupraemia or hypocuprosis	Hypocupraemia or hypocuprosis	Listeriosis (encephalitis)

Sheep disease surveillance dashboard outputs

Table 2: Great Britain scanning surveillance 10 most frequent sheep submission diagnoses in Q2 of 2024, Q2 of 2023, and Q2 for 2015 to 2024

	10 most frequent diagnoses Q2 2024	10 most frequent diagnoses Q2 2023	10 most frequent diagnoses Q2 2015 to 2024
1	Parasitic gastroenteritis (PGE)	Parasitic gastroenteritis (PGE)	Parasitic gastroenteritis (PGE)
2	Pneumonia due to M. haemolytica	Pneumonia due to M. haemolytica	Pneumonia due to M. haemolytica
3	Coccidiosis	Abortion due to Toxoplasma	Coccidiosis
4	Clostridium perfringens type D infection	Coccidiosis	PGE due to Nematodirus

5	Tickborne fever	Clostridium perfringens type D infection	Clostridium perfringens type D infection
6	Abortion due to Toxoplasma	Enzootic abortion	Abortion due to Toxoplasma
7	Enzootic abortion	Pneumonia due to other causes	Enzootic abortion
8	Intestinal torsion (Red Gut)	PGE due to Nematodirus	Pneumonia due to other causes
9	PGE due to Haemonchus	Pneumonia due to mycoplasma	Intestinal torsion (Red Gut)
10	PGE due to Nematodirus		Chronic fascioliasis

Parasitic gastroenteritis (PGE) excludes PGE due to Haemonchus and PGE due to Nematodirus.

Changes in disease patterns and risk factors

Syndromic analysis for sheep

Syndromic alerts were raised this quarter, in comparison to the quarter average of the previous 5 years for Great Britain, for the following diseases.

Increases:

- Hereditary or developmental abnormalities – not otherwise specified (NOS) (APHA only)
- Malnutrition (SRUC only)
- Trueperella pyogenes infection
- Tick pyaemia
- Intestinal torsion (SRUC only)
- Clostridium perfringens type B infection (SRUC only)
- PGE Haemonchus
- Diagnosis not listed – skin disease
- Tickborne fever (SRUC only)
- Fetopathy associated with Campylobacter (SRUC only)

Decreases:

- Border disease
- Nephrosis
- Enzootic abortion

Parasitology

Haemonchosis

There has been a significant increase in incidents of haemonchosis in sheep, as a percentage of diagnosable submissions, in Great Britain in Q2 of 2024, compared to Q2 in the previous 5 years (as shown in figure 6). A total of 23 incidents were diagnosed in Q2 2024, compared to 11 in 2023 and 2022 respectively. Most of the cases were in England and Wales as shown in figure 7.

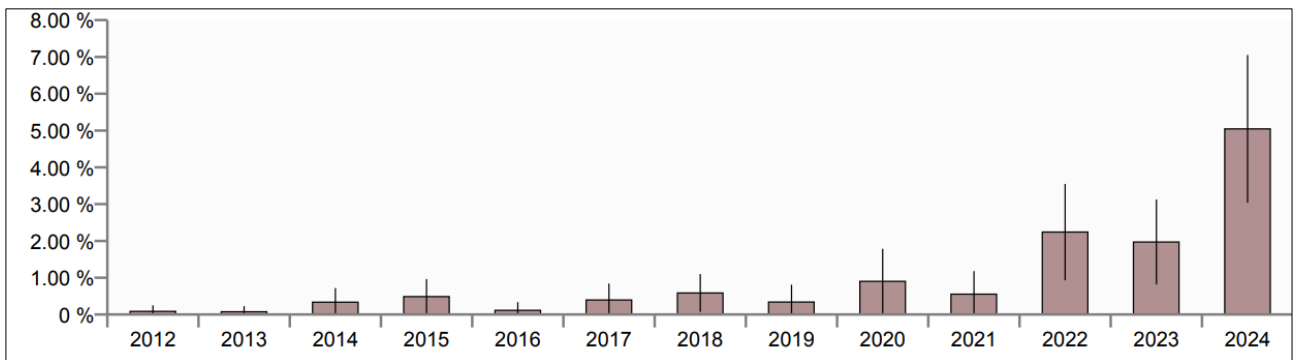


Figure 6: GB incidents of haemonchosis as percentage of diagnosable submissions for Q2; a significant increase can be seen for 2024 compared to previous years.

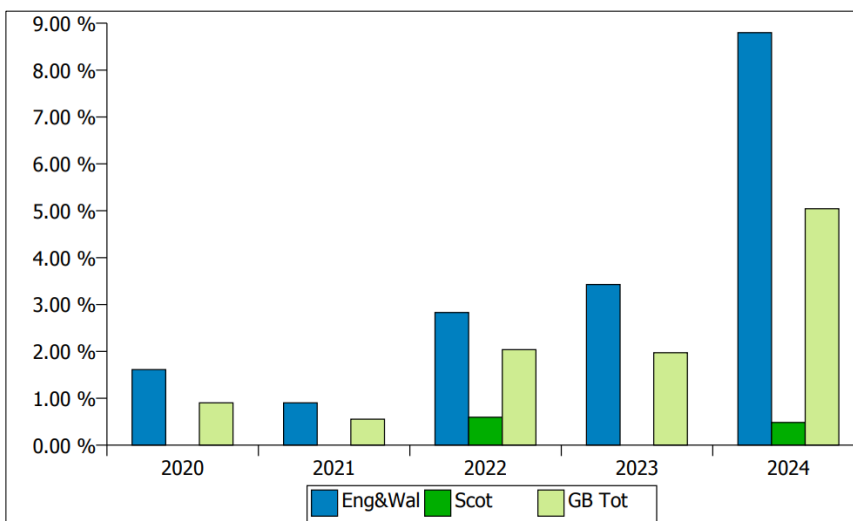


Figure 7: Incidents of haemonchosis as percentage of diagnosable submissions for Q2, showing an increase over the years, with most of the cases in England and Wales.

Systemic disease

Hereditary and developmental abnormalities not otherwise specified (NOS)

As was seen in the first quarter of this year, the number of diagnoses of hereditary or developmental abnormalities not otherwise specified (NOS) during Q2 of 2024 was significantly increased, compared to the same quarter for the preceding 5 years. Most of these cases are related to the resurgence of Schmallenberg virus (SBV) causing malformed aborted or stillborn lambs during the early lambing season of 2024, although a small number of cases will be due to other causes.

The Veterinary Investigation Diagnosis Analysis (VIDA) code for hereditary and developmental abnormalities NOS can be assigned when an abnormality is apparent at birth, for which there is not a definitive aetiology or diagnosis. It includes those likely to be caused by SBV infection based on foetal fluid or dam serology, and typical gross pathology, but without a positive polymerase chain reaction (PCR) result or pathognomonic histopathology. If deformities are identified in a lamb which are typical of in-utero SBV infection (for example, musculoskeletal, central nervous system deformities) a negative SBV PCR result does not necessarily rule out SBV as the cause. This is because the foetus may have been able to clear the virus by producing neutralising antibodies in utero.

Malnutrition NOS

The number of diagnoses of malnutrition not otherwise specified (NOS) during Q2 of 2024 was significantly increased compared to the same quarter for the previous 5 years. Most diagnoses were made in pre-weaned animals (figure 8). This is linked to the very cold and prolonged wet spring weather, which put a severe strain on the energy requirements required to maintain body temperatures. It also had a negative effect on grass growth which is likely to have resulted in lower milk production from the dams.

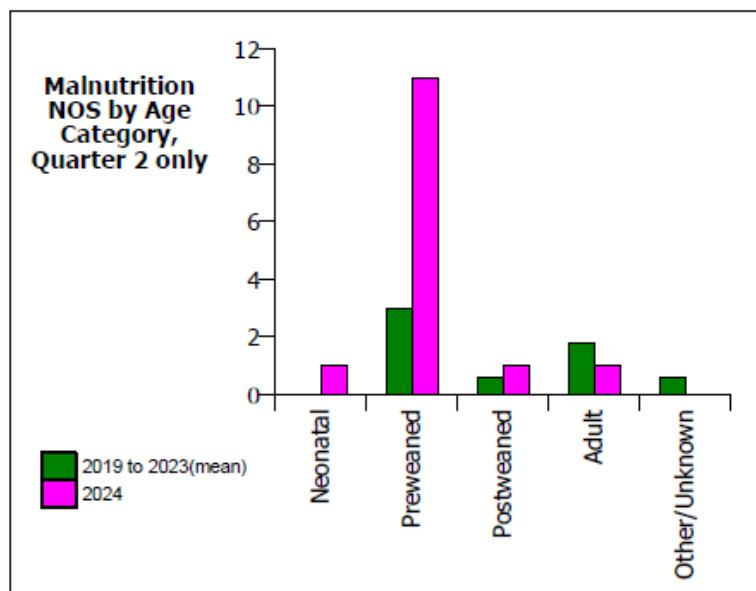


Figure 8: The distribution of diagnoses of malnutrition NOS by age category made during Q2 of 2024, showing that most were in pre-weaned animals.

Scotland was over-represented with 64% of incidents of malnutrition NOS being made in GB during Q2. Very wet weather may have contributed to cases of malnutrition in preweaned animals due to mismothering. The following case was reported by the SRUC: a three-week-old Suffolk cross tup lamb was found dead and submitted for postmortem examination. The cardiac and peri-renal fat had been metabolised, the rumen and abomasum contained a large quantity of ingested grass, and there was no evidence of milk within the digestive tract. The intestinal contents were also indicative of a grass diet and the faeces were pelleted. The weather the previous night had been very wet, and it was suggested that this lamb had become separated from the ewe or had been rejected or mismothered. It was also advised to check the dam for mastitis. Similar findings were recorded in lambs from multiple flocks during April, none of which were particularly thin, suggesting that they had initially been receiving sufficient milk.

Tick pyaemia

(Also see tick-borne fever under the circulatory system).

The number of diagnoses of tick pyaemia during Q2 of 2024 was increased compared to the same quarter for the preceding 5 years, although numbers were small (7 incidents). The majority of incidents were in Scotland, and this represented a marked increase in the numbers diagnosed in Scotland compared to the same quarter for the previous 5 years (figure 9). All cases were in pre-weaned animals.

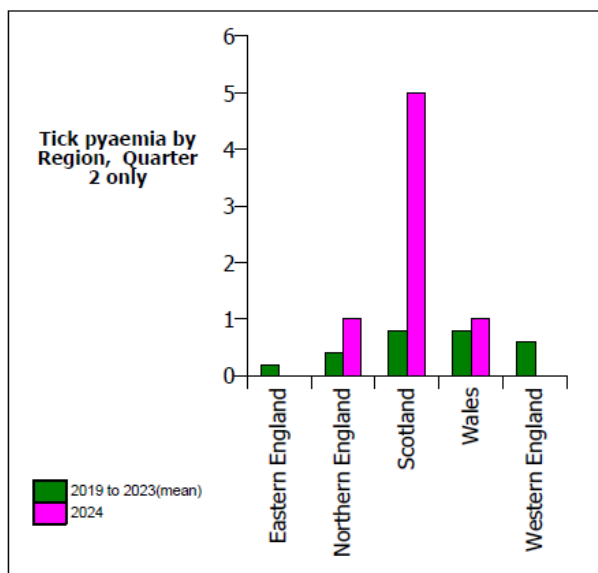


Figure 9: The highest number of diagnoses of tick pyaemia during Q2 were in Scotland.

Tickborne fever and tick pyaemia were identified as the cause of death in a 5-week-old lamb, submitted to Penrith Veterinary Investigation Centre to investigate sudden deaths in strong, healthy lambs at pasture. The lambs were turned out approximately 3 weeks prior, onto a mixture of upland and lowland, lakeside grazing. Other lambs were reported with hindlimb lameness, and hindlimb paresis in some cases. No vaccines were used within the flock.

On postmortem examination, the lungs had a diffuse, red-purple, mottled appearance affecting all lung lobes with blood oozing from the cut surface, the spleen was grossly enlarged. Small, ill-defined areas of white discolouration were scattered throughout the parenchyma of the liver and both renal cortices.

Staphylococcus aureus was cultured in pure growth from the spleen and lung, and as part of a mixed flora from the liver, consistent with *Staphylococcus aureus* bacteraemia. *Anaplasma phagocytophilum* was detected by PCR, confirming concurrent tick-borne fever.

A review of the risk for tick exposure in each field, through assessment of potential habitat and vegetation, and via tick dragging, if necessary, was advised. This can help to select lower risk pastures for the grazing of young lambs in subsequent years. In addition,

preventative treatments with synthetic pyrethroids or dipping, once lambs are of a suitable weight and age, is likely to play an important role prior to grazing higher risk pastures.

Border disease

There has been a decrease in incidents of border disease in sheep as a percentage of diagnosable submissions in Great Britain in Q2 of 2024, compared to Q2 in the last 5 years. Although numbers are small, this decrease continues the downwards trend in diagnoses of border disease over the preceding 4 years (figure 10).

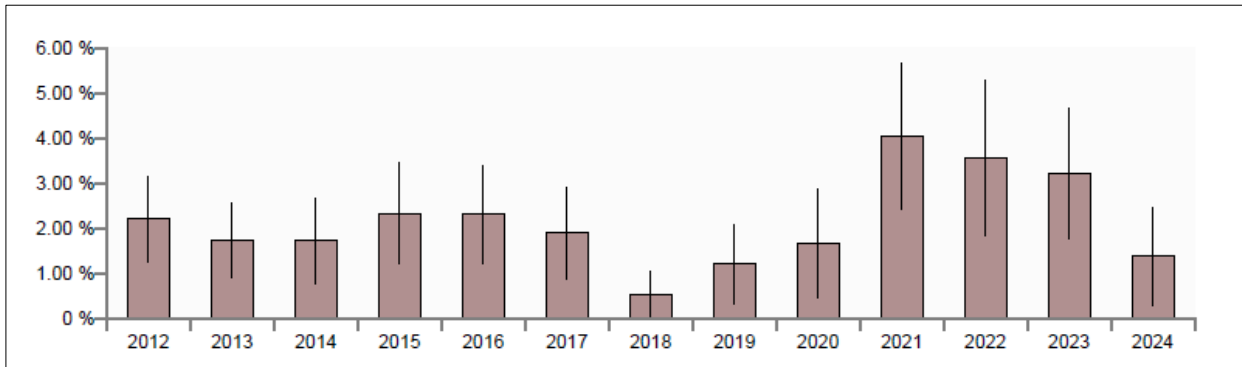


Figure 10: GB incidents of border disease as percentage of diagnosable submissions for Q2; a downwards trend can be seen over the last 4 years.

Concurrent infection with border disease and maedi visna (MV) virus caused significant losses in a commercial sheep flock, as a result of abortions and neonatal lamb deaths. Three 5-day-old lambs were examined with 2 testing positive for border disease virus and low ZST results confirmed hypogammaglobulinaemia in all cases. The carcasses of 2 thin ewes were also submitted. Ewe 1 had a purulent peritonitis centred around the uterus and tested positive for border disease virus on PCR. The second ewe had pneumonia from which *Pasteurella multocida* was cultured, and it was strongly seropositive for maedi visna. Sixteen ewes were blood sampled and 11 proved seropositive for MV. Further testing of 12 homebred ewe hoggs found that 3 were seropositive for MV and 9 for border disease.

Erysipelothrix rhusiopathiae bacteraemia

Two 10-day-old lambs were submitted to Penrith Veterinary Investigation Centre for postmortem examination. Lamb 1 was diagnosed with Cryptosporidiosis and lamb 2 was diagnosed with *Erysipelothrix rhusiopathiae* bacteraemia. The submitted lambs were born indoors and were found dead shortly after being turned out. Approximately 10 other lambs had been lost. Both lambs had moderate faecal staining around the perineum. The umbilicus of lamb 2 was wet and there was no evidence of navel dressing. The carpal joints of lamb 2 contained multiple small solid yellow clots and a moderate volume of yellow fluid bilaterally, and the abdominal cavity contained a moderate volume of yellow fluid. Testing detected *Cryptosporidium* spp. in the faeces of lamb 1 and the identification of

moderate to marked enteritis on histopathological examination. *Erysipelothrix rhusiopathiae* was cultured from the carpal joints and liver of lamb 2.

Listerial encephalitis, CAE and CLA in a herd of goats

Two 2-and-a-half-year-old goats, and a 5-year-old goat, were submitted to Carmarthen Veterinary Investigation Centre for postmortem examination, to investigate recumbency and ataxia in 12 animals and the death of 7, in a herd of dairy goats. Some of the other affected animals had recovered with antibiotic treatment.

Significant findings included:

- encephalitis with features consistent with central nervous listeriosis were detected in all 3
- *listeria monocytogenes* was isolated on direct culture from only one of the goats (prior antibiotic treatment may have affected cultures)
- both the younger goats had severe ocular lesions, and histopathology demonstrated a severe ulcerative keratitis, likely a result of facial nerve dysfunction
- all goats examined were positive for caprine arthritis encephalitis (CAE) on antibody ELISA
- one of the younger goats had abscesses present within the body typical of caseous lymphadenitis (CLA), and was confirmed by culturing of *Corynebacterium pseudotuberculosis*

Listerial encephalitis accounted for the clinical signs seen in these goats. *Listeria* spp. is ubiquitous in the environment, with a particular reservoir in soil. Infection is usually associated with silage feeding, with a higher pH in poorly preserved silage or spoilt silage contaminated by soil allowing multiplication of the pathogen. A review of the total mixed ration (TMR) fed and a change of the silage portion of the ration was recommended to aid in preventing further cases.

In addition, the CAE antibody ELISA result was positive for all goats. Maedi-visna (MV) and caprine arthritis-encephalitis (CAE) are persistent lentivirus infections of sheep and goats and are often grouped together as the small ruminant lentiviruses (SRLVs). Clinical and subclinical MV and CAE are associated with progressive, mononuclear cell inflammatory lesions in the lungs, joints, udder and central nervous system. Mastitis is common in both species, and its economic significance may be underestimated. Laboured breathing associated with emaciation, caused by progressive pneumonitis, is the predominant feature in clinically affected sheep, whereas polyarthritis is the main clinical sign in goats. However, most lentivirus infected sheep and goats are largely asymptomatic, but remain persistent carriers of virus.

One route of CAE and MV viruses' transmission is via colostrum and milk. The source of horizontal transmission, in the absence of lactation, remains unknown. However, faeces and lung fluids are known to harbour infectious virus.

One of the 2-and-a-half-year-old goats had CLA. CLA is a chronic, contagious, pyogenic disease of sheep and goats that causes abscesses in lymph nodes, lungs and viscera. The main source of infection is infected material from discharges entering open wounds, but inhalation is also possible, and infection of the tonsils via ingestion of the organism. Kids can be infected by bacteria in milk. After introduction into a clean herd, disease prevalence steadily increases reaching a high incidence within 2 to 3 years.

Salmonella Dublin septicaemia in pre-weaned goat kids

Two goat kids aged 10 and 19-days-old were submitted to investigate the deaths of 7 out of 12 kids over the previous week. The younger kid had been unwell for a few days; observed to be hunched up, lethargic, floppy, and intermittently sucking from the dam. The other died suddenly.

Significant findings at postmortem examination included yellow dry crusting present around the ear tags and base of the navel. A few joints contained bright yellow joint fluid or a small amount of fibrin. The spleens and livers were enlarged with fibrin over the serosal surface and omentum. Large volumes of bright yellow peritoneal fluid were present with large yellow fibrin clots (figure 11).

Fully sensitive Salmonella Dublin was cultured in systemic distribution from both goat kids. Incidents of Salmonella in goats in the UK are rare, and case reports in the literature are sparse.

Control of an outbreak should be based upon improving husbandry and hygiene. This should include management of the neonatal kids to ensure optimal colostrum intake, dipping of navels, and maintenance of clean and dry pens. The principles are the same as those suggested for control of S. Dublin in cattle herds (Henderson and Mason, 2017).

It is not known whether the carrier status seen with S. Dublin infection in cattle also occurs in goats, although it is thought unlikely that goats become subclinical carriers as they are not the natural host for S. Dublin.

Investigation into possible sources revealed a tenuous indirect link with cattle, with run-off rainwater downhill from a field where cattle grazed, into the goat shed. This incident happened prior to kidding and a protective moat was created to prevent this happening again.



Figure 11. Fibrinous peritonitis and jaundice in a goat kid with systemic salmonellosis due to *Salmonella* Dublin.

Henderson K and Mason C. '[Diagnosis and control of *Salmonella* Dublin in dairy herds](#)' In Practice 2017: volume 39, pages 158-168.

Malignant catarrhal fever in a goat

Malignant catarrhal fever was diagnosed in an adult goat from an open farm by Thirsk Veterinary Investigation Centre. It had been euthanased by the attending veterinary surgeon on welfare grounds, as it had failed to respond to treatment for respiratory disease. The gross findings were consistent with pneumonia and although pasteurellosis was a primary differential, preliminary bacteriology was unremarkable. Histology was undertaken with the findings suggestive of a potential viral insult, particularly of a herpesvirus infection. Molecular analysis confirmed the presence of Ovine Herpesvirus 2, whilst additional histology identified a non-suppurative encephalitis with circumferential lymphohistiocytic vasculitis, and a subacute to chronic, lymphoplasmacytic and histiocytic interstitial nephritis. A few references were provided to the referring veterinary surgeon for consideration, including Jacobsen (2007).

Jacobsen B and others. '[Malignant catarrhal fever-like lesions associated with ovine herpesvirus-2 infection in three goats](#)' Veterinary Microbiology 2007: volume 124, issues 3–4, pages 353-357.

Salmonellosis due to *Salmonella* Dublin

A single case of Salmonellosis due to *Salmonella* Dublin infection in sheep was diagnosed by APHA this quarter. The case involved a two-month-old lamb with a history of scour and weight loss before death. Twelve lambs from the group of 37 had died since turnout one month previously. Faecal culture isolated *Salmonella* Dublin. Cattle are deemed the most

probably source of infection for sheep and a review of on-farm risk factors and potential sources was recommended.

Salmonellosis NOS

Following on from Q1 2024, there was a decrease in diagnoses of Salmonellosis NOS this quarter with 4 (0.79%) incidents reported in 2024, compared to 13 (2.05%) in 2023. Three cases were reported by APHA and one case by SRUC. All incidents involved *Salmonella enterica* subspecies *diarizonae* 61:k:1,5,(7), and as per previous quarters it was typically detected in association with other enteric pathogens.

Skin disease

Ulcerative dermatitis

Starcross received 2 separate submissions to investigate suspect cases of ulcerative dermatitis. The first case involved a batch of 120 Scottish half-bred ewes, with cases first appearing in November 2023, and with 14 ewes affected. This progressed over the next few months to affect over 100 of the ewes, with 50% of those affected showing signs of lameness. Skin lesions varied in nature from chronic scabs to ulcerative areas which bled profusely on examination. In some cases, the joint closest to the skin lesion was swollen. Swabs were submitted for laboratory testing from 3 typically affected animals. In all 3 cases *Streptococcus dysgalactiae dysgalactiae* was isolated on bacterial culture, and in one case *Treponema phagedenis* and *Treponema medium* were detected by PCR. Orf virus was not detected. The laboratory findings, gross appearance of the lesions and clinical progression were highly suggestive of ulcerative dermatitis.

The second case involved a group of 170, 11-month-old lambs, with 67 lambs developing ulcerated lesions with scab formation, over the ears, face, and legs (figures 12 and 13). Again, *Streptococcus dysgalactiae dysgalactiae* was isolated on bacterial culture of swabs taken from the skin lesions. Parapox (orf) virus was detected in one lamb, although there were no changes seen on histopathology to indicate an active role.

Streptococcus dysgalactiae dysgalactiae appears to be a consistent bacteriological finding in these cases, but its significance remains unclear. Currently, the epidemiology and exact causes of the condition is poorly understood. Staton and others described ulcerative leg lesions in yearling lambs and postulated that the presence of *Fusobacterium necrophorum* and *Streptococcus dysgalactiae* in most of these lesions supports their role in the aetiopathogenesis of these lesions.

The following are characteristics of this condition: focal areas of ulceration (singular or multiple) affecting haired skin areas, most commonly on legs, typically from below the carpus or tarsus to the coronary band (with no associated hoof sloughing). Lesions may also occur on the head (lips or nose, ears, eyelids, poll). The ulcers range from open raw lesions (may have overlying crust) to lesions with a bed of roughened granulation-like

tissue, which is hyperaemic and bleeds readily when touched. The granulation tissue is often covered by necrotic material being discharged from the wound. The soft tissues around the lesion are swollen (cellulitis) but the lesion itself is ulcerative, not raised or markedly proliferative. Lesions on the distal limb often cause lameness, and the cellulitis is more obvious around these lesions. It has been reported in yearlings and mature sheep, but not lambs. Morbidity ranges from a few individuals to a large percentage of the flock (>80%), especially when introduced to a naïve flock. Lesions close to the coronary band can resemble Contagious ovine digital dermatitis (CODD) and coinfection can occur in an individual sheep. Lesions respond readily to amoxycillin but can recur.



Figure 12: Scabbed lesion below the eyelid of a sheep affected with ulcerative dermatitis. (With kind permission from the submitting private veterinarian).



Figure 13: Ulcerative lower leg lesion and swollen joint. (With kind permission from the submitting private veterinarian).

Reference:

Staton GJ, Crosby-Durrani H, Roberts G, Duncan JS, Seechurn N, Blowey R and Evans NJ. ['Novel ulcerative leg lesions in yearling lambs: Clinical features, microbiology and histopathology'](#) Veterinary Microbiology 2020: volume 247.

Respiratory disease

There were above average numbers of Mannheimia pneumonia and Mannheimiosis/Pasteurellosis diagnoses recorded for APHA this quarter, with Mannheimia pneumonia cases making up 10.07% of diagnosable submissions (typical range 4.04% to 11.36% of diagnosable submissions) and Pasteurellosis/Mannheimiosis diagnosis was 2.82% of diagnosable submissions (typical range of 0.79% to 2.99% of diagnosable submissions). The diagnoses were predominantly in preweaned lambs of up to 8 weeks of age. In 90% of the Mannheimia pneumonia cases, and almost half of the Mannheimiosis/pasteurellosis cases, either malnutrition or co-infections were found. These included endoparasitism (cryptosporidiosis, coccidiosis or PGE), or other respiratory pathogens such as Mycoplasma ovipneumoniae, suggesting a combination of disease factors were contributing to the disease issues in the affected lambs.

Out of 59 respiratory disease cases diagnosed by APHA this quarter, 27 had Mycoplasma ovipneumoniae confirmed by DGGE-PCR testing. Mycoplasma ovipneumoniae is now more commonly detected in very young lambs than it used to be, including being diagnosed in pneumonic lambs as young as 2 weeks of age. It is often difficult to determine the likely role of Mycoplasma in such young lambs, with histologically or grossly identifiable lesions normally only detected in lambs from 3 to 4 weeks of age. This increasing trend in younger animals may relate to factors such as increasing flock sizes, more variable immunity within flocks (due to bought-in replacements), or a tendency for longer penning or housing at lambing time. Prolonged housing around and after lambing, particularly if sheds are overstocked or have inadequate ventilation, can significantly increase the risk of respiratory infections such as Mycoplasma in a flock, particularly in very young lambs, which can lead to ongoing issues with pneumonia in those lambs even weeks or months after. The prolonged cold and wet spring weather necessitated prolonged housing by many livestock keepers.

Circulatory disease

Tick-borne fever (TBF)

(Also see tick pyaemia under systemic disease).

There was a marked increase in tick-borne fever (TBF) diagnoses recorded by SRUC during this quarter, with 27 diagnoses where the previous average for SRUC for this quarter had been 9. Most incidents were recorded in preweaned lambs, with increased case numbers recorded on lowland and hill or upland farms, mostly in Scotland, but also in

Northeast England. There was also an increase in tick pyaemia cases in preweaned lambs in these same areas, and in Wales.

Although multifocal Staphylococcal organ abscesses or 'tick pyaemia' is considered a typical concurrent complication in sheep infected with tick-borne fever, a range of other diseases, as described below, were also recorded in tick-borne fever positive cases during this quarter.

The carcasses of 3 yearling ewes were submitted to investigate acute onset malaise, recumbency and pyrexia in periparturient ewes which had failed to respond to treatment. Gross post-mortem findings were consistent with ongoing weight loss, and parasitology confirmed a worm burden in all 3 ewes and bacterial cultures indicated a colisepticaemia as the cause of the clinical signs reported. This is an unusual finding in adult animals and suggested there was an underlying immunosuppression. All 3 ewes tested positive for *Anaplasma phagocytophilum* (the cause of TBF), which was the likely cause for the immunosuppression in this case.

A colisepticaemia, presenting as systemic vascular leakage, pulmonary oedema and liver congestion was found in a ewe with ruminal acidosis (the rumen pH was 4.7). *E coli* was isolated in pure growth from the liver, lung, heart blood, and brain. It was considered likely that the ruminal acidosis was the source of the *E coli* infection with systemic spread occurring secondary to the immunosuppression associated with TBF infection and recent parturition.

Tick-borne fever and acute to chronic, suppurative broncho- and pleuropneumonia (figure 14) due to *Mannheimia haemolytica* and *Mycoplasma ovipneumoniae* infections, were identified in 2 thin young ewes submitted for postmortem examination to investigate increasing mortality in a group of 150 fell-grazed ewes.

Multiple coalescing necrotic liver parenchyma lesions and an enlarged spleen were found in a dead 2-and-a-half-week-old lamb that was also PCR positive for TBF. The lamb was from a flock where 4 lambs had died over 48 hours after a brief episode of appearing "hunched" and unwell. *Fusobacterium necrophorum* was isolated from the liver lesions (figure 15), confirming necrobacillosis, and *Mannheimia haemolytica* from multiple organs, confirming systemic pasteurellosis.

TBF was diagnosed as the cause of abortion in three ewes on hill grazing in Scotland, with no other cause of abortion identified.

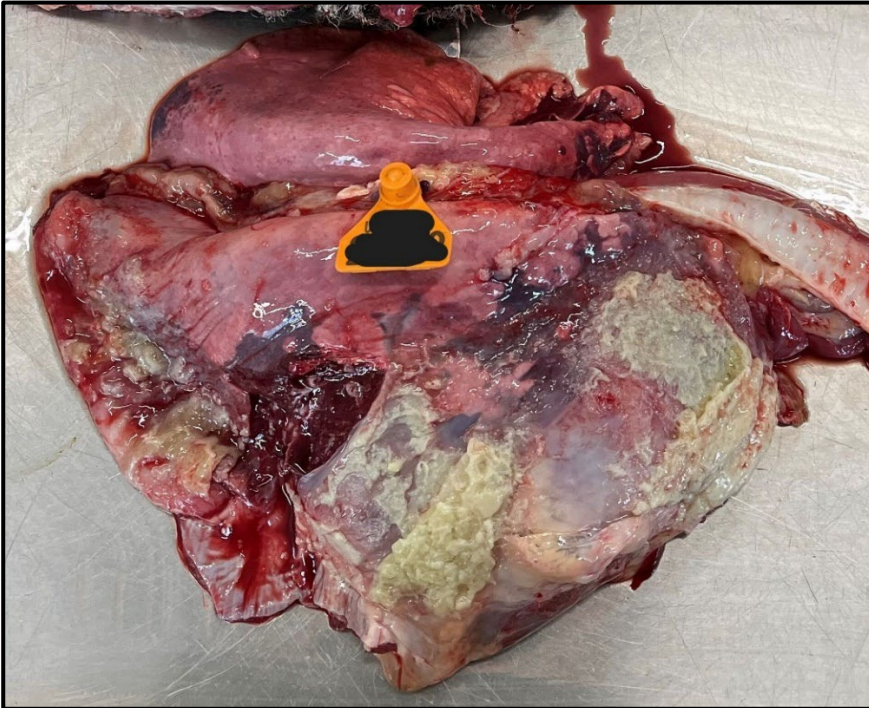


Figure 14: Suppurative broncho- and pleuropneumonia in a young ewe with tick-borne-fever.

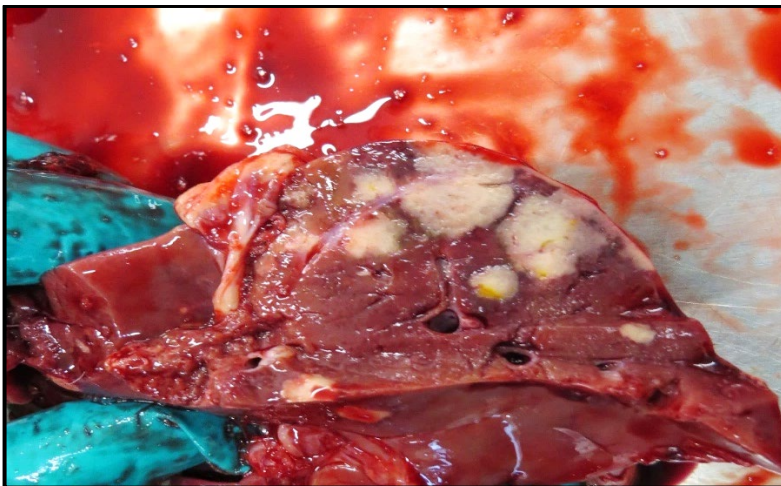


Figure 15: Multiple coalescing necrotic liver parenchyma lesions due to necrobacillosis in a two-and-a-half-week-old lamb that was PCR positive for TBF.

Congenital heart defects in a one-month-old lamb

A one-month-old Valais Blacknose lamb was submitted with a history of lethargy since birth, and with an increasing frequency of non-specific neurological signs and dyspnoea, which had failed to respond to treatment. The main findings on postmortem examination included carcass pallor, ascites, lung atelectasis and congenital abnormalities of the heart, including tricuspid atresia with patent foramen ovale and a ventricular septal defect. As a result, the right ventricle was markedly hypoplastic. These anomalies had ultimately resulted in right-sided heart failure, leading to the ascites and carcass pallor secondary to

circulatory failure seen grossly. Tricuspid aplasia is a very rare anomaly in humans and is almost unheard of in animals but has been described in individual lambs and foals (Bisaillon and others, 1982). The cause is unknown. In addition to the heart pathology, histopathology of the liver also identified vascular changes consistent with a porto-systemic shunt (PSS). No histopathological changes were seen in the brain suggesting the neurological signs seen clinically were most likely a combination of hypoxaemia, and hyperammonaemia as a consequence of the congenital heart and liver anomalies.

Bisaillon A, DeRoth L and Roy R. Congenital Cardiac Anomalies in a Lamb. *Veterinary Pathology* 1982; 19(6):718-720. doi:10.1177/030098588201900620.

Urinary disease

Urolithiasis in an 11-month-old lamb

The carcass of a 11-month-old whether lamb was submitted following penile infections in 8 store lambs over the past 2 months. Both entire and castrates had been affected. Clinical signs were the lambs becoming slow and hunched, with swelling around the prepuce which progressed down the hindlegs. One case responded to antibiotics after being caught early but the rest were unresponsive.

Postmortem examination revealed the subcutaneous tissues of the distal perineum and caudoventral abdomen midline were thickened, pale cream in colour and necrotic. Between the planes of tissue, there was yellow fluid with an odour of urine. In the tissue adjacent to the penis, there were linear, yellow-brown tracts (necrosis) and the tissue adjacent to the prepuce was dark red (figure 14). Within the bladder was a small volume of urine and fine granular white or cream material, which was loosely adhered to the mucosa. There were multifocal petechiae on the dorsal bladder wall. The preputial sheath mucosa was dark red. The structure of the distal penis was grossly distorted due to necrosis, and no urethral process or penile tip was visible. Within the preputial sheath and at the (presumed) tip of the penis, were multiple, white, jagged edged granules, 2mm to 7mm in length (figure 15).

As frequently occurs in affected lambs, urine leakage occurs locally to the urethral blockage causing severe tissue necrosis. There was no uroperitoneum, enlarged bladder, hydroureters or hydronephrosis in this lamb.

An urgent review of the dietary levels of phosphate and magnesium was recommended. Dietary inclusion of >0.6% Phosphate or >0.2% Magnesium promotes the formation of uroliths. A reduction in the amount of dietary concentrate and an increase in roughage can help prevent urolithiasis. The addition of calcium carbonate to increase the calcium: phosphate ratio, or the addition of 4-10% NaCl to the concentrate to promote water consumption can also reduce the risk of the condition. Clinical cases can be treated with an oral solution of ammonium chloride daily to promote urine acidification. It is also possible to add ammonium chloride to the ration, but the advice of a nutritionist is recommended.



Figure 14: Necrosis of the tissues adjacent to the penis in the ventrocaudal abdomen of an 11-month-old lamb, resulting from urethral blockage.



Figure 15: Uroliths in the preputial sheath and necrotic penile tissue in an 11-month-old lamb.

Nervous disease

Louping ill

Compared to Q2 2023, diagnoses of louping ill were considerably increased this quarter, with 9 cases (2.21%) reported in 2024, compared to only 4 cases (0.82%) in 2023. SRUC recorded the biggest increase in case numbers, their highest since 2019, with 8 incidents reported in 2024 compared to 3 in 2023. Cases were typically seen in adult sheep in hill flocks. Diagnoses recorded by APHA remained static.

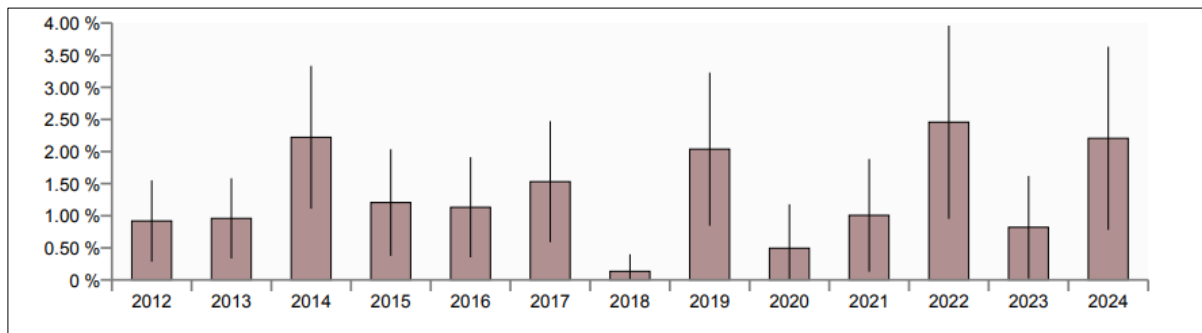


Figure 10: GB incidents of louping ill as percentage of diagnosable submissions for Q2, showing an increase this quarter.

The second quarter of the year is usually uneventful in terms of louping ill diagnoses, with very little in the way of variation in cases seen during this time in previous years. However, 2024 appears to be following a similar pattern to 2019 and 2022 where quarter 2 has seen an increase in case numbers. A study on the seasonal activity of *Ixodes ricinus* by Gray (2008) suggests that with high summer temperatures (average air temperatures 30°C), much of the host-seeking activity of nymphal and adult *I. ricinus* occurs in the late autumn and in the early spring of the following year. This would suggest that a combination of a previous hot dry summer, and variable sheep immunity, has resulted in the increased incidence of disease in 2024. Trend analysis for louping ill remains a challenge due to the small number of cases reported each year, in addition to the effect of climate conditions on tick activity and tick numbers. The situation will continue to be monitored.

Chemical food safety

Chemical Food Safety Reports can be found at: [APHA chemical food safety reports \(livestock\) \(GOV.UK\)](#)

Antimicrobial use and resistance

The Veterinary Antibiotic Resistance Sales and Surveillance (UK-VARRS) Report 2022 has been published by the Veterinary Medicines Directorate (VMD): [Veterinary Antimicrobial Resistance and Sales Surveillance 2022 \(GOV.UK\)](#)

This latest UK-VARSS report continues to document downward trends in sales of veterinary antibiotics in the UK. In addition, the latest RUMA Targets Task Force report can be found at: [RUMA-TTF-Report-2023-FINAL.pdf](#)

The Medicine Hub, a voluntary industry initiative, developed and managed by AHDB, was launched in 2021 and provides a central location for the collection of medicine data, including antibiotic use: [Medicine Hub for dairy, beef and sheep farmers | AHDB](#)

Centre of Expertise for Extensively Managed Livestock (COEEML)

The COEEML was developed by APHA to address potential surveillance gaps for extensively managed animals. Extensive management of livestock potentially makes regular or close inspection for disease detection more challenging. The Centre is based at the APHA Veterinary Investigation Centre in Carmarthen; however, it is a Great Britain-wide resource and forms part of the wider veterinary surveillance system operated by APHA. For more details, please see the [COEEML](#) pages on the Vet Gateway.

TSE

Surveillance for transmissible spongiform encephalopathies (TSEs) is carried out in the United Kingdom in animals susceptible to the disease. This includes cattle, sheep and goats. The main aim is to monitor trends in disease incidence and prevalence, to evaluate the effectiveness of TSE disease controls.

There are 2 categories of surveillance – passive and active.

Passive surveillance

This is when an animal with clinical signs suspicious of BSE or scrapie is reported to an APHA Office to be investigated. Such cases are slaughtered, and the examination of the brain determines whether the animal was affected by a TSE.

APHA has been recording and analysing data from reported cases in cattle since the start of the BSE epidemic in 1986, and for scrapie in sheep and goats since this disease became notifiable in 1993.

Active surveillance

The UK carries out active surveillance for TSEs. The UK has:

- tested cattle since July 2001
- tested sheep and goats since January 2002

- conducted a survey in 2007 and 2008 of farmed and wild deer

Updated TSE statistics are available at: [TSE disease surveillance statistics \(GOV.UK\)](#)

Horizon scanning

International Disease Monitoring (IDM) horizon-scanning activities monitor for major, notifiable, or new and re-emerging animal disease outbreaks worldwide. This is done to provide an early warning and to assess the risks they may pose to the United Kingdom (UK), particularly for those diseases which impact on animal health and welfare, international trade, public health, or wider society. IDM also assess the risk that animal diseases might come into the UK through the trade in animals or animal products (legal or illegal), through movements of wildlife, or through the movement of fomites and vectors such as insects which may carry infectious disease. These [outbreak assessments](#) are used to guide decisions how to manage or reduce the risks.

[Bluetongue virus in Europe \(GOV.UK\)](#)

[Peste des petits ruminants in Eastern Europe \(GOV.UK\)](#)

[Sheep and goat pox in Europe \(GOV.UK\)](#)

[Epizootic haemorrhagic disease in Europe \(GOV.UK\)](#)

Epizootic Haemorrhagic Disease

Epizootic haemorrhagic disease (EHD) is caused by EHD virus, which is an Orbivirus very closely related to BTV. Like BTV it is spread by *Culicoides* spp. and potentially germplasm, and causes a vascular disease resulting in haemorrhages, mucosal ulceration, and pulmonary oedema. As a result, it is clinically indistinguishable from BTV. Unlike BTV, EHD has a predilection for deer, causing a high mortality rate in particularly susceptible species, but it can also cause fatal disease in cattle. Small ruminants and camelids tend to be subclinically infected, and probably act as a reservoir for infection.

EHD is notifiable. It is present on all continents except Antarctica, but its first incursion into Europe was only in October 2022 when it spread north across the Mediterranean basin. In September 2023 it spread into France and by 28 November, 3527 outbreaks had been reported in Southern France. Models predict it will spread further north into Scandinavia.

Clinical signs include hyperaemia of the mucous membranes, oral ulceration, crusting around the nostrils, respiratory distress, lameness, congestion of the coronary bands, erythema and ulcers on the udder.

[Epizootic Hemorrhagic Disease Virus: Current Knowledge and Emerging Perspectives - PubMed \(nih.gov\)](#)

Bluetongue strains other than BTV3 in Europe

BTV-8 is currently circulating in France. [A risk assessment for BTV-3 and BTV-8 can be found on GOV.UK.](#)

Updates for other bluetongue strains can be found in this [updated outbreak assessment for Bluetongue virus in Europe \(GOV.UK\)](#).

Publications of interest

APHA Surveillance Reports

Monthly APHA disease surveillance reports can be found at this link: [APHA disease surveillance monthly reports \(GOV.UK\)](#)

APHA focus articles in the Veterinary Record can be found at: [APHA focus articles in the Veterinary Record \(GOV.UK\)](#)

SRUC-VS Surveillance Reports

April: [Mycotoxigenesis suspected as a cause of abortion in a sow - 2024 - Veterinary Record - Wiley Online Library](#)

May: [Staphylococcus aureus causing respiratory disease and mastitis in sheep - 2024 - Veterinary Record - Wiley Online Library](#)

June: [Tickborne disease contributing to lamb deaths across Scotland - 2024 - Veterinary Record - Wiley Online Library](#)

Salmonella

The 2022 edition of the Salmonella in animals and feed in Great Britain (previously called Salmonella in Livestock Production in GB) has been published and is now available here: [Salmonella in animals and feed in Great Britain \(GOV.UK\)](#)



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