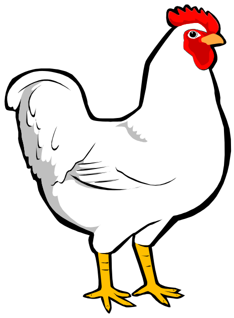
Animal & Plant Health Agency



SRUC

Great Britain Avian Report: Disease Surveillance and Emerging Threats

2024

Highlights

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Contents

Introduction and overview

This annual report reviews disease trends and threats for major poultry and gamebird species in Great Britain (GB) in 2024. It contains findings gathered from the GB scanning surveillance network (made up of APHA and its surveillance pathology partners, and Scotland's Rural College [SRUC] Veterinary Services), as well as intelligence gathered through the Avian Expert Group (AEG). Data from diagnostic submissions to the network are collated into the Veterinary Investigation Diagnosis Analysis (VIDA) database. Diagnoses (VIDA codes) follow strict criteria which are updated in-line with progressing diagnostic techniques and understanding of disease processes. In view of the range of variables affecting voluntary diagnostic submissions, and as the disease status of non-submitting flocks is unknown, the data cannot be extrapolated to infer the levels (prevalence) of diseases in the national flock. Links to other sources of information, including reports from other parts of the APHA and Defra agencies are included. A full explanation of how data are analysed is provided in the Annex available on GOV.UK.

Diagnostic throughput

Data from diagnostic submissions of chickens, turkeys, ducks, geese, and non-wild gamebirds were extracted from the VIDA database. Gamebirds are inclusive of pheasants, partridges, and grouse. Figure 1 shows the total number of submissions to the GB scanning surveillance network for non-wild poultry and gamebirds from 2020 to 2024. Chickens account for the most submissions, followed by non-wild gamebirds and turkeys, with the remainder consisting of non-wild ducks and geese. Submission data from wild birds were excluded, to prevent the figures being skewed by higher numbers of wild birds being submitted for avian influenza surveillance. There were more submissions overall in 2024 compared with 2023. The proportion of bird types submitted has remained stable.

Most submissions in 2024 were non-carcass submissions (72%), which include fixed tissues for histopathology. The diagnostic rate is the proportion of submissions with one or more diagnosis established. Similar to 2023, one or more diagnoses were established in 92% of carcass submissions in 2024, versus 85% of non-carcass submissions.

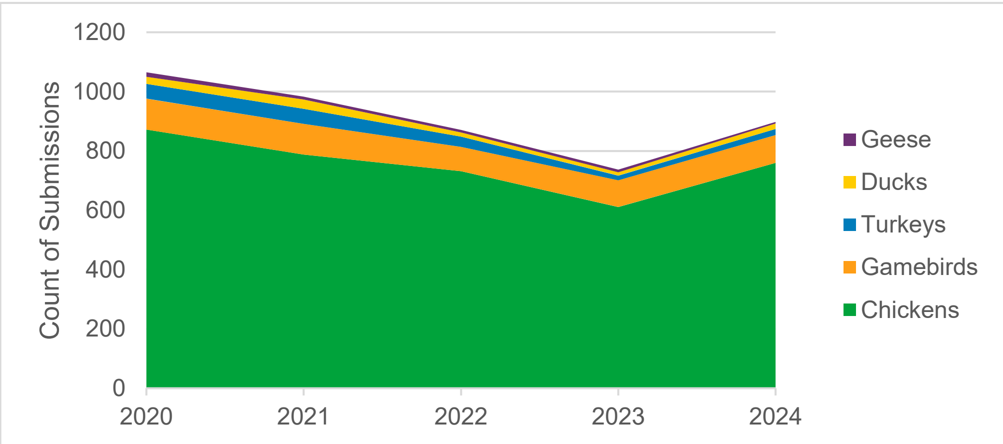

Figure 1: Stacked counts of submissions to the GB scanning surveillance network of chickens, turkeys, ducks, geese and non-wild gamebirds, 2020-2024.

Diagnostic trends

The top 10 diagnoses reached from submissions to the GB scanning surveillance network are discussed below for each species, and in chickens by production type (where data on species and/or production type were provided during the submission process). Submissions were excluded from the analysis where species and/or production type were not provided.

Chickens

Submissions of chickens were identified by the species provided during the submission. The top 10 diagnoses reached in chickens are discussed by production type (broilers, layers and small flocks). There was a total of 760 submissions of chickens in 2024.

Broilers

Submissions of broilers were identified by the purpose provided during the submission (broiler OR broiler breeder), **and** a provided flock size of over 2000 for broilers. All broiler breeders were included, regardless of flock size.

Figure 3 shows the top 10 diagnoses reached each year in broiler chickens from 2020 to 2024. The number of submissions diagnosed with each of the top 10 diagnoses per year ranged from 11 (Colisepticaemia in 2021) to 89 (Chronic bursal atrophy in 2020).

In 2024, Gizzard erosion due to a cause other than adenovirus (not otherwise specified [NOS]) was the most frequently established diagnosis (62 diagnoses). Diagnoses consistently in the top 10 from 2020 to 2024 were Gizzard erosion, either due to adenovirus or NOS; Poor intestinal health; and Inclusion body hepatitis (IBH). Rickets/osteomalacia, Transmissible viral proventriculitis (TVP), Colisepticaemia and Septicaemia were in the top 10 for four out of the five years from 2020 to 2024.

Inclusion body hepatitis (IBH) emerged as a significant re-emerging disease threat in British broilers in late 2024. An increase in cases was described anecdotally by private veterinarians and the APHA pathology team. The condition is associated with fowl adenovirus and can cause very high levels of mortality in young broiler chickens (commonly between 10-21 days of age). One case of IBH was reported as suspect notifiable avian disease [NAD]) and was investigated under the differential diagnoses of negated notifiable report cases (DDNRC) scheme (see Table 2). In some cases, the severity of disease has been reflected in APHA welfare intelligence, with high flock mortality triggering Food Standards Agency (FSA) threshold reports.

Layers

Submissions of layers were identified by the purpose provided during the submission (layer or layer breeders), **and** a provided flock size equal to or greater than 350 birds.

Figure 4 shows the top 10 diagnoses reached each year in layer chickens from 2020 to 2024. The number of layer submissions diagnosed with each condition in the top 10 diagnoses per year was low, ranging from 2 (diagnoses of Avian intestinal spirochaetosis, Egg peritonitis/salpingitis complex and Coccidiosis – *E. necatrix* in chickens, each made the top 10 from two diagnoses in 2023) to 35 (Colisepticaemia in 2021).

Colisepticaemia was consistently the top diagnosis each year from 2020 to 2024, with 32 diagnoses in 2024. The other diagnosis consistently in the top 10 from 2020 to 2024 was Egg peritonitis/salpingitis complex.

Small flocks

Submissions from small flocks (chickens kept as pets, on smallholdings, fancy flocks and small flocks not kept as part of larger scale commercial food production) were identified by the purpose provided during the submission (pet), **or** a provided flock size below 350 for layers and layer breeders, **or** below 2000 for broilers (excluding broiler breeders).

Figure 5 shows the top 10 diagnoses reached each year in chicken small flocks from 2020 to 2024. The number of small flock submissions diagnosed with each condition in the top 10 per year was low, ranging from 2 (Amyloidosis and Curled toe paralysis/riboflavin deficiency in 2023 and Infectious laryngo-tracheitis in 2022) to 28 (Egg peritonitis/salpingitis complex in 2021).

Diagnoses consistently in the top 5 from 2020 to 2024 were Egg peritonitis/salpingitis complex, Marek's disease, Neoplasm NOS (e.g. adenocarcinoma), and Helminthosis NOS (e.g. *Capillaria*). The top diagnosis in 2024 was Egg peritonitis/salpingitis (13 diagnoses).

Gamebirds

Submissions of gamebirds were identified by the species provided during the submission (pheasant, partridge, and grouse). Submissions were included regardless of whether they were described as captive or wild (unlike the data for diagnostic throughput), except for those that tested positive for avian influenza. This was a total of 93 submissions for 2024.

The top 10 diagnoses reached each year in gamebirds from 2020 to 2024 are shown in Figure 6. The number of gamebird submissions diagnosed with each condition in the top 10 diagnoses per year ranged from 1 (several diagnoses in 2020, e.g. Cannibalism) to 23 (Coccidiosis in 2024).

Diagnoses consistently in the top 10 from 2020 to 2024 were Coccidiosis, Spironucleosis, Rotavirus disease, and Helminthosis NOS.

Turkeys

Turkey data are inclusive of all sectors of turkey production, regardless of purpose or flock size. This was a total of 21 submissions for 2024.

Diagnoses consistently in the top 10 from 2020 to 2024 were: Blackhead disease (associated with *Histomonas meleagridis*); Colisepticaemia; and Erysipelas.

An increased number of cases of **Blackhead disease** in turkeys was described by the British Poultry Council in the UK Veterinary Antibiotic Resistance and Sales Surveillance report for 2024, which they attributed to more challenging weather conditions. The number of diagnoses through the GB scanning surveillance network was low but was broadly consistent with previous years.

Ducks

Submissions of ducks were identified by the species provided during the submission but with the exclusion of wild birds. This was a total of 18 submissions for 2024.

Diagnoses included egg peritonitis/salpingitis and coccidiosis. Duck virus enteritis was diagnosed on material submitted for further investigation of a negated notifiable avian disease case.

Geese

Submissions of geese were identified by the species provided during the submission but with the exclusion of wild birds. This was a total of 6 submissions for 2024.

Chicken - Broilers

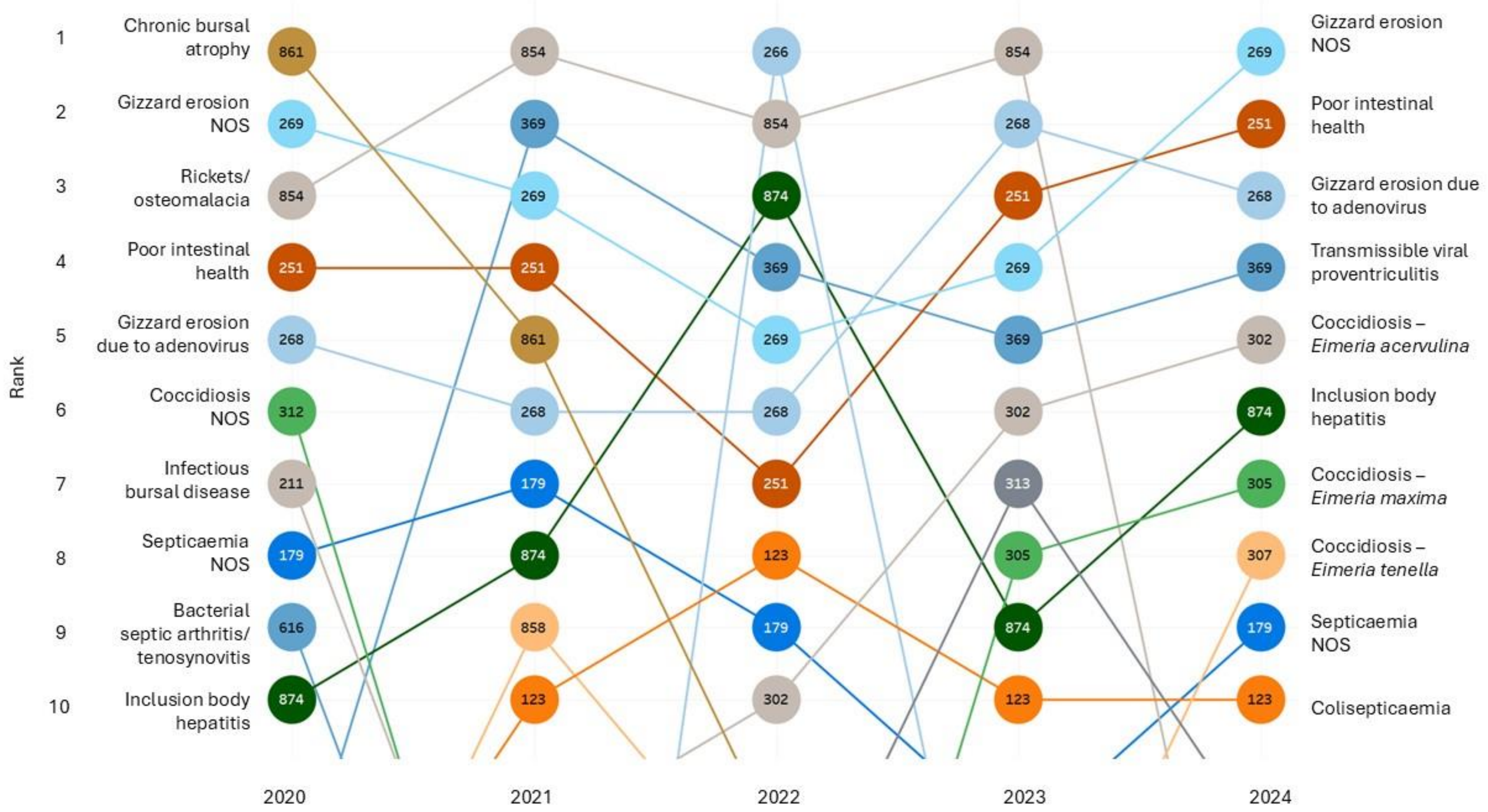

Figure 2: Top 10 diagnoses in broiler and broiler breeder chickens, shown as a bump chart. Numbers within circles represent the APHA VIDA diagnostic codes. See Appendix 2, where the corresponding diagnoses are listed in full.

Chicken - Layers

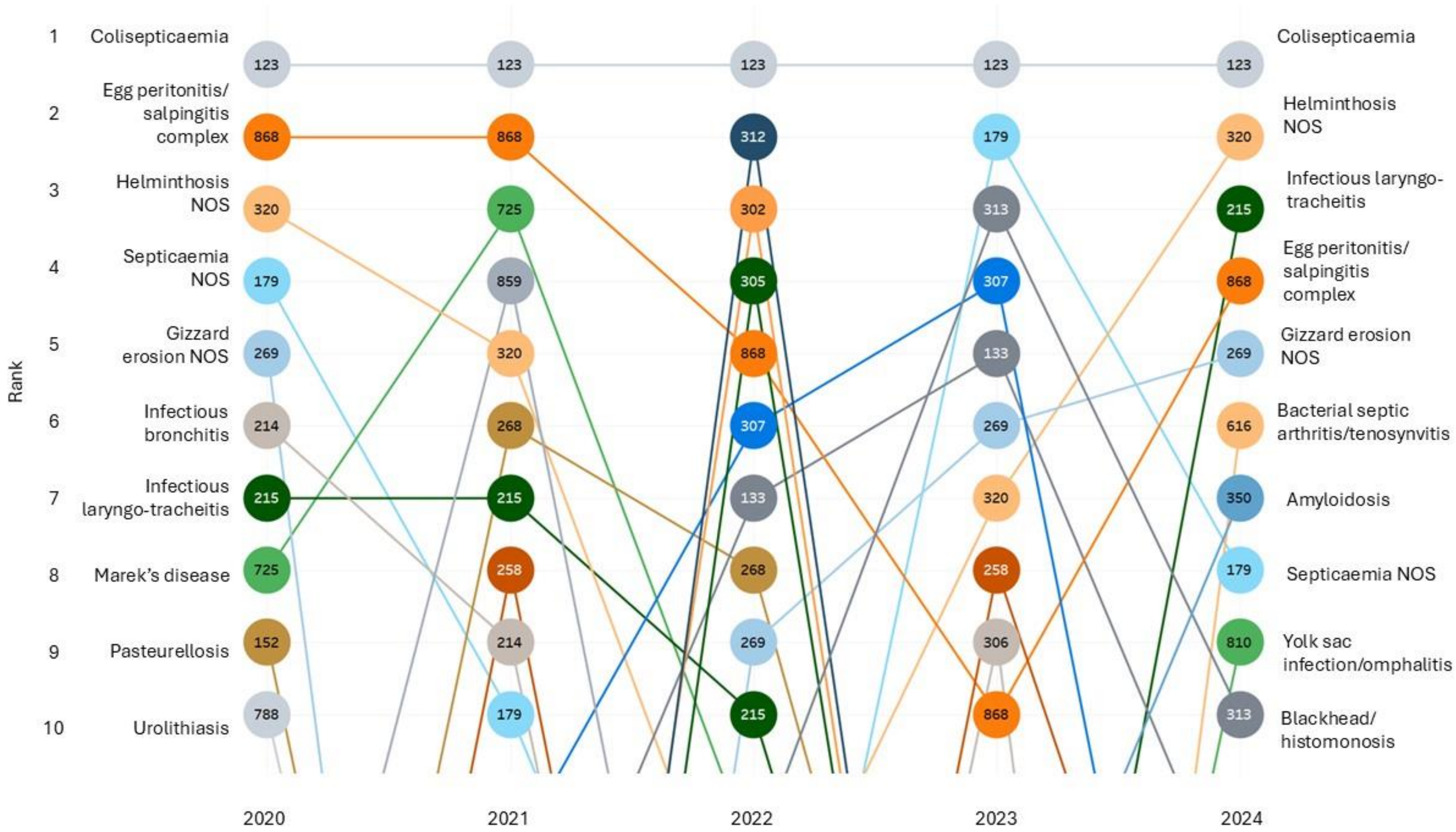

Figure 3: Top 10 diagnoses in layer and layer breeder chickens, shown as a bump chart. Numbers within circles represent the APHA VIDA diagnostic codes. See Appendix 2, where the corresponding diagnoses are listed in full.

Chicken - Small Flocks

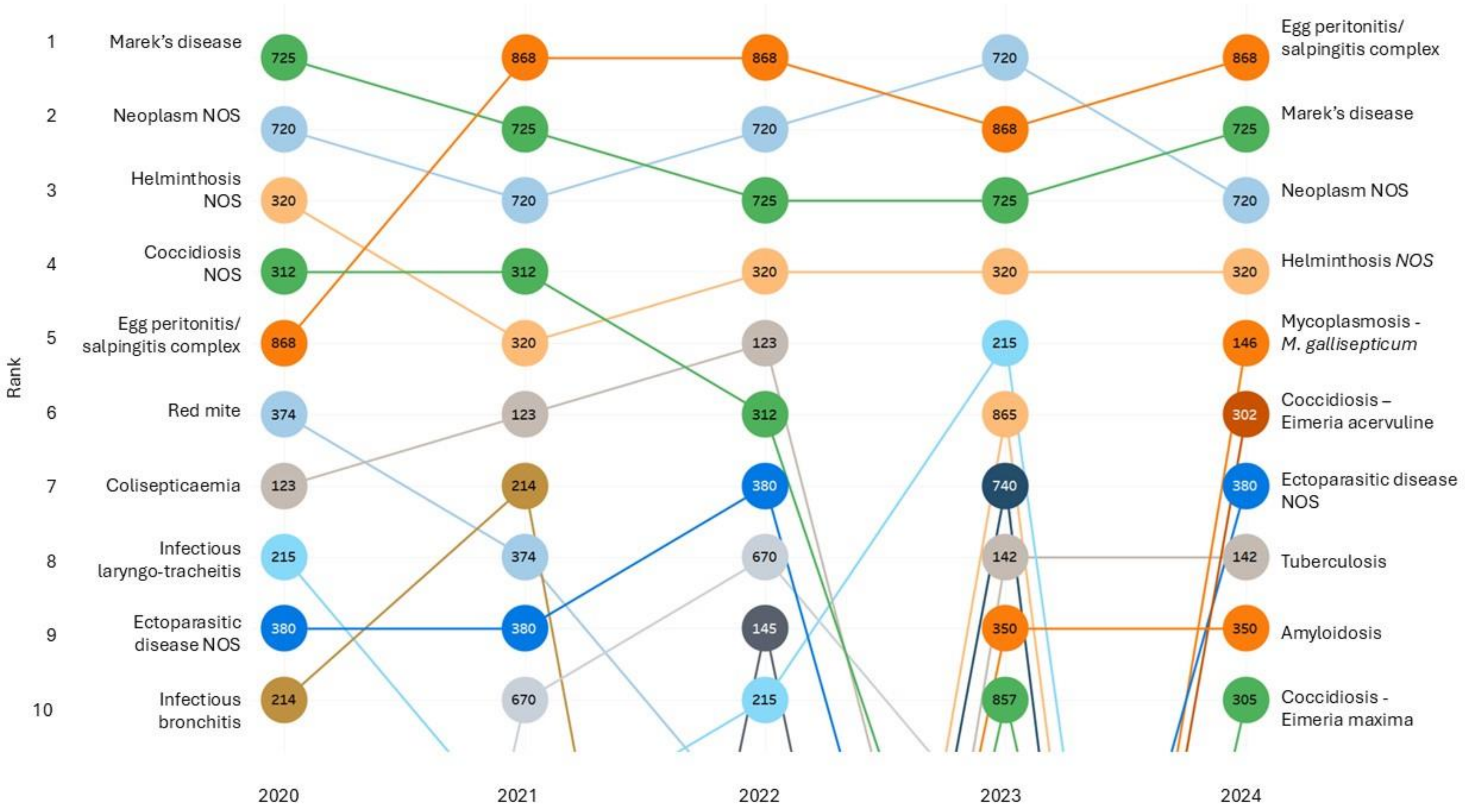

Figure 4: Top 10 diagnoses in pet and smallholder chickens, shown as a bump chart. Numbers within circles represent the APHA VIDA diagnostic codes. See Appendix 2, where the corresponding diagnoses are listed in full.

Gamebirds

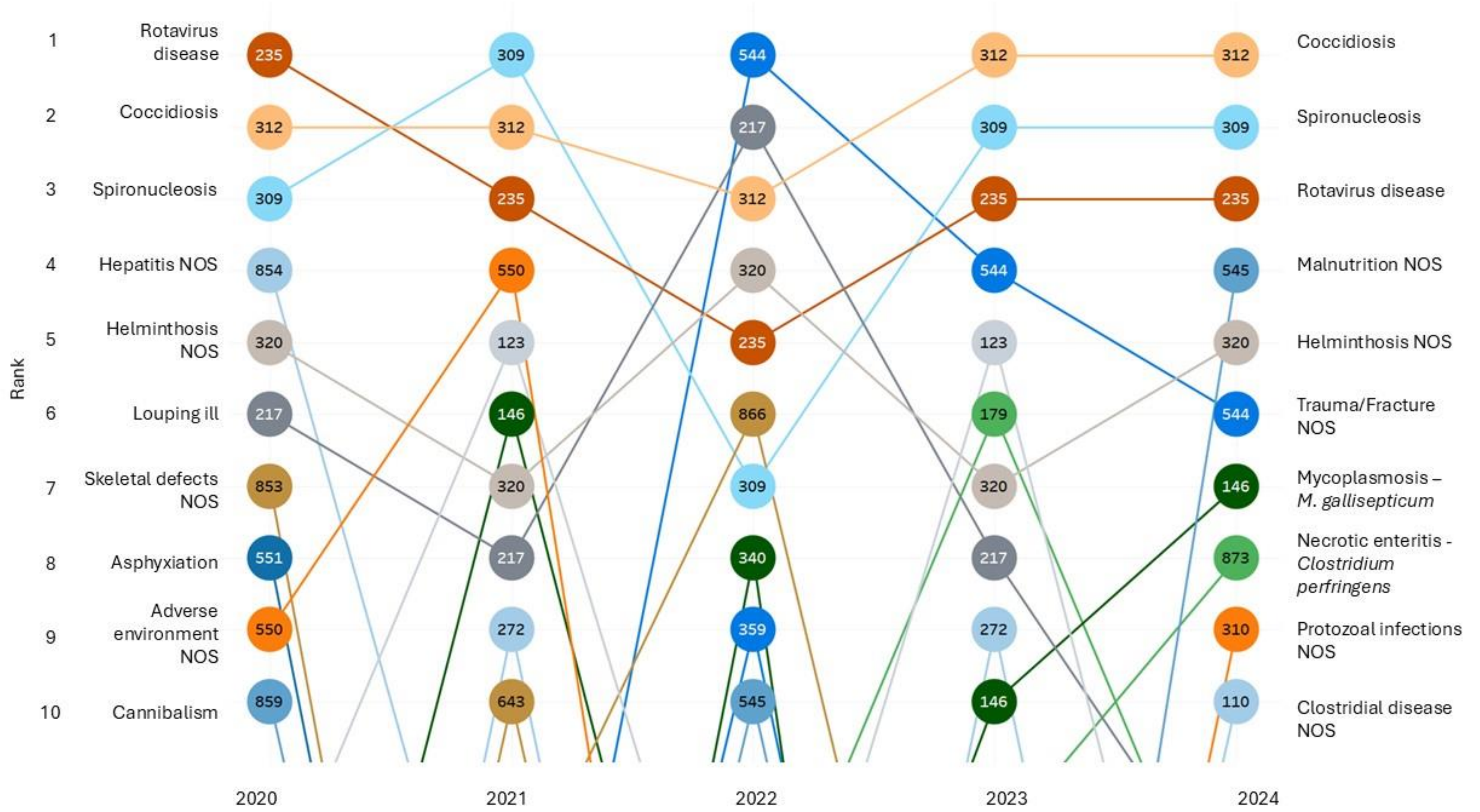

Figure 6: Top 10 diagnoses in gamebirds, shown as a bump chart. Numbers within circles represent the APHA VIDA diagnostic codes. See Appendix 2, where the corresponding diagnoses are listed in full.

New and re-emerging diseases and threats

Notifiable avian diseases

Highly pathogenic avian influenza (HPAI), Low pathogenicity avian influenza (LPAI) and Newcastle disease (ND) are notifiable avian diseases (NAD) in poultry in GB.

Highly pathogenic avian influenza

The number of outbreaks of HPAI in the 2023-2024 outbreak season was significantly lower than the preceding two seasons. A total of six HPAI H5N1 infected premises (IPs) were confirmed in kept birds across England (4) and Scotland (2), with no detections in Wales. All six of these were in commercial flocks, of which four held over 1000 birds whilst two had less than 50 birds. Chickens were affected in four cases, whereas ducks and turkeys were affected in the other two cases.

This lower number of cases broadly mirrored the situation in Europe. In 2024, the European Food Safety Authority (EFSA) reported a lower overall number of HPAI detections in European poultry and wild birds compared with previous years, particularly in the first half of the year. However, cases surged in late 2024 due to infections in waterbirds, with HPAI H5N1 and H5N5 detected in 27 countries. More information on HPAI in GB and internationally can be found in resources listed in Appendix 1.

Highly Pathogenic Avian Influenza in Mammals

During the 2023-2024 outbreak season, HPAI H5N1 was detected in wild mammals in the UK, but no captive/domestic mammals. In the United States of America (USA) a new H5N1 virus genotype (B3.13) was identified in over 800 dairy herds in 16 states. More information is available via EFSA. Infection in cattle appeared to be centred on the udder, with milk from infected animals showing high viral loads and representing a new vehicle for transmission. HPAI viruses were also identified in several other mammalian species globally (including goats, alpaca and walrus) for the first time.

Low pathogenicity avian influenza

No outbreaks of LPAI were detected in the UK during the 2023-2024 outbreak season.

Serological evidence of LPAI infection (H5N1, H5N4, H7N3) was reported in laying birds in the Netherlands in 2023-24. On one of these farms, H7N3 LPAI was detected by PCR. On a separate laying farm in the Netherlands, evidence of LPAI infection (H5N1) was found in early 2024. The severity of disease increased as the infection spread through the site, including increased mortality, reduction of feed intake and an 80% reduction in egg production. Mutation to HPAI did not occur.

Newcastle Disease

No outbreaks of ND were detected in the UK during the 2023-2024 outbreak season.

Pigeon paramyxovirus investigations

Pigeon paramyxovirus-1 (pAAvV-1, formerly PPMV-1) is a virulent variant of ND virus. It is notifiable in GB in all kept birds classified as poultry, including captive pigeons. More information can be found through Garden Wildlife Health.

There were six 'report cases' of suspect pigeon paramyxovirus investigated by APHA in 2024 (Table 1). A 'report case' is a formal investigation, triggered when notifiable avian disease is suspected or confirmed in the UK. Three were positive on PCR, one of which was also positive on virus isolation (VI) and serology. Testing was undertaken throughout the year, with pAAvV-1 identified in quarters 1, 2 and 3.

A fourth case was identified through the Wild Bird Surveillance scheme. Although the disease is not notifiable in wild birds, the Wild Bird Surveillance scheme tests wild pigeons when deemed appropriate. The three positives in captive birds were from premises in Scotland and England.

Table 1: Summary information on investigated cases of suspected pAAvV-1.

Quarter	Submission type	Species	Location	PCR	Serology	Virus isolation
1	Pigeon report case	Pigeon	Scotland	Positive	Not tested	Negative
1	Pigeon report case	Pigeon	Scotland	Negative	Not tested	Negative
2	"Found-dead" wild bird surveillance	Pigeon	England	Positive	Not tested	Positive
2	"Found-dead" wild bird surveillance	Pigeon	England	Negative	Not tested	Negative
3	Pigeon report case	Pigeon	England	Positive	Positive	Positive
3	Pigeon report case	Pigeon	England	Positive	Not tested	Negative
3	Pigeon report case	Dove/ Pigeon	England	Negative	Negative	Negative
4	Pigeon report case	Pigeon	England	Negative	Negative	Negative

Differential diagnosis of negated notifiable disease report cases

The 'Differential Diagnosis of Negated Notifiable Disease Report Cases' (DDNRC) scheme (see Welchman et al., 2019) offers differential diagnostic testing through the avian scanning surveillance project in cases where the suspicion of NAD has been reported and subsequently negated on clinical grounds or by laboratory testing. Private veterinarians are encouraged to submit samples via the DDNRC scheme following the negation of NAD. To access the scheme, veterinarians should contact their nearest Veterinary Investigation Centre, APHA Lasswade, or the AEG.

Table 2 shows the DDNRC investigations undertaken in 2024, all of which were in England. There were seven DDNRC investigations across a range of avian species. Table 2Infectious disease was determined as the likely cause in six cases; the causal agent was identified in five. Definitive identification was not possible in one case (quarter 1, case 3, 52-week-old layers) due to samples for further testing being unavailable.

Table 2: Summary of DDNRC investigations undertaken during 2024.

Quarter	Species & Purpose	NAD negation reason	Age	Clinical presentation	Diagnosis
1	Duck – Layer	Clinical grounds	12 weeks	Mortality; incoordination; tremors	Amyloidosis; Zonal hepatopathy
1	Chicken – Layer	Official testing	60 weeks	Reduced egg production; poor eggshell quality	Mycoplasmosis due to *M. gallisepticum* and *M. synoviae*; Infectious bronchitis
1	Chicken – Layer	Official testing	52 weeks	Reduced egg production; poor eggshell quality	Septicaemia; Chronic active peritonitis
2	Chicken – Pet	Clinical grounds	Adult	Moribund; lethargy; recumbency; twitching	Egg peritonitis/salpingitis
2	Duck – Pet	Official testing	Adult	High mortality; Lethargy, opisthotonus; Reduced egg production	Duck viral enteritis; Oesophageal parasitism due to *Capillaria* spp.
3	Quail – Small flock	Official testing	10 weeks to 18 months	High mortality; gasping; recumbency; diarrhoea	Inclusion body hepatitis
4	Chicken – Broiler	Official testing	21 days	High mortality	Inclusion body hepatitis

Table 2Test to exclude notifiable avian disease (TTE)

Vets can request to TTE NAD in chickens and turkeys in GB, where notifiable disease is a possibility but low on the differential list. The scheme started in May 2014. The first six years of the scheme were reviewed in 2021. Information on, and how to access, TTE can be found in Appendix 1. No TTE investigations were undertaken during 2024.

Unusual Diagnoses

APHA and SRUC animal disease surveillance reports describe unusual diagnoses or investigations. They are published monthly in the Veterinary Record and can be accessed freely. Table 3 shows the cases published in 2024.

Table 3: Cases published in the APHA animal disease surveillance reports in the Veterinary Record (VR).

Species & Purpose	Organisation	Case description	Linked VR volume and issue (V, I) numbers
Chicken - Layer	APHA	Coccidiosis in layer pullets	V194, I3
	APHA	Enterococcal joint infections in layer pullets	V195, I1
	APHA	Egg drop and cestodiasis in commercial layers	V196, I1
Chicken - Small flock	APHA	Infectious laryngotracheitis in chickens	V194, I7
	APHA	Squamous cell carcinoma in a smallholder chicken	V194, I9
	SRUC	Multifactorial mortality due to housing and husbandry in small layer flock	V194, I10
	APHA	Avian mycobacteriosis in a small flock	V194, I11
	APHA	Neuropathy in a smallholder hen	V194, I5
Gamebird	APHA	Coccidiosis in rearing pheasants	V195, I3
	APHA	Ill thrift and poor intestinal health in pheasants in rear	V195, I9
	SRUC	*Syngamus trachea* in 10-week-old pheasants	V195, I12
	APHA	Gapeworm and histomonosis in a guinea fowl	V195, I5

Species & Purpose	Organisation	Case description	Linked VR volume and issue (V, I) numbers
	SRUC	Gastrointestinal parasitism in red grouse	V195, I6
	APHA	Protozoal hepatitis in partridges	V195, I7
	APHA	Outbreak of quail bronchitis	V195, I11
Pigeon	SRUC	Circovirus infection and intestinal ascaridiasis in racing pigeons	V195, I6

Horizon Scanning

Chickens

Reovirus outbreaks in Europe in 2023 and 2024

Significant outbreaks of avian reovirus (ARV) tenosynovitis were reported in parts of Europe during 2023, particularly in South-West France and the Netherlands. Genetic characterisation centred on the σC gene demonstrated substantial diversity among circulating strains. In the Netherlands, genotype 4.7 predominated, with additional detections of genotypes 1, 2 and 4. In France, phylogenetic analysis of cases from 2016-2023 identified clusters belonging to genotypes 1.2, 2 and 4, and importantly showed that strains closely related to those associated with the 2023 outbreaks were already circulating in 2022, suggesting local persistence and continued evolution. Together, these findings highlight the ongoing emergence and maintenance of divergent ARV lineages within European poultry systems.

In Pennsylvania (USA), sequencing of 72 ARV isolates collected between 2017–2022 revealed the continued co-circulation of genotypes 1–6, with genotypes 5 (33%) and 2 (22%) most frequently detected. σC gene analysis showed marked genetic heterogeneity, with amino acid identity between field isolates and commercial vaccine strains ranging from 45–100%, indicating substantial antigenic divergence. Similar to observations in France and the Netherlands, these data underline the evolutionary plasticity of ARVs and reinforce the importance of ongoing molecular surveillance, early detection of emerging variants, and periodic reassessment of vaccine suitability in both European and global poultry populations.

Following the cases reported in the Netherlands, APHA issued an alert to veterinarians registered with the Endemic and Emerging Diseases Alert System (EEDAS) to raise awareness of the situation. A review of GB diagnostic data was undertaken to assess whether a similar pattern was emerging. The review identified sporadic diagnoses of ARV tenosynovitis in APHA VIDA data. One diagnosis was made in 2021 and, following increased communication and outreach in 2024, three diagnoses were recorded in 2024. These cases involved two farms, with genotypes 4 and 3 identified. Currently ARV tenosynovitis does not appear to be a significant issue for the GB flock. However, veterinarians are encouraged to contact the AEG to discuss possible or confirmed cases.

Chicken parvovirus and megrivirus detected in layer breeders affected by intestinal dilatation syndrome

Nuñez et al., 2024 presented a study on intestinal dilatation syndrome (IDS) in two Brazilian white layer breeder chicken farms. The birds were 50- and 60-weeks-old and presented with rapid weight loss, decreased feed intake, diarrhoea and paleness in the beak, legs and claws. A 20% decrease in fertile egg production, 20% culling and 5% natural mortality was also reported. The main gross finding was the dilatation from the proximal jejunum until the Meckel's diverticulum, and the dilated portions were filled of undigested feed and litter. This was observed in both sick and healthy-looking chickens. Histopathology of the affected areas of the jejunum revealed a lymphoplasmacytic and heterophilic atrophic enteritis with hyperplastic crypts, ulceration, heterophilic and lymphoplasmacytic perineuritis in the submucosal and myenteric plexuses. The authors suggest jejunal dilation with a narrow Meckel's diverticulum region associated with perineuritis and intestinal stasis as important markers for IDS diagnosis.

Viruses were detected by PCR testing and viral metagenomics. Chicken parvovirus (ChPV) was detected in duodenum, jejunum, ileum, pancreas and proventriculus through PCR testing. Viral metagenomics detected chicken megrivirus (ChMV) in contents of jejunal segments. Two nearly complete megrivirus genomes, USP-500/507-A and USP-500/507-B, were assembled. These were phylogenetically related to megrivirus C and three clusters within megrivirus C were also identified.

IDS poses significant challenges to poultry production. The aetiology has remained unknown since 2004, when the first cases were reported in layer chickens in the UK by Twomey et al. (2005) and Perez (2005). The paper by Nuñez et al., 2024 concludes with the need for further research to understand the specific roles of the detected viruses in the pathogenesis of this syndrome. Those suspicious of IDS are encouraged to contact the AEG. We also welcome intestinal samples for histopathology and storage.

Infectious Bursal Disease Virus (IBDV): globally circulating strains

A UK study analysing bursal samples collected between 2020–2021 detected no very virulent (vv) IBDV but showed that reassortant A3B1 strains were widespread among the farms sampled (13/16). These A3B1 strains often co-occurred with vaccine strains (A1bB1), and some carried antigenic-drift mutations associated with the Western European clade. The A3B1 reassortants are thought to cause subclinical infection with bursal atrophy, consistent with reports elsewhere in Europe.

Internationally, evidence indicates changing patterns in circulating IBDV strains. In 2023 in Egypt there was a shift from typical vvIBDV outbreaks to predominantly subclinical infections caused by novel variant strains (A2d) closely related to Chinese nVarIBDV. This was the first detection of A2d in Egypt. The isolates displayed a unique VP2 mutation at position 321 (321V), located in the most exposed antigenic region of the capsid. Similar A2d-origin viruses have also been identified in Argentina, where sequencing of samples collected between 2020 and 2022 confirmed the presence of A2dB1b viruses forming a genetically homogeneous monophyletic cluster. These Argentine strains showed high nucleotide identity with the Chinese nVarIBDV SHG19 variant, supporting a recent transcontinental introduction. Phylodynamic analysis suggests the genotype may have begun to spread in Argentina around 2014. In parallel, a broad molecular survey across the Near East and Persian Gulf, found multiple atypical genotypes (A3B1, A4B1, A6B1) circulating widely, with vvIBDV (A3B2) representing only a minority and many strains genetically linked to viruses from other continents.

Salmonella Pullorum (SP) outbreak in a Dutch laying flock

Molenaar et al. described a *Salmonella enterica* subspecies *enterica* Serovar Gallinarum Biovar Pullorum (SP) outbreak in a Dutch laying flock of 65 weeks of age, showing increased mortality, decreased egg production, and neurological signs. The flock was vaccinated three times with a live *S*. Enteritis and *S*. Typhimurium vaccine in the rearing period. At 71 weeks, as mortality peaked, a live SG 9R vaccine was applied. At 76 weeks, mortality decreased and egg production stabilized but did not return to a normal level. Post-mortem, histological, bacteriological, and serological examinations were frequently performed. Gross findings in diseased and dead birds were characterized by hepatomegaly, splenomegaly, and oophoritis. SP was frequently isolated from the liver, spleen, ovary, and bone marrow, and the isolation rate did not vary significantly between the different organs. In birds with neurological signs, histological examination and immunostaining showed cerebral granulomas in the presence of *Salmonella*. Previous *Salmonella* vaccinations did not hamper the detection of specific SP antibodies (positive at serum dilution ≥ 1:8) using a commercial rapid plate agglutination test. At 85 weeks, 40 clinically healthy birds were investigated and three had ovarian lesions, explaining egg production not returning to normal. These birds had antibodies against SP, indicating contact with the bacterium, but carrier status could not be confirmed by culture. Phylogenetic analysis showed SP isolates within this outbreak to be clonal and differing from SP isolates from previous outbreaks.

SP has not been detected by the GB scanning surveillance network since 2015. This case report reinforces the need to consider salmonellosis as a differential diagnosis in cases of mortality. Please contact the AEG to discuss cases where there is suspicion of SP.

Egg drop syndrome 76 in a US broiler breeder flock

Hurst-Proctor et al. reported the first case of egg drop syndrome 76 (EDS’76) in broiler breeders in the USA. The birds were 35-39 weeks old, housed in four houses, and were not vaccinated against EDS'76. The first affected house had a 15% decrease in egg production over seven days. Hundreds of pale, shell-less and wrinkled eggs were also noted. Over five weeks, these clinical signs progressed to the other three houses. In rear, the pullets had suffered from numerous infectious challenges. The authors believed that immunosuppression played a role in these challenges, as well as in the onset of EDS'76.

At post-mortem examination, 4/5 hens were in lay and 1/5 had an atrophied ovary and oviduct. One of the laying birds had scant fibrin adjacent to the ovary. Shell-less eggs had shell membranes with none to slight frosting by calcium carbonate and various albumen issues. Histopathology found no significant lesions in the magnum, isthmus or shell gland. PCR testing of eggshell swabs and whole egg samples from all houses was positive for EDS'76. Hemagglutinin Inhibition tests were performed in birds from all houses, at different ages, and were positive for EDS'76 until week 65. Testing for other common chicken diseases was unrewarding.

The broiler breeder farm was located near other commercial and non-commercial flocks and other cases of EDS'76 had been reported in commercial layer chickens in the local area around the time of the outbreak. The authors suggest commercial egg packages found in the egg handling area or wild birds as possible infection sources for this broiler breeder farm. The horizontal spread through the farm was likely facilitated by staff movement or fomites. After four weeks, egg production recovered to breed standards in 3/4 houses. Following the outbreak, the company introduced vaccination of pullets at 18 weeks with an inactivated EDS'76 vaccine.

In the UK, a commercial multivalent inactivated vaccine containing EDS'76 is commonly administered to layer chickens in rear. Broiler breeder flocks are not routinely vaccinated. Although EDS'76 is sometimes suspected in cases of sudden drop in egg production, a diagnosis is not always reached. A non-vaccinated flock can be diagnosed by serology, since the presence of antibodies is indicative of exposure to the virus. However, diagnosing EDS'76 in vaccinated flocks is challenging. DIVA tests, PCR testing and virus isolation are not currently available in the UK and histopathology is frequently unrewarding, since the viral infection, and presence of inclusion bodies in the oviduct, is transient. Please contact the AEG to discuss cases where there is suspicion of EDS'76.

Castellaniella spp. detected in mortality events among broiler breeders

Work by Luo et al. describes 20 cases of mortality since 2018 in broiler breeders where *Castellaniella* spp. have been detected associated with pathology in the US. The age of affected flocks ranged from 7.5 to 31.5 weeks, and cases were from 14 different farms. The main types of pathology associated with detection of the bacteria were increased mortality, lameness and joint involvement, and/or subcutaneous facial and wattle swelling. Small pinpoint colonies were identified using 16S rDNA gene amplification. In 14 of the 20 cases there was similarity with various *Castellaniella* sp. including *Castellaniella ginsengisoli* and *Castellaniella denitrificans.* In the six other cases, the genus was confirmed as *Castellaniella.*

The significance of the organism is unclear. In 15 of the cases there were coinfections with other bacteria, e.g. *Escherichia coli, Staphylococcus aureus, Enterococcus* sp., and one flock had reovirus infection at an early age. As detection in the 20 cases was only possible using 16S rDNA gene amplification, it is possible that the bacteria may have been overlooked previously.

Further work is needed to establish the clinical significance of the bacteria as an opportunistic pathogen or primary cause of disease. Although its isolation has not been reported in poultry previously, it has been found in poultry litter compost. It is possible that this may act as a source of the bacteria for birds.

Gamebirds

Re-emergence of Bagaza virus in wild birds from southern Spain

Bagaza virus (BAGV) is a mosquito-borne flavivirus of birds which has zoonotic potential. It predominantly affects the *Phasianidae* family (pheasant and partridge species) with abnormal mortality. BAGV was first reported in Europe in 2010 in southern Spain and subsequently re-emerged in southern Spain in 2019. In 2021, BAGV was detected in the southwest Iberian Peninsula.

Gonzalvez et al. describe a study designed to monitor the outbreak of BAGV in game and non-game species in southern Spain in 2021. Authors describe outbreaks of neurological signs, diarrhoea, wasting and abnormal mortality rates affecting free-ranging red-legged partridges and common pheasants. In July 2021 the Epidemiological Surveillance Program for Wildlife (ESPW) launched a passive regional surveillance program to analyse game birds found dead between July 2021 and February 2022 in 45 hunting areas in Andalusia, together with collection of epidemiological data. Opportunist sampling of non-game wild birds at wildlife rehabilitation centres and wild birds found dead was also carried out. Live birds were swabbed, and the carcases of dead birds were swabbed, underwent postmortem examination and tissues collected. Any flavivirus-positive samples were tested by specific RT-PCR, and BAGV-positive samples with Ct <30 underwent further molecular analysis.

BAGV was confirmed in red-legged partridges and common pheasants from 24 hunting areas. Suspected cases (compatible signs or mortality but without molecular confirmation) were detected in 11 additional hunting areas. At postmortem examination, BAGV positive gamebirds showed distinct lesions including myocarditis, encephalitis, and inflammatory infiltrates and necrosis in the liver and kidney. Mortality and morbidity were higher in partridges than pheasants, which was consistent with findings from previous outbreaks. The majority of cases occurred in July and August, coinciding with the period of highest mosquito prevalence in the region. Molecular analysis revealed close homology with isolates from earlier outbreaks in southern Spain. The authors hypothesise that there may be silent and endemic circulation in the region but also did not rule out reintroduction from neighbouring territories. The study detected BAGV infection for the first time in green woodpecker, Eurasian spoonbill, white stork and cynereous vulture.

This virus has never been detected in the UK. In view of the increasing numbers of vector-borne viruses detected in the UK in recent years (e.g. Bluetongue virus, Usutu virus), the AEG and its collaborating groups will continue to review evidence which arises around the spread/incursion of this agent.

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The AEG comprises representatives across APHA, including the Veterinary Medicines Directorate (VMD), SRUC, Agri-Food and Biosciences Institute (AFBI), veterinarians in APHA partner postmortem providers, and poultry veterinarians from private practice and industry. We extend our gratitude to AEG members who contributed expertise from APHA virology, bacteriology including the mycoplasma department, epidemiology, veterinary investigation centres, and avian pathology. The detection of new and re-emerging threats through scanning surveillance relies on submissions from private practitioners and the contributions of professionals across the scanning surveillance network. Their dedication and hard work is greatly appreciated.

Appendix 1 – Other Resources

APHA Scanning Surveillance

Animal disease scanning surveillance at APHA

APHA Veterinary Investigation Centres and Surveillance Pathology Partners

APHA disease surveillance monthly reports – Vet record links

GB Poultry Statistics

Poultry industry statistics

Egg statistics

Avian Influenza

Avian Influenza latest situation in:

- England
- Wales
- Scotland

Epidemiology reports for GB: Avian influenza (bird flu): epidemiology reports - GOV.UK

World Organisation for Animal Health: Avian Influenza - WOAH - World Organisation for Animal Health

European Food Safety Authority: https://www.efsa.europa.eu/en/topics/topic/avian-influenza

U.S. Department Of Agriculture: 2022–2024 Detections of Highly Pathogenic Avian Influenza (usda.gov)

Test to Exclude Notifiable Disease in Chickens and Turkeys

Test to Exclude Notifiable Diseases in Poultry

Salmonella

Salmonella in animals and feed in Great Britain - GOV.UK

Appendix 2 – Top 10 diagnosis tables

Chicken

Broiler

Table 4: Diagnoses established from diagnostic submissions of broiler chickens, ranked 1-10, over five years. Rank 1 was the diagnosis identified in the highest number of submissions.

Rank	2020	2021	2022	2023	2024
1	Chronic bursal atrophy	Rickets/ osteomalacia	*Enterococcus cecorum*	Rickets/ osteomalacia	Gizzard erosion NOS
2	Gizzard erosion NOS	Transmissible viral proventriculitis	Rickets/ osteomalacia	Gizzard erosion – adenovirus	Poor intestinal health
3	Rickets/ osteomalacia	Gizzard erosion NOS	Inclusion body hepatitis	Poor intestinal health	Gizzard erosion – adenovirus
4	Poor intestinal health	Poor intestinal health	Transmissible viral proventriculitis	Gizzard erosion NOS	Transmissible viral proventriculitis
5	Gizzard erosion – adenovirus	Chronic bursal atrophy	Gizzard erosion NOS	Transmissible viral proventriculitis	Coccidiosis – *Eimeria acervulina*
6	Coccidiosis NOS	Gizzard erosion – adenovirus	Gizzard erosion - adenovirus	Coccidiosis – *Eimeria acervulina*	Inclusion body hepatitis
7	Infectious bursal disease	Septicaemia NOS	Poor intestinal health	Blackhead/ histomonosis	Coccidiosis – *Eimeria maxima*
8	Septicaemia NOS	Inclusion body hepatitis	Colisepticaemia	Coccidiosis – *Eimeria maxima*	Coccidiosis – *Eimeria tenella*
9	Bacterial septic arthritis/ tenosynovitis	Osteomyelitis or spondylitis	Septicaemia NOS	Inclusion body hepatitis	Septicaemia NOS
10	Inclusion body hepatitis	Colisepticaemia	Coccidiosis – *Eimeria acervulina*	Colisepticaemia	Colisepticaemia

Layer

Table 5: Diagnoses established from diagnostic submissions of layer chickens, ranked 1-10, over five years. Rank 1 was the diagnosis identified in the highest number of submissions.

Rank	2020	2021	2022	2023	2024
1	Colisepticaemia	Colisepticaemia	Colisepticaemia	Colisepticaemia	Colisepticaemia
2	Egg peritonitis/ salpingitis complex	Egg peritonitis/ salpingitis complex	Coccidiosis NOS	Septicaemia NOS	Helminthosis NOS
3	Helminthosis NOS	Marek's disease	Coccidiosis - *Eimeria acervulina*	Blackhead/ histomonosis	Infectious laryngo-tracheitis
4	Septicaemia NOS	Cannibalism	Coccidiosis – *Eimeria maxima*	Coccidiosis – *Eimeria tenella*	Egg peritonitis/ salpingitis complex
5	Gizzard erosion NOS	Helminthosis NOS	Egg peritonitis/ salpingitis complex	Erysipelas	Gizzard erosion NOS
6	Infectious bronchitis	Gizzard erosion dt adenovirus	Coccidiosis – *Eimeria tenella*	Gizzard erosion NOS	Bacterial septic arthritis/ tenosynovitis
7	Infectious laryngo-tracheitis	Infectious laryngo-tracheitis	Erysipelas	Helminthosis NOS	Septicaemia NOS
8	Marek's disease	Avian intestinal spirochaetosis	Gizzard erosion dt adenovirus	Avian intestinal spirochaetosis	Yolk sac infection/ omphalitis
9	Pasteurellosis	Infectious bronchitis	Gizzard erosion NOS	Coccidiosis – *Eimeria necatrix*	Amyloidosis
10	Urolithiasis	Septicaemia NOS	Infectious laryngo-tracheitis	Egg peritonitis/ salpingitis complex	Blackhead/ histomonosis

Small flocks

Table 6: Diagnoses established from diagnostic submissions of small flock chickens, ranked 1-10, over five years. Rank 1 was the diagnosis identified in the highest number of submissions.

Rank	2020	2021	2022	2023	2024
1	Marek's Disease	Egg peritonitis/ salpingitis complex	Egg peritonitis/ salpingitis complex	Neoplasm NOS	Egg peritonitis/salpingitis complex
2	Neoplasm NOS	Marek's Disease	Neoplasm NOS	Egg peritonitis/salpingitis complex	Marek's Disease
3	Helminthosis NOS	Neoplasm NOS	Marek's Disease	Marek's Disease	Neoplasm NOS
4	Coccidiosis NOS	Coccidiosis NOS	Helminthosis NOS	Helminthosis NOS	Helminthosis NOS
5	Egg peritonitis/ salpingitis complex	Helminthosis NOS	Colisepticaemia	Infectious laryngo-tracheitis	Mycoplasmosis - *M. gallisepticum*
6	Red Mite	Colisepticaemia	Coccidiosis NOS	Nephrosis / nephropathy	Coccidiosis – *Eimeria acervulina*
7	Colisepticaemia	Infectious bronchitis	Ectoparasitic disease NOS	Pneumonia NOS	Ectoparasitic disease NOS
8	Infectious laryngo-tracheitis	Red Mite	Impactions of crop/gizzard/ duodenum	Tuberculosis	Tuberculosis
9	Ectoparasitic disease NOS	Ectoparasitic disease NOS	Mycoplasmosis NOS	Amyloidosis	Coccidiosis – *Eimeria maxima*
10	Infectious bronchitis	Impactions of crop/gizzard/ duodenum	Infectious laryngo-tracheitis	Curled toe paralysis / riboflavin deficiency	Amyloidosis

Turkeys

Table 7: Diagnoses established from diagnostic submissions of turkeys, ranked 1-10, over five years. Rank 1 was the diagnosis identified in the highest number of submissions.

Rank	2020	2021	2022	2023	2024
1	Blackhead/ histomonosis	Blackhead/ histomonosis	Blackhead/ histomonosis	Blackhead/ histomonosis	Blackhead/ histomonosis
2	Colisepticaemia	Colisepticaemia	Mycoplasmosis - *M. gallisepticum*	Coccidiosis	Coccidiosis
3	Erysipelas	Poor intestinal health	Colisepticaemia	Colisepticaemia	Colisepticaemia
4	Impactions of crop/gizzard/ duodenum	Coccidiosis	Adverse environment NOS	Ectoparasitic disease NOS	Erysipelas
5	Cardiomyopath y and heart failure NOS	Erysipelas	Cryptosporidios is	Erysipelas	Focal myositis associated with oil-emulsion vaccines
6	Coccidiosis	Gizzard erosion NOS	Erysipelas	Impactions of crop/gizzard/ duodenum	Fungal Infections NOS
7	Poor intestinal health	Pneumonia NOS	Impactions of crop/gizzard/ duodenum	Ingestion of inappropriate materials	Gizzard erosion NOS
8	Adverse environment NOS	Rotavirus disease	Infectious sinusitis NOS	Pneumonia or airsacculitis, mycotic	Helminthosis NOS
9	Cellulitis (usually E.coli, scratching)	Starveout – failure to feed in first week of life	Myopathy NOS	Pododermatitis/ hock burn/breast blister	Mycoplasmosis - *M. gallisepticum*
10	Fungal Infections NOS	Adverse environment NOS	Necrotic enteritis – *Clostridium perfringens*	Yolk sac infection/ omphalitis	Mycoplasmosis – *M. synoviae*

Gamebirds

Table 8: Diagnoses established from diagnostic submissions of gamebirds, ranked 1-10, over five years. Rank 1 was the diagnosis identified in the highest number of submissions.

Rank	2020	2021	2022	2023	2024
1	Rotavirus disease	Spironucleosis	Trauma/fracture NOS	Coccidiosis	Coccidiosis
2	Coccidiosis	Coccidiosis	Louping ill	Spironucleosis	Spironucleosis
3	Spironucleosis	Rotavirus disease	Coccidiosis	Rotavirus disease	Rotavirus disease
4	Rickets/ osteomalacia	Adverse environment NOS	Helminthosis NOS	Trauma/fracture NOS	Malnutrition NOS
5	Helminthosis NOS	Colisepticaemia	Rotavirus disease	Colisepticaemia	Helminthosis NOS
6	Louping ill	Mycoplasmosis – *M. gallisepticum*	Coronavirus nephritis	Septicaemia NOS	Trauma/fracture NOS
7	Skeletal defects NOS	Helminthosis NOS	Spironucleosis	Helminthosis NOS	Mycoplasmosis - *M. gallisepticum*
8	Adverse environment - asphyxiation	Louping ill	Syngamus species infection	Louping ill	Necrotic enteritis - *Clostridium perfringens*
9	Adverse environment NOS	Management intervention in game birds	Hepatic trichomonosis	Management intervention in game birds	Protozoal infections NOS
10	Cannibalism	Meningitis/ encephalitis NOS	Malnutrition NOS	Mycoplasmosis – *M. gallisepticum*	Clostridial disease NOS

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APHA is an Executive Agency of the Department for Environment, Food and Rural Affairs and also works on behalf of the Scottish Government, Welsh Government and Food Standards Agency to safeguard animal and plant health for the benefit of people, the environment and the economy.