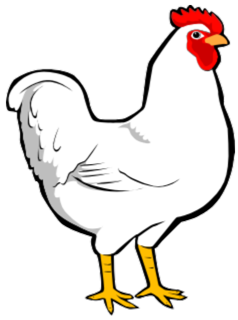
Animal & Plant Health Agency



SRUC

Great Britain avian quarterly report: disease surveillance and emerging threats

Volume 25: Quarter 2 – April to June 2021

Highlights

- **Update on HPAI in the UK and Europe – page 3**
- **Pheasant ataxia – page 7**
- **Infectious bronchitis virus in small and backyard chicken flocks – page 9**
- ***Enterococcus cecorum* in broilers – page 12**

Contents

Editor: David Welchman
Telephone: 02080 267640
Email: david.welchman@apha.gov.uk

Introduction and overview

This quarterly report reviews disease trends and disease threats for the second quarter of 2021, April to June. It contains analyses carried out on disease data gathered from APHA, Scotland's Rural College (SRUC) Veterinary Services and partner post-mortem providers and intelligence gathered through the Avian Expert Group.

In addition, 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 is analysed is provided in the Annex available on GOV.UK.

Issues and trends

Industry trends – chick and poult placings

Broilers

There was a 6.8% increase in placings of broiler chicks from UK hatcheries during June 2021 compared with June 2020 (see Figure 1), at 96.5 million chicks, representing an average of 23.7 million chicks per week for the quarter.

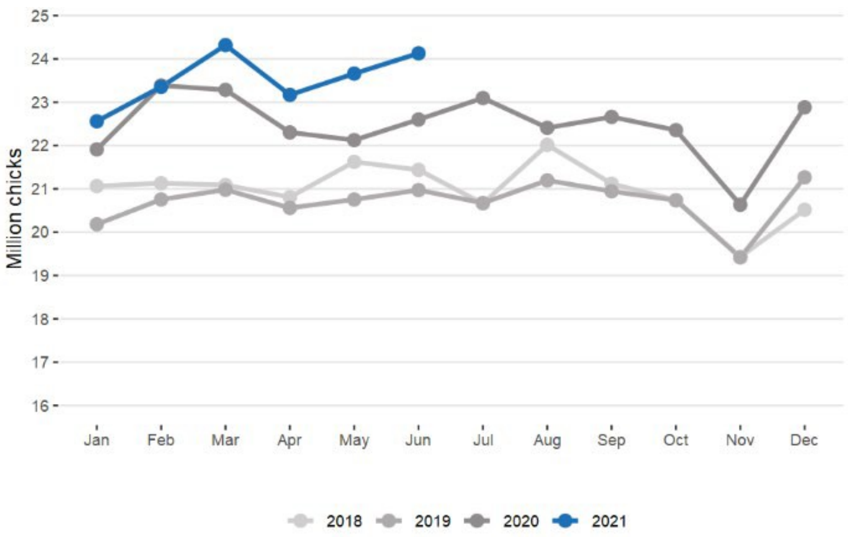


Figure 1: average number of broiler chicks placed per week in the UK from UK hatcheries

Turkeys

There was an increase of 24% in the number of turkey poults placed during June 2021 compared with June 2020 (see figure 2), at 1.4 million, representing an average of 0.3 million poults placed per week for the quarter.

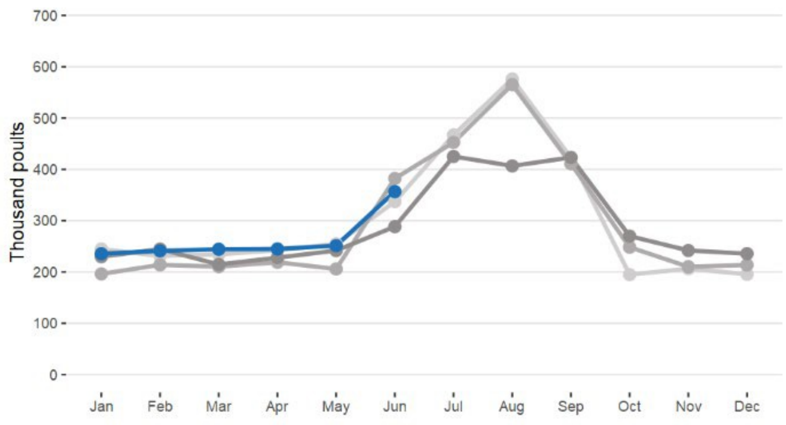


Figure 2: average number of turkey poults placed per week in the UK by UK hatcheries

Layers

The number of layer chicks placed during June 2021 was 2.3% higher than for June 2020, at 3.6 million chicks (see figure 3). UK packing station egg throughput in Quarter 2 of 2021, at 7.9 million cases, was 3.1% higher than in Quarter 2 of 2020 and 0.5% higher than Quarter 1 2021. Free range eggs accounted for 58.2% of eggs packed in Quarter 2 of 2021, compared with 51.9% in Quarter 2 of 2020.

Free range egg output during Quarter 2 of 2021 exceeded enriched colony system output by 61.2%, a greater difference compared to the previous quarter.

Barn and organic production remained at low levels although organic production has increased. Average UK farm gate prices for eggs in Quarter 2 of 2021 were 2.3% higher than the preceding quarter, and 13% higher than Quarter 2 of 2020.

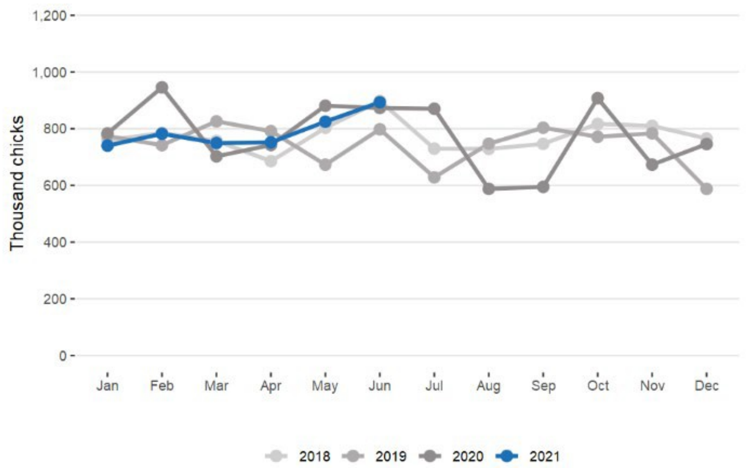


Figure 3: average number of layer chicks placed per week in the UK by UK hatcheries

Poultry industry statistics

The following poultry industry statistics are available on GOV.UK:

- Poultry and poultry meat statistics
- Egg statistics

New and re-emerging diseases and threats

Refer to the annex on GOV.UK for more information on the data and analysis.

Highly Pathogenic Avian influenza (HPAI) in Europe

There have been no outbreaks of highly pathogenic avian influenza (HPAI) confirmed in poultry or captive birds in the UK since March 2021 but outbreaks of HPAI H5N8 have continued in poultry elsewhere in Europe.

UK situation update to 28 July 2021

Up to 28 July there have been 24 outbreaks of HPAI in poultry and/or captive birds in the UK since November 2020, of which 22 involved H5N8 and two involved H5N1.

The first case in the UK was confirmed on 3 November 2020 in broiler breeder chickens, and other cases have been confirmed in commercial layer and broiler chickens, rearing turkeys, ducks, gamebirds, backyard poultry and captive birds other than poultry. All outbreaks have been reported to the OIE and where disease was confirmed, measures were put in place in accordance with Council Directive 2005/94/EC.

The outbreaks were summarised in the International Disease Monitoring (IDM) Updated Outbreak Assessment dated 28 July 2021.

Up to 28 July there were also 320 cases of HPAI in wild birds in the UK, comprising 292 cases of HPAI H5N8, 15 of HPAI H5N1, six of HPAI H5N5, one of H5N3 and six awaiting full typing (H5Nx) The largest number of cases was 177 in mute swans (*Cygnus olor*), followed by other swan species and geese. Eleven cases were identified in raptors. Only two cases were identified in ducks, one each in a common shelduck (*Tadorna tadorna*) and a Eurasian wigeon (*Mareca penelope*).

The outbreaks of HPAI in poultry, captive birds and wild birds in Europe up to 28 July and the relation to wild bird migration flyways are shown in Figure 4.

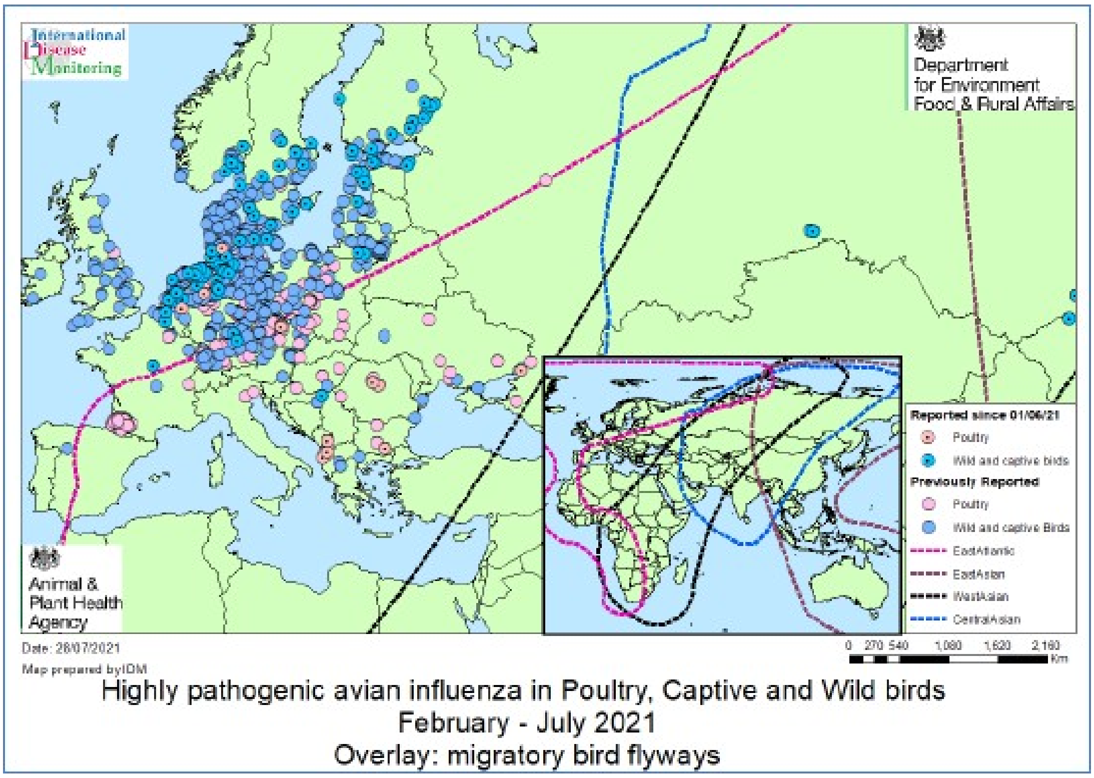


Figure 4: outbreaks of highly pathogenic avian influenza (from OIE data) in poultry, captive and wild birds across Europe, 1 February 2021 to 28 July 2021. Symbols with a central dot are those reported since 1 June 2021 and show the large reduction in outbreaks in June to July compared to earlier in the year. The migration flyways are shown as dotted lines, with the UK being in the East Atlantic flyway

European poultry and wildlife update and UK wildlife update 12 August 2021

The latest updated outbreak assessment dated 12 August reports that 22 outbreaks of HPAI H5N8 have been reported in poultry in four European countries (Czech Republic, Denmark, France and Poland) from 28 July to 12 August and six wild bird outbreaks of HPAI H5N8 (three) and H5N1 (three) in Finland and the Netherlands. The latter was H5N8 in greater white-fronted geese (*Anser albifrons*).

In addition, HPAI H5N1 has been identified in five wild bird cases in the UK, all in great skuas (*Stercorarius skua*) on Fair Isle and the Flannan Isles, off the coast of Scotland.

EFSA report

Information in the most recent European Food Safety Authority report dated 31 May 2021 indicates that between 24 February and 14 May in Europe (including the UK) there were 580 HPAI outbreaks in poultry (the majority being in Poland and Germany), 1,051 outbreaks in wild birds and 41 in captive birds.

Between 24 February and 14 May, the principal wild bird species in which HPAI was detected (more than 20 detections) were greylag goose (*Anser anser*) (190), mute swan (156), common buzzard (*Buteo buteo*) (81), barnacle goose (*Branta leucopsis*) (56) and whooper swan (*Cygnus cygnus*) (48).

These outbreaks and detections have predominantly comprised HPAI H5N8, with much smaller numbers of H5N1, H5N5, H5N3, H5Nx and H5N4. These subtypes all belong to clade 2.3.4.4b and the acquisition of different neuraminidase (N) subtypes has been the result of reassortments with other avian influenza viruses from different regions.

The weekly numbers of detections of HPAI across all avian species (poultry, captive birds and wild birds) in successive years, and the number of countries affected each year, are shown in Figure 5 below, taken from the EFSA report.

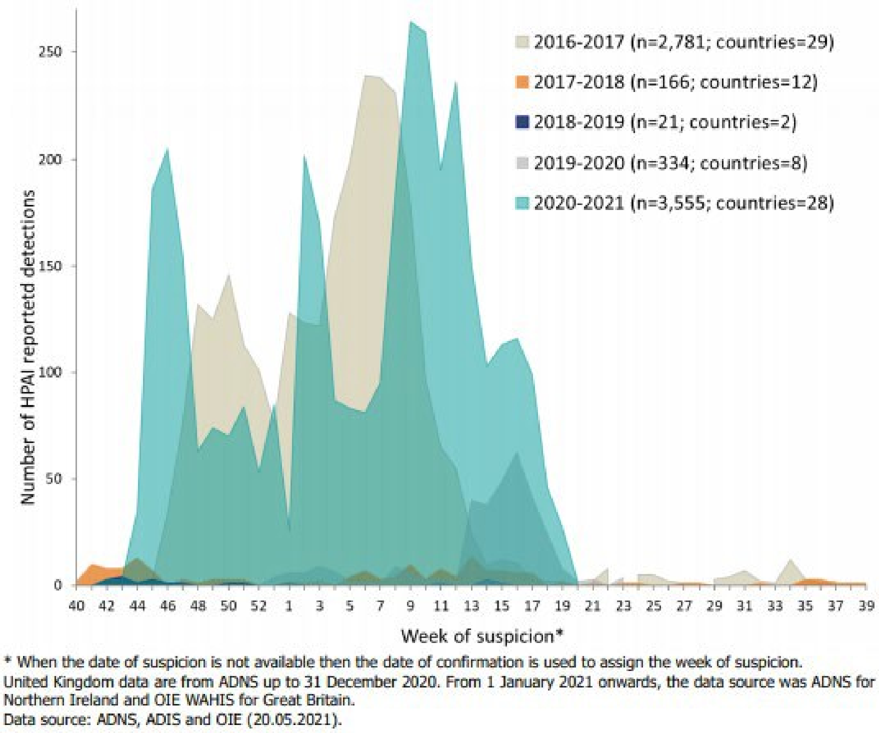


Figure 5: number of detections of HPAI across all avian types (poultry, captive birds and wild birds) according to week of the year and the numbers of European countries affected in successive avian influenza seasons from 2016 to 2017 and 2020 to 2021 (1 October 2020 to 4 May 2021)

Conclusion

The updated outbreak assessment dated 12 August, referred to above, concludes that “The risk of HPAI H5 incursion in wild birds remains at low (event is very rare but cannot be excluded). Given all factors with ongoing detections in wild bird populations not only in central Asia and southern Russia, but also nearer to the UK mainland in the remote northern Scottish Isles and the Netherlands, the risk level may well increase through the autumn.

We will continue to closely monitor the situation. The risk of poultry and captive bird exposure to HPAI H5 across the whole of Great Britain is still low (with medium uncertainty) where biosecurity is sub-optimal, and low (with low uncertainty) where stringent biosecurity measures are applied."

"It is particularly important that stringent adherence to biosecurity measures are maintained as summer progresses into autumn, so as to prevent disease being introduced to poultry and captive birds, through contaminated fomites and environmental exposure. If you keep poultry (including game birds or as pets), you should follow our biosecurity best practice advice, which can be found on GOV.UK.

Remain vigilant for any signs of disease in your flock and report any signs of avian influenza to Defra Rural Services Helpline on 03000 200 301.

Further information is available on Avian influenza on GOV.UK including updated biosecurity advice for poultry keepers for England, for Wales and for Scotland."

Low Pathogenicity Avian Influenza

No outbreaks of notifiable Low Pathogenicity Avian Influenza (LPAI) have been identified in the UK in Quarter 2 of 2021.

EFSA reports that between 24 February and 14 May, there were two outbreaks of notifiable LPAI in Europe, one of LPAI H5N3 in a flock of domestic mule ducks in France and one of LPAI H7N3 in a small flock of domestic ducks in Germany.

Avian notifiable disease exclusion testing scheme ('Testing To Exclude', TTE, Testing For Exclusion) in Great Britain

The scheme started in May 2014 (Gibbens and others 2014) and is ongoing APHA Vet Gateway: Testing for exclusion of notifiable avian diseases (defra.gov.uk).

There were no exclusion testing investigations undertaken during Quarter 2 of 2021. The scheme is very valuable in enabling possible LPAI to be investigated in situations where it is considered to be a differential diagnosis for the clinical signs seen in birds on a site. The scheme currently only applies to chickens and turkeys.

Differential diagnosis of negated notifiable disease report (DDNRC) cases in Great Britain

This scheme was introduced in autumn 2018 to offer differential diagnostic testing through the avian scanning surveillance project at APHA and its partners in cases where suspicion of Notifiable Avian Disease (NAD) has been reported and subsequently negated on either clinical grounds or by laboratory testing.

Testing is also available for TTE cases if NAD has been ruled out by laboratory testing. The scheme is described in more detail by Welchman and others (2019).

The scheme is important because it gives a better insight into disease outbreaks in both poultry and gamebirds which may present with clinical signs suspicious of NAD. When sudden mortality and other clinical signs of NAD affect commercial and back yard birds, there may be significant welfare implications as well as a marked economic impact, warranting further investigation.

Differential diagnostic investigations were undertaken on four cases negated during Quarter 2, two in broiler flocks and two in backyard poultry. No underlying infectious disease was identified in the two backyard cases.

The broiler investigations are still ongoing and involve screening for potential new and emerging pathogens as part of the investigation. This requires detailed molecular analyses and evaluation of findings in the context of the pathology observed. Colleagues in the field and private sector are encouraged to submit samples to this scheme.

Pigeon paramyxovirus investigations

Four submissions of material were tested for Pigeon Paramyxovirus-1 (pAAvV-1, formerly PPMV-1)) at APHA Weybridge during Quarter 2 of 2021, from birds submitted as report cases in April, May and June (two). PAAvV-1 was detected by culture in cloacal swabs and tissue samples, and by PCR in cloacal swabs, in just one of these, the submission in May.

'Pheasant ataxia'

'Pheasant ataxia' was the name given to a neurological disease of pheasants (*Phasianus colchicus*) first seen in British pheasants in the 1990s and characterised by various degrees of ataxia in pheasants which otherwise remain bright and alert (Schock and others 2021).

No diagnoses have been recorded in VIDA by APHA or SRUC since 2002 and it has not been recorded in other species of pheasants or in partridges.

In 2021, a report and video clips were received by APHA from a private veterinary surgeon of neurological signs in a small number of pheasants that had been released in 2020 on a single estate in the South of England. The birds showed difficulty flying but remained alert.

To investigate, APHA examined the heads of three affected pheasants. Externally, large numbers of *Ixodes ricinus* ticks were present in the periocular area in all birds.

Histopathology of the brain showed a non-suppurative meningoencephalitis with degeneration and loss of Purkinje cells of varying severity and chronicity predominantly orientated on the cerebellum.

The clinical history and the distribution of the brain lesions are those typically observed in cases of pheasant ataxia reported previously (Welchman and others, 2000). The characteristics of the brain lesions are consistent with an infectious cause, potentially viral, although the exact aetiology of pheasant ataxia is unknown.

No ticks were noted in previous cases of pheasant ataxia and it is therefore unclear if the presence of ticks and encephalitis are related. In the UK, louping ill is the most common virus causing this type of pathology in sheep and red grouse (*Lagopus scoticus*), but pheasants do not commonly develop disease after infection with this virus (Reid and Moss 1980).

Deer are frequently found on the estate where the recent cases were seen, but louping ill has not been reported in the area. Another flavivirus which is known to cause disease in pheasants is the mosquito-transmitted Bagaza virus.

However, so far disease caused by this virus has only been recognised in Spain (Gamino and others 2012). To further investigate the possibility of a flavivirus aetiology for disease in birds recently diagnosed with pheasant ataxia, a non-validated pan-flavivirus PCR test (Johnson and others 2010) was carried out on a brain sampled from one of the pheasants and this did not detect flavivirus infection.

Further investigations are ongoing to try to identify an infectious agent. The reason for the apparent re-appearance of pheasant ataxia after a gap of many years is not known.

This case was described in the APHA disease surveillance report in the Vet Record for May 2021 (APHA 2021a).

Unusual diagnoses

Follicular torsion in a bantam

A three-year-old bantam hen from a small flock had a history of dullness for two days. It was treated with antibiotic and anti-inflammatories but collapsed and died three days later. It was in good bodily condition and post-mortem examination by the practitioner revealed a suspected follicular torsion (see Figure 6).

Tissue was submitted to APHA for histological examination. The gross presentation and histopathology were consistent with a large follicular atresia and torsion around the peduncle. There was no indication of neoplastic disease.

Follicular torsion appears to have been rarely recorded in poultry (or other birds), although it has been described previously in an ostrich (*Struthio camelus*) (Suárez-Bonnet and others 2012), and also occurs in women, horses and some other mammals. The cause of the torsion developing in this case was unknown.

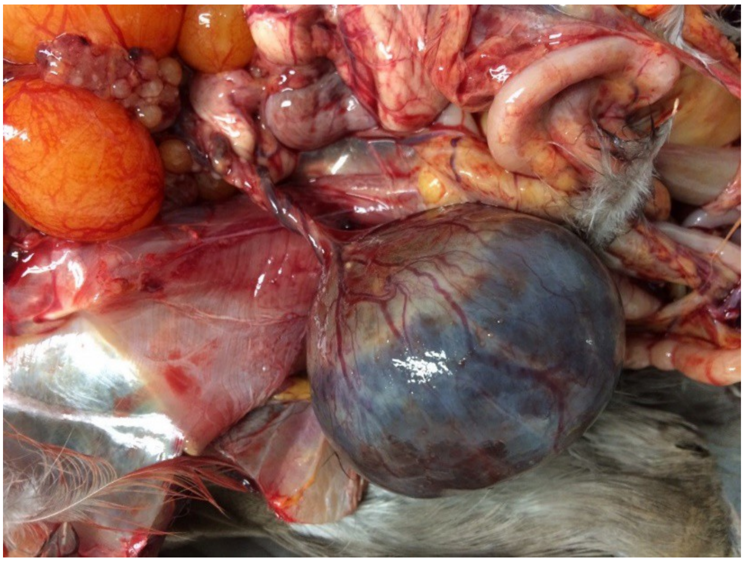


Figure 6: follicular torsion in a chicken (image courtesy of the veterinary practitioner)

Changes in disease patterns and risk factors

Infectious bronchitis virus in small and backyard chicken flocks

Reference to the APHA dashboard of small and backyard poultry flocks indicates that infectious bronchitis is one of the commonest diagnoses in chickens in small flocks.

A recent example described in the APHA surveillance report for July 2021 (APHA 2021b) was of an adult chicken submitted to APHA to investigate signs of malaise and abnormal cloacal discharge. Three other hens had died in the previous week from the flock of 42 chickens. All the dead birds were from a group of 12 purchased a year previously from one source as point of lay pullets.

Post-mortem examination showed that the kidneys were generally pale and the left kidney was slightly enlarged, with a small number of petechial haemorrhages in the cortex at the caudal pole.

There were bilateral, lobated, thin walled structures in the ovary filled with dark brown fluid and abnormal content within the oviduct, particularly the distal oviduct which contained caseous material. PCR testing for Infectious Bronchitis virus (IBV) was performed on the kidneys and was positive.

Genotyping revealed a 93.6 per cent similarity to the European QX strain of IBV. Histopathological examination of the kidney revealed a marked tubulointerstitial nephritis consistent with IBV infection. There were also some findings potentially attributable to a concurrent bacteraemia or toxaemia, as well as a yolk peritonitis and ovarian follicular atresia.

The purchased birds were believed to have been vaccinated against IBV as pullets, although further information on the strain of IBV in the vaccine(s) used was not known. The owner was advised to seek further advice on IBV vaccination.

It was subsequently reported that nine of the 12 purchased chickens had died, but the original older hens in the flock appeared unaffected. This case demonstrates the adverse effect that IBV strains such as QX can have in small and backyard poultry flocks.

In a separate case, a cockerel from a small flock was submitted for investigation. Post-mortem examination in this bird revealed mucopurulent material in the nasal cavity and infraorbital sinuses and the kidneys were pale. PCR testing performed on a cloacal swab was positive for IBV and genotyping revealed 92 per cent similarity to the European QX strain.

No evidence of *Mycoplasma gallisepticum* infection was detected in this case as a potential cause of the respiratory tract pathology.

These findings confirm that pathogenic variants of IBV such as QX, which can be associated both with nephritis and respiratory disease, are circulating in small chicken flocks and are likely to be disseminated as a result of inadequate biosecurity standards common in flocks of this type and inadequate or absent vaccination protocols.

A recent publication reported on a survey of IBV in backyard chickens in California, USA (Gonzales-Viera and others, 2021). IBV was commonly detected in backyard chickens, often associated with Marek's disease which may have had an immunosuppressive effect.

The IBV strains detected largely matched those prevalent in commercial poultry in California and the authors concluded that small flocks can be a suitable environment for the mutation and evolution of new and potentially more pathogenic variants of IBV and can be a reservoir of IBV.

As described in the Quarter 1 report (APHA 2021c), analysis of backyard poultry consultations by small animal veterinary practices in the UK over a five-year period from 2014 to 2019 showed that respiratory signs were the second commonest clinical sign reported in chickens, comprising 13.6 per cent of electronic health records (Singleton and others 2021).

The cause of respiratory signs was not addressed in this paper. However the APHA dashboard of small and backyard poultry flocks, referred to above, shows that infectious bronchitis was the second commonest agent identified in respiratory disease cases, as well as being associated with a range of other clinical signs.

Infectious bursal disease in broiler chickens

Infectious bursal disease (IBD) is a significant disease affecting poultry resulting in acute disease and, more commonly, in subclinical infection resulting in immunosuppression. The latter is characterised by lesions in the bursae of infected birds.

IBD virus (IBDV) is a double-stranded RNA virus with two segments A and B, which is usually classified according to its virulence with the strains causing severe disease termed very virulent IBDV (vvIBDV).

Whilst commercial poultry are commonly vaccinated, this infection continues to be a problem throughout the world although there are no recent publications on IBD in the UK.

The lack of up to date surveillance information from the UK prompted APHA and The Pirbright institute to undertake a small investigation into the disease in commercial, vaccinated broiler flocks with suspected IBV.

Diagnostic samples received from each flock's veterinary surgeon were examined by undertaking histopathology of the bursa and sequencing of the IBDV. Preliminary results were recently presented in a poster at the Annual Meeting of the Microbiology Society (Reddy, R.A.P. and others, abstract book). In brief, results from seven flocks were presented. Histopathology showed lesions consistent with, or suggestive of, IBD in all seven flocks.

Extensive molecular analysis of segments A and B showed that in one flock only vaccine strain was circulating whereas in the other six flocks the situation was more complex.

These findings suggest that both vaccine and field strains, including vvIBDV strains, were circulating in the same flocks and that the opportunity for co-infection and reassortment is thus high in British flocks.

One reassortant virus was identified in which phylogenetic analysis indicated a vv segment A and a classical/vaccine segment B.

Due to the COVID-19 pandemic and other factors, only a limited number of samples could be collected for the study; however material has now been collected from a total of 16 farms and further analysis is in progress.

Enterococcus cecorum infection in broilers

Two examples of disease due to *Enterococcus cecorum* infections were described in the APHA disease surveillance report for April (APHA 2021d). These were unrelated submissions from commercial broiler farms with a history of lameness.

The birds were between 15 and 17 days of age. Post-mortem examination of birds from both submissions showed signs of septicaemia with the main finding being fibrinous pericarditis.

In one of these submissions, hepatosplenomegaly and perihepatitis were also reported. The femoral heads of some of the birds in each submission easily fractured upon manipulation suggesting osteomyelitis. Grossly no lesions were detected in the hock joints.

Bacteriology yielded *E. cecorum* from the pericardium, joints and bone in one of the submissions and from the liver and spleen in the other.

In one of the submissions, histopathology was carried out on the hock joints revealing a subacute granulocytic and mononuclear synovitis, in some of the samples this was associated with a more acute osteomyelitis.

These lesions explain the clinical presentation of lameness observed on the farm, although no lesions had been detected in the hock joints on gross examination.

E. cecorum infection was first described in broilers in the early 2000s (Wood and others 2002) but has become more common in recent years. Spinal osteomyelitis later in the production cycle is a typical finding but the bacterium can also cause systemic lesions including pericarditis, synovitis and other changes at an earlier stage as seen in these recent cases.

Based on APHA experience, lesions of septic arthritis can be difficult to detect at gross examination because they are more subtle than those observed in cases of *E. coli* or staphylococcal infections.

E. cecorum has emerged as a significant pathogen in broiler production globally, in some cases associated with the development of antimicrobial resistance (Jung and others 2018), although in the two cases referred to above the isolates were sensitive *in vitro* to all antimicrobials tested. APHA is undertaking further investigations of *E. cecorum* in British broiler production.

A recent paper (Grund and others 2020) showed that pathogenic *E. cecorum* is relatively resistant under environmental conditions commonly observed in broiler houses, illustrating the importance of good hygiene management to avoid carryover of infection between successive crops of birds.

Horizon scanning

Co-infections between *E. coli* and enterococci

As indicated in the preceding paragraph, *E. cecorum* is an increasingly important pathogen in broiler chickens. Other enterococci can also be implicated as pathogens including *E. faecalis* and *E. hirae*.

Colibacillosis is the commonest infectious disease of poultry worldwide and responsible for significant economic losses (Nolan and others 2020).

A recent paper (Walker and others 2020) described co-infections between avian pathogenic *E. coli* (APEC) and enterococci and showed that the latter may contribute to the development and severity of colibacillosis associated with APEC, for example in yolk sac infections.

Interactions between APEC and enterococci may be particularly significant in situations where natural host defence mechanisms limit iron availability, as enterococci are not limited by iron restriction.

APEC showed significantly better growth and survival in mixed culture with *E. faecalis* in iron restricted conditions *in vitro*. A similar effect was also demonstrated experimentally in infections in early embryos.

The authors suggest that enterococci may contribute to APEC-associated mortality in poultry, a potential interaction that merits further research.

References

APHA (2021a) Disease surveillance in England and Wales, May 2021. *Vet Record* 188 (11), 420

APHA (2021b) Disease surveillance in England and Wales, July 2021. *Vet Record* 189 (1), 23

APHA (2021c) Great Britain Avian quarterly report – Disease surveillance and emerging threats, vol 25, Quarter 1 (January to March 2021) https://www.gov.uk/government/publications/avian-gb-disease-surveillance-and-emerging-threats-reports

APHA (2021d) Disease surveillance in England and Wales, April 2021. *Vet Record* 188 (9), 343 to 344

Gamino, V, Gutierrez-Guzman, A V, Fernandez-de-Mera, I G, Ortiz, J A, Duran-Martin, M, de la Fuente, J, Gortazar, C and Hofle, U. (2012) Natural Bagaza virus infection in game birds in southern Spain. *Vet. Res.* 43: 65

Gibbens, N., Brown, I.H. and Irvine, R.M. (2014) Testing for exclusion of notifiable avian disease. *Veterinary Record* 174, 534 to 535

Gonzales-Viera,O., Crossley,B., Carvallo-Chaigneau,F.R., Blair, E.R. Rejmanek, D. and 5 others (2021) Infectious Bronchitis Virus Prevalence, Characterization, and Strain Identification in California Backyard Chickens. *Avian Diseases* 65, 188 to197

Grund A, Rautenschlein, S. and Jung, A. (2020) Tenacity of *Enterococcus cecorum* at different environmental conditions. *J Appl Microbiol.* 2020 May;130(5):1494 to1507. doi: 10.1111/jam.14899. Epub 2020 Nov 2. PMID: 33064913

Johnson N, Wakeley PR, Mansfield KL, McCracken F, Haxton B, Phipps LP and Fooks AR. Assessment of a novel real-time pan-flavivirus RT-polymerase chain reaction. *Vector Borne Zoonotic Dis*. 2010 October,10(7):665 to 671

Jung, A., Chen, L. R., Suyemoto, M. M., Barnes, H. J. and Borst, L. B (2018) A Review of Enterococcus cecorum Infection in Poultry. *Avian diseases* 62(3): 261 to 271 https://doi.org/10.1637/11825-030618-Review.1

Nolan, L.K., Vaillancourt, J.-P., Barbieri, N and Logue, C.M. (2020) Colibacillosis. in Diseases of Poultry, 14th Edition, ed Swayne, D.E. Wiley Blackwell p 770 to 771

Reid, H W, Moss, R. The response of four species of birds to louping ill virus. *Zentralblatt für Bakteriologie, Mikrobiologie und Hygiene* 1980; Abt Suppl 9: 220 to 223

Singleton, D.A., Ball, C., Rennie, C., Coxon, C., Ganapathy, K., Jones, P.H., Welchman, D. and Tulloch, J.S.P. (2021) Backyard poultry cases in UK small animal practices: Demographics, health conditions and pharmaceutical prescriptions. *Veterinary Record* 188, 265 https://doi.org/10.1002/vetr.71

Suárez-Bonnet, A., Herráez, P., Batista-Arteaga, M., Quesada-Canales, O., Andrada, M. and 2 others (2012) Follicular ovarian torsion in an ostrich (*Struthio camelus*) Veterinary Quarterly, 32:2, 103 to 105, DOI: 10.1080/01652176.2012.709651

Walker, G.K., Suyemoto, M.M., Gall, S., Chen, L., Thakur, S. and Borst, L.B. (2020) The role of *Enterococcus faecalis* during co-infection with avian pathogenic *Escherichia coli* in avian colibacillosis. *Avian Pathology* 49, 589-599

Welchman, D., Hansen, R. and Schock, A. (2019). Differential diagnosis of negated avian notifiable disease cases in Great Britain. *Veterinary Record* 184, 276, http://dx.doi.org/10.1136/vr.l938

Welchman, D, Ainsworth, H L, Pennycott, T W, MacKenzie, G and Wood, A M. Pheasant ataxia: a new condition in pheasant poults. *Vet. Rec.* 2000, 147: 93-97

Wood AM, MacKenzie G, McGiliveray NC, Brown L, Devriese LA and Baele M. (2002) Isolation of Enterococcus cecorum from bone lesions in broiler chickens. *Vet Rec.* ,150(1):27. PMID: 11822370

This publication is available at:

https://www.gov.uk/government/collections/animal-disease-surveillance-reports

Any enquiries regarding this publication should be sent to us at SIU@apha.gov.uk

http://apha.defra.gov.uk/vet-gateway/surveillance/index.htm