GB Emerging Threats Report

Avian diseases

Quarterly Report: Volume 18, No. 2
April – June (Q2) 2014

These reports aim to identify new, emerging and re-emerging animal-related diseases and threats. Their production is underpinned by a large amount of surveillance data and information compiled as part of Defra’s animal disease surveillance programme. Some of these data can be viewed on the AHVLA website: http://www.defra.gov.uk/ahvla-en/disease-control/surveillance/emerging/

VIDA diagnoses are recorded on the AHVLA FarmFile database and SAC Consulting LIMS databases and comply with agreed diagnostic criteria against which regular validations and audits are undertaken.

The investigational expertise and comprehensive diagnostic laboratory facilities of both AHVLA and SAC Consulting are widely acknowledged, and unusual disease problems tend to be referred to either. However, recognised conditions where there is either no diagnostic test, or for which a clinical diagnosis offers sufficient specificity to negate the need for laboratory investigation, are unlikely to be represented. The report may therefore be biased in favour of unusual incidents or those diseases that require laboratory investigation for confirmation.

AHVLA Laboratories and SAC Consulting Veterinary Surveillance Centres have UKAS Accreditation and comply with ISO 17025 standard.

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Highlights

- **Submission trends**: Decrease of 1% in the total number of avian diagnostic submissions to AHVLA and SAC during Q2-2014 compared with Q2-2013. This includes a fall of 4% in the total number of avian diagnostic submissions received by AHVLA and a rise of 13% received by SAC (pages 2-3).

- **New & Re-emerging diseases**: H4N6 LPAI infections in chickens; Enterococcal and streptococcal infections in broilers; ILT in broiler breeders; *Salmonella Infantis* in broilers (pages 3-5).

- **Unusual diagnoses**: Two incidents of *Salmonella Pullorum* in hobby chickens (page 5).

- **Changes in the industry and disease patterns**: The average weekly placings of broiler and layer chicks in June were the highest for four years (pages 5-7).
INTRODUCTION

DIAGNOSTIC SUBMISSION TRENDS: April - June 2014

April to June 2014 (Q2-2014) saw a 1% decrease in the total number of avian diagnostic submissions received by AHVLA and SAC Consulting (SAC) compared with Q2-2013 (670 vs. 678). A little over one-third of avian diagnostic submissions received in Q2-2014 were carcases (n=236), and the remainder were non-carcase submissions (n=434). Comparing Q2-2014 and Q2-2013, avian diagnostic submissions received by AHVLA decreased by 4% (558 vs. 579), comprising a fall in carcase submissions of 22% (150 vs. 192) but a rise in non-carcase submissions of 5% (408 vs. 387). The total number of submissions received by SAC rose by 13% (112 vs. 99) (Figure 1). Overall, chicken and turkey submissions showed small increases but game bird submissions declined (Figure 2).

Figure 1: Number of avian diagnostic submissions (excluding wild birds) examined in Great Britain by the AHVLA and SAC during Q2 (April-June) 2010-2014

Figure 2: Number and species of avian diagnostic submissions examined by the AHVLA and SAC from poultry premises in Great Britain* during Q2 (April-June) 2013-2014

Comparison of the four-year average for this quarter (Q2-2010 to Q2-2013) with Q2-2014 showed a decrease in total numbers of avian diagnostic submissions (non-carcase and carcase) to AHVLA and SAC Consulting (717 vs. 670). This comprised a 17% increase in the total number of avian non-carcase submissions (372 vs. 434) but a 32% drop in the total number of avian carcase diagnostic submissions (345 vs. 236) to AHVLA and SAC when comparing the same periods.

**DIAGNOSTIC SUBMISSION TREND COMMENTS:**

The trend over the last four years of declining carcase submissions to AHVLA in Q2 continued this year, but the trend for increasing non-carcase submissions continued. The rise in non-carcase submissions may reflect changes such as the increased use of relevant diagnostic assays at AHVLA and changes in the economic viability of the various poultry sectors. The decline in carcase submissions to AHVLA during the quarter was most marked in game birds (a 33% decline) which may have been partly a result of relatively good weather conditions early in the game bird rearing season. The closure of AHVLA laboratories as part of Surveillance 2014 (AHVLA, 2013) is also likely to have had an impact on avian diagnostic submissions during the quarter. Avian diagnostic submissions data, trends and other information will continue to be monitored, to understand the relevant risk factors and their potential impact on scanning surveillance in GB and the potential effects on the detection of new and re-emerging threats.

**NEW AND RE-EMERGING DISEASES & THREATS**

Maintaining good biosecurity and hygiene standards, disease awareness and vigilance and prompt investigation of problems are essential to limit both the risk of introduction and spread of infection and the impact of disease outbreaks. Surveillance activities and PVS and industry contact continue to monitor for the presence of any potential new or re-emergent threats in the GB poultry population.

**ONGOING NEW AND RE-EMERGING DISEASE INVESTIGATIONS**

**H4N6 LPAI virus infections detected from chicken flocks in England & Wales**

Two separate cases of non-notifiable H4N6 low pathogenicity avian influenza (LPAI) virus infection were detected in chicken flocks during May and June 2014 in central England and mid-Wales respectively. The first H4N6 LPAI virus detection (May 2014) arose as a result of testing samples from a broiler breeder flock that were submitted through the 12-month pilot scheme enabling private veterinary surgeons in Great Britain (GB) to request chargeable Notifiable Avian Disease (NAD) Exclusion testing (AHVLA, 2014; Gibbens and others, 2014). The second case was detected during June 2014 affecting a free-range chicken layer flock in mid-Wales. Clinical suspicion of NAD was initially reported due to increasing daily mortality (to ~100 hens daily) and reduced egg production (~16%) over a five-day period. Official veterinary and laboratory investigations (in accordance with international standards) at AHVLA Weybridge confirmed infection with a non-notifiable H4N6 LPAI virus that was highly similar, but not identical to, the H4N6 LPAI virus detected during May 2014. Detailed viral genome analyses also suggested that the H4N6 virus from the second case in Wales showed characteristics of a strain that had not recently transferred from wild birds, suggesting spread within the poultry sector. In both cases clinical signs resolved within a 2-week period. However, LPAI viruses can cause mild or subclinical infections in poultry making recognition and detection of disease more difficult, a potential contributory factor conducive to spread (Irvine, 2013a,b). The risk also exists of more extensive secondary spread in areas of higher poultry population density. Whilst the exact source of the H4N6 LPAI virus detected from these two cases was not definitively confirmed no other cases were reported.
The last NAD outbreak in GB occurred during June/July 2008 (H7N7 HPAI in a free-range layer flock, Oxfordshire; Defra, 2008). However, detections of non-notifiable avian influenza (AI) and avian paramyxovirus type 1 (APMV-1) virus infection in domestic poultry are not uncommon in GB; from February 2009 to April 2013 there were eight such cases. These cases all resulted in official veterinary and laboratory investigations by AHVLA and were initially reported either as a result of laboratory testing of routine endemic disease scanning surveillance submissions or as statutory Report cases. These events highlight the continuous threat presented to poultry health by AI and APMV-1 viruses. In the majority of these cases the source of infection was putatively attributed to be wild birds, but other risk pathways were also identified. Therefore, it is important to maintain good flock biosecurity and hygiene practices at all times, with prompt reporting of suspected NAD to the veterinary authorities.

Enterococcal and streptococcal infections in broilers

A variety of enterococci can cause infections in broilers. These include Enterococcus hirae which was identified by scanning surveillance as the cause of vegetative endocarditis in 21- to 24-day-old broilers during the quarter.

Septicaemia, femoral head necrosis and vegetative endocarditis due to Streptococcus pluranimalium was seen in a submission of 44-day-old broilers with a history of unexpected mortality since thinning. The post-mortem findings included focal granulomatous-necrotic lesions in the liver and spleen, crumbly femoral heads and vegetative lesions in the heart valves. Routine cultures of heart valve lesions and a femoral head yielded profuse growth of alpha-haemolytic Gram positive cocci further identified by molecular methods (16S rRNA gene sequencing) as Streptococcus pluranimalium. This organism is recognized as a potential pathogen of the reproductive tract in cattle, and has been reported in association with septicaemia and vegetative valvular lesions in adult broiler breeders (Hedegaard and others 2009), but there appear to be no previous descriptions of its occurrence in broiler chickens.

The origin of these organisms is unclear, but they may relate to hygiene issues in the hatchery (particularly in the case of enterococcal infections in young chicks) or on farm. It is important to maintain a high standard of hygiene practices, including in areas such as water supply lines, to prevent infections becoming endemic on farms, as well as maintaining good biosecurity. The use of techniques such as 16S rRNA sequencing is required to differentiate organisms such as S. pluranimalium from other, phenotypically similar streptococci. Infections with these groups of Gram positive bacteria will continue to be monitored by means of scanning surveillance.

Antimicrobial resistant Salmonella Infantis in broilers

Multidrug resistant clones of Salmonella Infantis have emerged over the last few years in the broiler industry in Europe (Nógrády and others 2012). The further dissemination of such clones in broilers and in broiler meat may represent a threat to public health.

The ability to identify emerging Salmonella threats and prevent them becoming permanently established in UK poultry flocks via efficient scanning surveillance and expert-led intervention is a major asset in terms of protecting public health, and the good reputation of the UK poultry industry for efficient Salmonella control.

Infectious Laryngotracheitis (ILT) in broiler breeders

The veterinary advisor to the British Poultry Council (BPC) wrote to the British Veterinary Poultry Association on 2 July highlighting the BPC’s concern over broiler breeder sites becoming regularly infected with ILT. Investigations were reported to have revealed that in many cases these infections have been associated with ILT vaccination on a nearby layer pullet rearing site. It is alleged that many of these pullet rearers are using ILT vaccine either by spray or drinking water, which is “off label”, as the datasheet for the vaccine stipulates it should be administered by eye drop. The use of a vaccine other than via the authorised route is a consideration under the Cascade (VMD, 2013). The BPC considered
that using the vaccine off-label may result in reversion to virulence of the vaccine with higher loadings of vaccine being excreted by vaccinated birds.

ILT has been diagnosed by AHVLA in the course of scanning surveillance activities this year, including in broiler breeders, and airborne transmission from nearby layer farms and a rearing farm which may be vaccinating was considered a possibility. ILT has also been diagnosed separately by AHVLA this year in backyard flocks. ILT is an economically important disease and is controlled in commercial and parent flocks in several different countries including GB by the use of live attenuated vaccines. However a recent review (Menendez and others 2014) has emphasised the importance of reversion to virulence of attenuated strains in the epidemiology of ILT, and this is exacerbated by poor mass administration of the vaccine. This reinforces the need for good vaccination practice to control ILT, as advocated by BPC. Infection can be spread directly from bird to bird and windborne transmission is also recognised. The situation will continue to be monitored through AHVLA scanning surveillance activities.

UNUSUAL DIAGNOSES

Endemic poultry diseases, including some unusual cases, continued to be diagnosed in backyard and commercial poultry during Q2-2014 in GB. A selection has also been described in the surveillance highlight reports published in the Veterinary Record (AHVLA, 2014a, SAC C VS, 2014). In these cases no wider threats were recognised and no specific actions required other than for producers and veterinarians to maintain vigilance for disease problems and investigate as appropriate.

**Salmonella Pullorum (Pullorum disease)**

*Salmonella* Pullorum infection was confirmed in two small hobby breeding flocks this quarter. Each case was associated with hatching eggs being brought onto the premises resulting in deaths of six out of 44 and five out of 40 chicks on separate holdings.

Pullorum disease can be spread through the egg from an infected carrier hen and also through contamination of the environment, such as through contaminated incubators. As a result, infection can result in the possibility of long term persistence on premises. If hatching eggs or hens are sold from these premises there is the risk that infection can be spread to other backyard farms.

Only two to four cases have been recorded on VIDA each year between 2005 and 2012. It is a well recognised disease that is not zoonotic but is now rare in chickens.

CHANGES IN THE INDUSTRY, DISEASE PATTERNS AND RISK FACTORS

**Broilers**

There was a small (1.8%) increase in placings of broiler chicks from UK hatcheries during Q2-2014 compared with the preceding quarter, and also a small increase compared with Q2-2013. The average weekly placings in June were the highest for four years (Figure 3). The broiler sector remains the most stable part of poultry meat production.
Turkeys
The numbers of turkey poults placed during Q2-2014 were 18% lower compared with the same period of 2013, reflecting a continued slight downward trend in placings in Q2 over the last four years (Figure 4), and a corresponding downward trend in the volume of turkey meat produced each month.

Layers
The number of layer chicks placed during June 2014 was 15% higher than the corresponding figure for June 2013 (Figure 5), although the average placings for Q2-2014 were slightly less than Q2-2013. Egg output in Q2-2014 was 100,000 cases higher than Q1, but 48,000 cases less than Q2-2013 (Figure 6), and free range eggs again accounted for 43% of eggs packed (Figure 7). The retail egg market is reported to be very challenging at present, although this is offset to some extent from the producers’ point of view by a reduction in feed prices.
Avian diagnostic submission rates and surveillance information will continue to be monitored to assess, where possible, the impact of financial and poultry demographic changes on scanning surveillance activities and endemic, exotic, new and re-emerging avian disease threats.

References


The poultry industry statistics are available online at:


The comments are supplemented by reports from industry and Poultry World.