GB Emerging Threats
Quarterly Report
Pig Diseases

Quarterly Report: Vol 21: Q2 April to June 2017

Contents
Overview and Introduction 2
New & re-emerging diseases and threats 2
Ongoing new & re-emerging disease investigations 7
Unusual diagnoses or presentations 8
Changes in disease patterns and risk factors 10
Horizon Scanning 12
References 12

Highlights

- Risk of African Swine Fever raised from very low to low 3
- Haemorrhagic disease outbreaks reported as suspect swine fever 5
- Severe outbreak of inclusion body rhinitis 9
- Staphylococcal skin infection and antimicrobial resistance 10
- Wild boar non-statutory pig pathogen surveillance 11

VIDA diagnoses are recorded on the APHA FarmFile database and SAC Consultancy: Veterinary Services LIMS database and comply with agreed diagnostic criteria against which regular validations and audits are undertaken.

The investigational expertise and comprehensive diagnostic laboratory facilities of both APHA and SAC C VS 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.

APHA VICS have UKAS Accreditation and comply with ISO 17025 standard. SAC C VS have UKAS accreditation at their central diagnostic laboratory and at the Aberdeen, Edinburgh, Perth, Ayr, Dumfries, Inverness, St Boswells and Thurso Disease Surveillance Centres which comply with ISO 17025 standard.

From September 2014 APHA contracted the services of partner Post Mortem providers. From April 2015, these services were provided by the Royal Veterinary College, the University of Bristol, University of Surrey, Wales Veterinary Science Centre and SACCVS. These providers contribute to the VIDA diagnoses recorded on the APHA FarmFile database and comply with agreed diagnostic criteria. To achieve a VIDA diagnosis, all testing must be carried out by a laboratory with ISO 17025 accreditation.
OVERVIEW

The Surveillance Webpages and Species Expert Group Webpage were launched and provide better access to information about the APHA surveillance network, diagnostic services and expertise. They include a webpage dedicated to pig disease surveillance http://ahvla.defra.gov.uk/vet-gateway/surveillance/seg/pig.htm.

Terms of reference for the Species Expert Groups were reviewed and the top-line items are:
- Detection, investigation and characterisation of new and re-emerging pig-related threats in GB
- Provision of pig-based expertise to other APHA and Defra /Welsh /Scottish Government work areas
- Development of veterinary scanning surveillance and knowledge exchange networks
- Maintenance and development of expertise

The Pig Health and Welfare Council biennial report was published in June and includes a useful summary of disease threats or potential threats to UK pigs identified in 2015-16 (PHWC, 2017) in the section on horizon scanning.

INTRODUCTION

This report contains analysis of animal health and scanning surveillance data and information from APHA, SAC Consulting Veterinary Services (SAC CVS) and non-APHA partner post mortem providers (SAC CVS, University of Bristol, Royal Veterinary College, University of Surrey (four sites), Wales Veterinary Science Centre, Aberystwyth) from the second quarter of 2017 compared to data in previous quarters and years. The network of partner post mortem providers is developing, and the current providers and sites have commenced activity at various times between September 2014 and July 2015. The report is compiled by the APHA Pig Expert Group, and is based on diagnostic submissions as well as on surveillance data and information from other sources. It is planned for the latter two to be expanded with time as other sources of complementary information are included. These scanning surveillance activities aim to provide timely detection of animal-related new and re-emerging diseases and threats. The information contained in this report, and other linked outputs, is used by government, the livestock industry, farmers and vets to maintain awareness and take action to manage risks that may be associated with the identified threats. Further information can be found at: http://ahvla.defra.gov.uk/vet-gateway/surveillance/index.htm.

NEW AND RE-EMERGING DISEASES AND THREATS

Monitoring the trends in diagnoses of known diseases cannot, by definition, detect either new diseases or changes in endemic diseases that would prevent a diagnosis from being reached (for example a change in the pathogen that compromised the usual diagnostic test). Such new or emerging diseases would probably first be detected by observation of increased numbers of submissions for clinical and/or pathological syndromes for which a diagnosis could not be reached in the normal way. Submissions for which no diagnosis is reached (DNR) despite testing deemed to allow reasonable potential for a diagnosis to be reached are regularly analysed to look for increases in undiagnosed disease which could indicate the presence of a new or emerging disease. Undiagnosed disease submissions are summarised broadly by the clinical presentation of disease and, once this has been determined by further investigation, the body system affected. Both groups are investigated and trends in the levels are compared over time.

Data recording by APHA and SAC CVS was harmonised from 2007. The Species Expert Group reviews trends in VIDA DNR data each quarter with the aim of providing information on potential new or emerging diseases or syndromes. ‘Prior years’ refers to pooled data for 2012 to 2016 for GB VIDA data. Supplementary analysis of APHA DNR data is also undertaken using an early detection system (EDS). This uses a statistical algorithm to estimate an expected number of DNR reports and a threshold value. If the current number of DNR reports exceeds the threshold (i.e. exceedance score>1), this indicates that the number of reports is statistically higher than expected. When this EDS identifies categories of submissions where the threshold DNR has been exceeded, the Species Expert Group reviews the data to investigate further. This review may involve assessment of individual DNR submissions. Where this DNR analysis finds no evidence of a new and emerging threat or other issue, the detail of these reviews in response to thresholds being exceeded may not be reported here.
Analysis of Diagnosis Not Reached (DNR) by syndrome and presenting sign

- A total of 19.5% of GB pig submissions to the second quarter of 2017 did not reach a diagnosis following reasonable testing. This was not significantly changed compared to the overall DNR of 18.3% for the same period in prior years. The overall DNR rate for APHA (19.7%) for the first six months of 2017 was not significantly different compared to 19.0% for the same period in prior years. The overall DNR rate of 19.3% for the first six months of 2017 for SAC CVS was not significantly different compared to 16.1% for this period in prior years.

- The DNR rate for submissions with a presenting sign of “Other” with reasonable testing in SAC CVS submissions was significantly increased to 33.0% in this quarter compared to 10.4% for the same quarter in prior years. Basic information from VIDA about undiagnosed SAC cases was reviewed. Two were from Eastern England, four from Scotland. The ages varied widely (one day to five months) and the disease syndromes were diverse (reproductive, digestive, musculoskeletal) and overall, these undiagnosed cases did not raise concern with respect to new and emerging disease.

- Four neonatal pig (0-7 days old) submissions with a presenting sign of diarrhoea were undiagnosed to Q2 2017 which was a significant increase compared to the same period in prior years. Although this represents a small number of cases, they and undiagnosed preweaned pig diarrhoea cases were reviewed. Histopathology indicated a likely bacterial cause in five of eight cases however, testing for the common enteropathogens for this age of pig which was possible in seven of the eight cases, did not identify the cause. Further submissions were recommended and additional diagnostic bacterial testing of such cases in future is being considered.

- A significant increase in DNR in Q2 2017 compared to prior years for musculoskeletal syndrome submissions involving five undiagnosed cases was reviewed. Three were non-carcase submissions which would have limited diagnostic investigation. Two carcase submissions were undiagnosed; in one, prior antibiotic treatment was cited as a reason for lack of diagnosis while the other remained undiagnosed despite reasonable testing. These five cases do not suggest a new and emerging disease but DNR for this syndrome will be kept under review.

- No other individual syndrome or presenting sign showed a significant increase in DNR in the first six months of 2017 in GB, APHA or SAC CVS submissions compared to the same period in prior years.

Analysis of undiagnosed submissions in and up to the second quarter of 2017 has not revealed evidence of a new and emerging syndrome in GB pigs.

Risk of African Swine Fever introduction raised to low

The risk of African Swine Fever (ASF) being introduced into the UK pig herd has been raised from very low to low (but does occur) in the latest outbreak assessment from APHA’s International Disease Monitoring Team ASF POA Aug 3 2017. This followed reports of cases of ASF in dead wild boar in the Czech Republic, the first case in Romania in backyard pigs and a westward spread in Poland. The detection in Czech wild boar represented a significant geographic jump into a new region. The source of infection has not been confirmed, but generally when the disease appears for the first time at this distance from previously affected areas, it is more likely to be due to illegal movements or feeding on contaminated products. The first wild boar cases in the Czech Republic were mostly found near inhabited areas and introduction of infection by wild boar consuming contaminated products is the most likely scenario. Intensive surveillance and wild boar containment and control are in progress.

An alert was issued to Pig Veterinary Society members and in the APHA VIC monthly newsletters to veterinary practices requesting veterinarians to raise awareness about the ASF situation in Eastern Europe amongst their pig-keeping clients and to emphasise the need to minimise the risks of introduction of ASF, and other exotic diseases, to their pigs. Key amongst actions is preventing feeding of kitchen waste to pigs. APHA recently ran a campaign recently to get this message across to pig owners and members of the public (APHA comms illegal feeding of pigs). Reviewing biosecurity measures to
address any weak areas, ensuring that staff do not attend other pigs, that staff and visitors wear clothing and boots dedicated to the farm and that no meat or meat products are brought onto the farm are all vital. APHA contributed to an on-line item in Pig World (ASF Pig World Aug2017) to help disseminate key messages. The BVA and Pig Veterinary Society have also issued a news release emphasising these BVA-PVS ASF Aug 2017.

Figure 1: African Swine Fever reports in 2017 in wild boar and domestic pigs of Eastern Europe

![Figure 1: African Swine Fever reports in 2017 in wild boar and domestic pigs of Eastern Europe](image)

Early detection of suspect notifiable disease and prompt reporting to APHA field services is essential and there is more information about the signs and lesions of ASF on these links: Defra ASF Guidance and ASForce-project, and information about the disease in Eastern Europe on these links: FAO ASF and EFSA ASF control.

Porcine Epidemic Diarrhoea – Continued need for vigilance

Since May 2017, Manitoba, Canada experienced an upsurge of porcine epidemic diarrhoea (PED) with over 60 cases confirmed on farms between May and July 2017 according to the Manitoba Agriculture website: Manitoba Canada PED update. This represents a significant escalation as prior to May of this year, only 10 PED cases had been confirmed in Manitoba since the first in February 2014. The recent PED outbreaks have been confirmed in breeding, nursery and finisher herds. The Manitoba pig industry is working with government to raise awareness and encourage implementation of strict biosecurity measures by pig producers, transporters and suppliers to help limit the spread of the virus. PED is a reportable disease in Manitoba, and pig producers have to contact their veterinarian immediately if pigs show any signs of illness. No details are given about how infection has spread but PED virus is known to be very readily transmitted by movements of infected pigs and anything contaminated with virus-infected faeces on vehicles, feed, equipment, staff, visitors and other between pig farms, abattoirs and other “high-traffic” sites. The latest August figures suggest that the spread of PED is now slowing.

PED is notifiable in England and Scotland and if clinical signs raise suspicion of disease, this must be promptly reported as detailed here: [https://www.gov.uk/guidance/porcine-epidemic-diarrhoea-how-to-](https://www.gov.uk/guidance/porcine-epidemic-diarrhoea-how-to-).
As the name suggests, PED causes diarrhoea and in naïve pigs this is explosive (epidemic) and spreads rapidly to affect many pigs in a group over a few days. The diarrhoea can affect pigs of any age and tends to be watery. Disease due to virulent strains of PED causes high mortality in young suckling pigs, while in older pigs, diarrhoea is transient and they mostly recover although they may also show a period of reduced appetite and lethargy. In sows, the main signs may be lethargy and loose faeces spreading within a group.

The situation in Canada serves as a reminder that strains of both virulent and less virulent PED virus are still actively circulating in some parts of the world and, as PED is not reportable or notifiable in most countries, knowledge about the distribution of PEDV and associated outbreaks may be patchy. Thus, the introduction of PEDV to the UK pig population remains a risk and veterinarians attending pig units should review all measures with their pig-keeping clients, particularly those relating to biosecurity, to minimise any risks of virus introduction. It is also important that vets ensure their clients are aware of the clinical signs of PED and their responsibility to report or consult their vet if they have concerns. Detailed biosecurity and other advice is available on this link http://pork.ahdb.org.uk/health-welfare/health/emerging-diseases/pedv/standard-operating-procedures/. Importations of pigs or semen into the UK should follow guidance in the National Pig Association voluntary import protocol and involve vet to vet discussions early in the planning stages: http://www.npa-uk.org.uk/hres/NPA%20Import%20Protocol. As in other countries, minimising the risk of PED being introduced into the UK pig population requires vigilance and attention to detail across the pig industry. No PEDV has been detected in surveillance on diagnostic submissions to APHA from pigs with diarrhoea since June 2013 through PCR testing funded by AHDB Pork. APHA sent a reminder of the need for vigilance for PED to Pig Veterinary Society members and in the APHA VIC monthly newsletters to veterinary practices in July and this was reiterated in the monthly Veterinary Record APHA surveillance report (APHA 2017a).

**Haemorrhagic disease outbreaks reported as suspect swine fever**

Two reports of suspect swine fever were made to APHA during Q2, 2017; both were negated. In the first, the Thirsk Veterinary Investigation Centre (VIC) reported suspicion of swine fever when dead, seven-day-old piglets with haemorrhagic lesions illustrated in Figures 2 and 3 were submitted from a farm on which about half the piglets in each of three litters had died in the previous two days.

Kidney (arrow) and serosal haemorrhages (Figure 2) and skin haemorrhages (Figure 3) in a case of thrombocytopenic purpura

Figure 2

![Figure 2](image1)

Figure 3

![Figure 3](image2)
APHA veterinarians immediately visited the herd of origin to investigate and found sows and piglets were well, with no pyrexia or other clinical signs of swine fever, and that deaths reported in weaned pigs related to long-term respiratory disease. They were able to rule out swine fever on clinical grounds. The clinical, epidemiological and pathological features made it likely that the piglets died from thrombocytopenic purpura (TP). This occurs in preweaned pigs when the sow produces antibody to fetal thrombocyte antigens which is ingested by piglets in colostrum and leads to a coagulopathy. TP has prompted suspect swine fever report cases on previous occasions as the haemorrhages found at postmortem examination can resemble those seen in swine fever. TP is not seen in gilt litters and all three affected litters were from sows; no further problems were reported from the unit. The disease tends to be sporadic in commercial herds. The case was described in the APHA monthly Veterinary Record surveillance report (APHA 2017b).

In the second case, dead piglets aged two and three weeks of age were submitted to the Carmarthen VIC after being seen to be off colour in the morning and dying rapidly. There was extensive red-purple skin discolouration (Figure 4) and unusually marked haemorrhages over the kidney cortices of one pig (Figure 5).

Figure 4: Red-purple discolouration of the skin due to erysipelas septicaemia

![Red-purple discolouration of the skin due to erysipelas septicaemia](image1)

Figure 5: Marked kidney haemorrhages due to erysipelas septicaemia

![Marked kidney haemorrhages due to erysipelas septicaemia](image2)
When further history was received that there was an unwell sow with pyrexia (40.5°C), two more sick piglets and others showing malaise at the smallholder premises, the case was reported as suspect notifiable disease (swine fevers). Field APHA veterinarians visited and examined the live pigs, and sampled them to test for swine fevers as it was not possible to rule out the possibility of notifiable disease on clinical grounds. Tests for African and Classical swine fevers were negative and restrictions were lifted. Bacteriology was then progressed and *Erysipelothrix rhusiopathiae* was isolated from the spleens, livers and meninges confirming a diagnosis of erysipelas. No pigs on the premises had been vaccinated for erysipelas. The live sick pigs had responded well to treatment with penicillin. This case is to be included in the September APHA disease surveillance report in the Veterinary Record.

Where suspect swine fever signs and/or lesions are seen, they must be reported to APHA [https://www.gov.uk/guidance/african-swine-fever](https://www.gov.uk/guidance/african-swine-fever) for investigation as occurred in these cases which highlight the importance of prompt veterinary investigation and achieving a diagnosis in disease incidents (once negated for notifiable disease), particularly where clinical signs resemble some of those seen in porcine notifiable disease.

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

**Seasonal outbreaks of *Klebsiella pneumonias* septicaemia diagnosed**

*Klebsiella* species septicaemia was the subject of a focus surveillance article (APHA, 2017c) in the Veterinary Record to provide an alert just before the likely season for disease. The first summer outbreak of *Klebsiella pneumoniae* subsp. *pneumoniae* (Kpp) septicaemia of 2017 was diagnosed in May. This was followed by two more in July: all three were typical of those diagnosed every year since 2011 between the months of May and September (Figure 6). All but two outbreaks have been in East Anglia and, to date, there have been 28 outbreaks on 21 premises in pigs from 10 days of age to weaning, with 19 occurring on outdoor breeding units. All outbreaks from 2011-2016 have involved the same Kpp strain which is sequence type ST25, and all outbreak isolates have the same small plasmid and set of virulence genes. Most isolates show no acquired antimicrobial resistance.

**Figure 6: Seasonality of *Klebsiella pneumoniae* outbreaks in preweaned pigs 2011-2017**

![Figure 6: Seasonality of *Klebsiella pneumoniae* outbreaks in preweaned pigs 2011-2017](image)

The reasons for the strictly seasonal pattern of diagnoses of this disease and its age restriction are not understood and the potential for investigation into the role of climatic factors is being explored with relevant experts. Although disease outbreaks have been self-limiting and with mostly relatively low incidence, Kpp septicaemia diagnoses constituted 11 per cent of diagnoses of infectious disease in preweaned pigs made by the APHA surveillance network in 2016.

There is no evidence of any link to human Kpp infections and the Human Animal Infections and Risk Surveillance (HAIRS) group has been made aware of the APHA investigations. Further information about Kpp septicaemia for veterinarians and farmers is available online at
UNUSUAL DIAGNOSES OR PRESENTATIONS

There were a number of unusual diagnoses or presentations this quarter; details of these have been included in monthly APHA or SAC CVS reports; [http://ahvla.defra.gov.uk/vet-gateway/surveillance/reports.htm](http://ahvla.defra.gov.uk/vet-gateway/surveillance/reports.htm). These are kept under review to assess whether they justify initiation of emerging disease investigations.

**Unusual nervous signs in finisher pigs with a likely viral aetiology**

One per cent of a group of 12-week-old pigs placed into straw yards four weeks previously were affected over a 48-hour period with unusual clinical signs. All showed a flaccid paralysis of the forelimbs, and malaise, with a preference for lateral recumbency. Some were able to shuffle around on their hindlegs (Figure 7).

Figure 7: Unusual forelimb paralysis in grower pig due to a non-suppurative, likely viral, myelitis (image kindly provided by the veterinary practitioner)

Two pigs were examined at the Bury St Edmunds VIC; one had died and had a fibrinous polyserositis typical of Glässer’s disease which was confirmed by isolation of *Haemophilus parasuis*. The other pig had been euthanased and had no gross lesions of note. In view of the unusual clinical presentation, the spinal cords from both pigs were removed and examined histologically and a severe, segmental, subacute lymphoplasmacytic poliomyelitis was detected in both pigs. These non-suppurative inflammatory lesions were consistent with a viral infection of the spinal cord. Potential viral causes included teschoviruses, sapelovirus and certain enteroviruses. The clinical and epidemiological scenario of limited morbidity and a very short-lived disease episode was not suggestive of Teschen virus involvement. No teschovirus or sapelovirus was detected by PCR and no specific viral cause was identified. Porcine sapelovirus has been identified in nervous disease incidents in pigs submitted to APHA in 2008 and 2014 (APHA 2014, Schock and others 2014). Clinical signs varied from progressive hindlimb paresis/paralysis to lateral recumbency and paddling. Although the large majority of nervous disease investigated in pigs at the APHA is due to bacterial meningitis (mainly due to *Streptococcus suis* and also *H parasuis*), viral neurotropic disease should be considered as a possible differential diagnosis, along with oedema disease and water deprivation in particular. In this incident, disease occurred concurrently with Glässer’s disease which complicated the clinical picture, but the unusual clinical signs had prompted the veterinarian to initiate further investigation which proved valuable and the case was described in the July APHA disease surveillance report in the Veterinary Record (APHA, 2017a).
**Swine influenza infection in sows associated with several abortions**

Convincing seroconversion (<1/10 to 1/5120) between acute and convalescent sera from the same sow collected two weeks apart was demonstrated to the pandemic H1N1 2009 strain of swine influenza. The sow was one of five out of a group of 60 showing late-term abortion over the period of a week in an indoor breeding herd. Foetuses submitted from this sow were freshly dead and of similar size without any mummification and no infectious agent of abortion was identified by routine testing. The serology results suggested the abortion was likely to have occurred due to maternal factors relating to the influenza, such as pyrexia, although there was no overt respiratory disease apparent in the sows. A second aborting sow showed a significant increase in antibody titre to the same influenza strain (1/80 increased to 1/640) between acute and convalescent sera which supported the diagnosis. Swine influenza infection in breeding pigs is very variable in clinical presentation; outbreaks in England have previously been confirmed by APHA in which reproductive disease with abortions was reported, while in other breeding herds, minimal or no clinical signs were noted despite confirmed infection (Williamson and others, 2012). Swine influenza is mainly diagnosed by PCR on plain nasal swabs or tissues (pool of tonsil, trachea and cranial lung from each pig) and this virological testing is offered at no charge to the submitting veterinary practice under a Defra-funded swine influenza surveillance project at APHA. There is more information about this surveillance on this link: [http://ahvla.defra.gov.uk/documents/surveillance/diseases/swine-influenza.pdf](http://ahvla.defra.gov.uk/documents/surveillance/diseases/swine-influenza.pdf).

**Severe outbreak of inclusion body rhinitis in young pigs**

Piglets approaching weaning were submitted to the Shrewsbury VIC to investigate an ongoing problem of sneezing, mucopurulent nasal discharges, malaise and reduced growth with high morbidity, in litters from around three weeks of age and continuing into the postweaning period. Serology and PCR testing of nasal swabs had not detected evidence of swine influenza involvement. The submitted pigs showed marked accumulations of mucopurulent material around the turbinates. In two, there was significant occlusion of the nasal passages as illustrated in Figure 8. *Pasteurella multocida* was isolated from the nasal chambers and, although older pigs were not showing signs of upper respiratory tract disease or twisted snouts, the *P multocida* isolates were tested in the atrophic rhinitis toxigenic ELISA with negative results.

Histopathology revealed lesions pathognomonic for inclusion body rhinitis (porcine cytomegalovirus infection, PCMV). There was marked to severe rhinitis, with extensive viral cytopathic lesions; the severity of the lesions correlated with the unusually marked and widespread clinical picture on farm. Histopathology confirmed that bacteria were playing a secondary role in the pathology. The veterinarian noted that a large intake of replacement gilts had been sourced several months earlier before closing the herd. Whether this disrupted endemic immunity to PCMV in the resident herd is unclear; disease occurred in litters from all parities of sow. Vaccination for porcine reproductive and respiratory syndrome (PRRS) was being performed at three weeks of age and in view of the poor health of many piglets at this age, vaccination was delayed to avoid exacerbating disease due to PCMV disease and, potentially, adversely affecting PRRS vaccine ‘take’. A more detailed description was included in the July APHA disease surveillance report in the Veterinary Record (APHA, 2017a).

![Figure 8: Inclusion body rhinitis in a weaner pig: transverse section of snout showing nasal passages occluded by mucopurulent material](image)
The primary presenting sign for almost all diagnoses of inclusion body rhinitis recorded in VIDA in the last 10 years has been respiratory disease or wasting and the cases have been predominantly in pigs aged from three to six weeks. Diagnosis is confirmed by histological examination of lesioned tissue from the nasal cavities.

**CHANGES IN DISEASE PATTERNS AND RISK FACTORS**

This section of the report gives information on occurrence of selected diseases. The data originate from submissions and are summarised and presented according to the diagnosis reached and assigned as a VIDA code. Our charts show the number of diagnoses (numerator) as a proportion of the number of submissions in which that diagnosis was possible (denominator), for all of GB, England & Wales and for Scotland. The bars indicate the 95% confidence limits. Note that the y-axis of the charts varies and therefore care must be taken when comparing individual charts.

**Staphylococcal skin infection and antimicrobial resistance**

Livestock-associated meticillin-resistant *Staphylococcus aureus* (LA-MRSA) was identified in an APHA scanning surveillance submission to a Veterinary Investigation Centre in England following testing of a *Staphylococcus aureus* isolate obtained from a piglet submitted to investigate skin disease. Antimicrobial resistance testing of the isolate was carried out within APHA's "Monitoring of Antimicrobial Resistance in Bacteria from Animals and their Environment" project. This is the second LA-MRSA to be isolated from a pig in a scanning surveillance submission in England; the first was in late 2014 (Hall and others, 2015), also in a case of skin disease. Guidance for those working with livestock to reduce the risk of LA-MRSA infection is available [LAMRSA guidance for livestock workers](#). The diagnostic investigation also detected *Staphylococcus hyicus*, the common cause of greasy pig disease, which was diagnosed in the pig which had the skin lesions illustrated in Figures 9 and 10. The *S. hyicus* showed the same antimicrobial resistance pattern and is being further characterised. There have been no LA-MRSA prevalence studies in pigs reported in UK since 2008 when the EU breeding pigs survey did not detect LA-MRSA (EFSA, 2009). The Veterinary Medicines Directorate, which is the policy lead for antimicrobial resistance, has recently submitted an update of LA-MRSA isolations from animals in the UK which will shortly be published in the Veterinary Record.

Figure 9: Exudative epidermitis lesions

Figure 10: Facial exudative epidermitis lesions
Swine dysentery outbreaks continue into second quarter of 2017

Six diagnoses of swine dysentery were recorded in APHA and SAC CVS submissions in the first six months of 2017 on five premises in England; three in North Yorkshire, one in East Anglia and one in Cheshire. This represents a slight upward trend compared to 2015-16 as shown in Figure 11. Where Brachyspira hyodysenteriae isolates were available from outbreaks, they were tested for tiamulin sensitivity free of charge and none were resistant. The development of resistance in Brachyspira hyodysenteriae to antimicrobials commonly used in the control of swine dysentery is a recognized risk, particularly in situations where medication is used long-term. The control of swine dysentery using alternative interventions (all-in, all-out management systems; cleaning and disinfection; and partial and total depopulation leading to eradication) is vital to prevent the development of wider antimicrobial resistance.

Figure 11: Seasonality of GB swine dysentery diagnoses as a % of diagnosable submissions

Advice issued to pig producers in 2016 when a cluster of swine dysentery cases was seen in Yorkshire remains relevant NPA Swine dysentery alert 2016. There is advice on swine dysentery control and information about the Significant Diseases Charter on the AHDB Pork website http://pork.ahdb.org.uk/health-welfare/health/swine-dysentery/.

Wild boar non-statutory pig pathogen surveillance

The findings of AHDB Pork-funded surveillance for non-statutory endemic pathogens in culled wild boar have been reported (Williamson and others, 2017). The findings were broadly similar to those of a similar study performed in 2013-14 except that evidence of Hepatitis E virus (HEV) infection was found; this pathogen was not included in previous testing. HEV infection or exposure was detected in 6% of the culled wild boar which were tested. One wild boar was excreting HEV; the virus was identified as genotype HEV-3 and was not typical of HEV strains reported in domestic pigs or human cases. Those consuming wild boar products should take the same precautions as when consuming pork or other meat and meat products, and ensure that they are thoroughly cooked before consumption. Serological evidence of exposure to Leptospira Bratislava was detected with a low estimated seroprevalence of 3.6%. This finding supports the need for routinely practising good personal hygiene and wearing protective clothing in those contacting wild boar, as for other livestock and wildlife species, for example during evisceration of carcases. No Salmonella or Brachyspira species, or porcine epidemic diarrhoea virus were detected in faeces. No antibodies to porcine reproductive and respiratory syndrome virus or Mycoplasma hyopneumoniae were detected in sera. With the given population and sample sizes this provides at least 95% confidence that the prevalence of those pathogens in this wild boar population was less than 4%. The results from this study are relevant for a long-established wild boar population in a forested region of England which has a relatively low commercial pig density and should not be extrapolated to wild boar populations which exist, or could establish, in other regions.
HORIZON SCANNING

Virulent Genotype 1 strains of Porcine Reproductive and Respiratory Syndrome Virus
Two recent publications report Porcine Reproductive and Respiratory Syndrome genotype 1 (European) virus strains with greater virulence. One describes the results of experimental infections with several PRRSV strains, one of which was a Belarus strain isolated in 2009, known as BOR59 (Stadejek and others, 2017). The demonstration in this strain of increased virulence in young piglets by experimental infection provides more robust evidence than reports from field outbreaks, as the involvement of concurrent infections, environmental, managemental and other factors can be controlled. This BOR59 strain is genotype 1, subtype 2, while all GB PRRSV strains identified so far are genotype 1, subtype 1.

A report from Austria describes field outbreaks with severe neonatal piglet mortality in 2015 due to a strain named AUT15-33 (Sinn and others, 2016) and there are media reports that this strain has also been detected in pig farms in Germany (Pig Progress, 2017). PRRSV strain AUT15-33 does not cluster closely with known GB strains and shows 84.3 to 86.0% similarity to PRRSV vaccines available in the UK. No reports of PRRS outbreaks in GB with such severe disease as described in this publication have been received by APHA or SAC CVS to date.

Testing for PRRSV of genotypes 1 and 2 is recommended in the National Pig Association voluntary import protocol when importing live pigs and semen to address the risk of importing new PRRSV strains. While PCR will immediately identify any genotype 2 PRRSV strains, sequencing would be required to detect the presence of divergent genotype 1 PRRSV strains in PCR-positive diagnostic submissions. PRRSV sequences in PCR-positive APHA submissions are analysed as a batch when surveillance funding allows, and sequencing is performed on individual PCR-positive submissions on request on a chargeable basis. A session on PRRS control and the feasibility of control and elimination at regional and national level is planned for the Pig Veterinary Society autumn conference in November 2017.

Novel “Linda” pestivirus identified in Austrian herd with congenital tremor
Researchers in Austria have published a description of a novel pestivirus in association with congenital tremors (CT) in piglets on one breeding farm (Lamp and others, 2017). The virus has been isolated and named Linda virus as an acronym for ‘Lateral-shaking inducing neurodegenerative agent’ as the clinical signs are of lateral shaking rather than more typical vertical shaking (ie head and body bouncing up and down not side to side). However, as only one affected herd is described, it is not clear how consistent that feature is. Piglet mortality occurred due to Linda pestivirus as many affected piglets could not suckle; a significant increase in piglet mortality combined with congenital tremor could prompt a report of suspect notifiable disease. The Austrian herd on which the novel Linda pestivirus was detected had clinical signs of CT from January to July 2015 and, once all sows had delivered affected litters, the outbreak stopped. Unlike atypical porcine pestivirus (APPV), Linda virus was easily isolated in culture. This new Linda pestivirus is genetically distinct from APPV which has been detected in CT cases in England from 2011, 2016 and 2017, as well as several other countries globally and there is a description of congenital tremor and APPV detection in a 2016 surveillance focus article (APHA, 2016). The Linda pestivirus is stated to be genetically most similar to Bungowannah virus which was described in Australia in 2006 causing pig mortality and found to date on just two neighbouring pig farms. It is not known how widespread the new Linda virus is in the swine population in Austria or elsewhere. Experimental infection to confirm virulence of Linda virus have not yet been performed. The three most recent CT type A2 outbreaks investigated in 2016-17 by APHA have all tested positive for APPV. However, as a precaution, archived CT material at APHA will be tested for Linda pestivirus DNA with testing based on PCR primers in the publication.

REFERENCES

APHA (2016) Congenital tremor associated with atypical porcine pestivirus *Veterinary Record* 2017 180: 42-43

APHA (2017a) Disease surveillance in England and Wales, July 2017 *Veterinary Record* 2017 181: 135-138 http://veterinaryrecord.bmj.com/content/181/6/135

APHA (2017b) Disease surveillance in England and Wales, June 2017 *Veterinary Record* 2017 181: 11-15 http://veterinaryrecord.bmj.com/content/181/1/11

APHA (2017c) Surveillance focus in Disease surveillance in England and Wales, April 2017: *Klebsiella pneumoniae* septicemia in preweaned pigs *Veterinary Record* 2017 180: 443 http://veterinaryrecord.bmj.com/content/180/18/443


Sinn L. J., Eva Klingler, Benjamin Lamp, Rene Brunthaler, Herbert Weissenböck, Till Rümenapf and Andrea Ladinig (2016). Emergence of a virulent porcine reproductive and respiratory syndrome virus (PRRSV) 1 strain in Lower Austria Porcine Health Management (2016) 2:28

