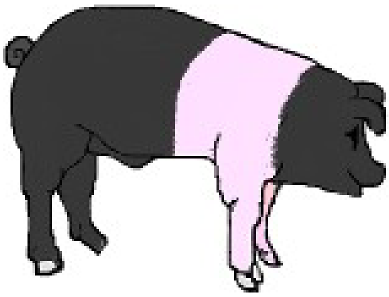

# Great Britain pig quarterly report: disease surveillance and emerging threats

## Volume 28: Quarter 1 of 2024 (January to March)

## Highlights

- African swine fever spreads west in Germany – page 5
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## Introduction and overview

This quarterly report reviews disease trends and disease threats for the first quarter of 2024, January to March. 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 Pig Expert Group networks.

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 annexe available on GOV.UK.

**Pig disease surveillance dashboard outputs**

Diagnoses made most frequently in the first quarter of 2024 through the Great Britain (England, Wales and Scotland) scanning surveillance network are listed in table 1. These can be interrogated further using the interactive pig disease surveillance dashboard which was launched in October 2017.

**Table 1: Great Britain scanning surveillance 15 most frequent diagnoses in quarter 1 of 2024 and for the same quarter in 2023**

| 15 most frequent diagnoses in quarter 1 of 2024 (total 342) | 15 most frequent diagnoses in quarter 1 of 2023 (total 355) |
|---|---|
| 1. Salmonellosis – *S.* Typhimurium | 1. *Lawsonia* sp. associated disease |
| 2. *Streptococcus suis* disease | 2. Salmonellosis – *S.* Typhimurium |
| 3. Colibacillosis - enteric | 3. PRRS - systemic |
| 4. Porcine reproductive and respiratory syndrome (PRRS) - systemic | 4. *Streptoccus suis* disease |
| 5. *Glaesserella parasuis* disease | 5. PRRS - pneumonia |
| 6. *Brachyspira pilosicoli* colitis | 6. Swine influenza |
| 7. *Lawsonia* sp. associated disease | 7. Swine dysentery – *B. hyodysenteriae* |
| 8. Swine influenza | 8. *Pasteurella multocida* pneumonia |
| 9. Swine dysentery – *B. hyodysenteriae* | 9. *Brachyspira pilosicoli* colitis |
| 10. *Pasteurella multocida* pneumonia | 10. Colibacillosis - enteric |
| 11. Pneumonia other cause | 11. Digestive disease – not listed |
| 12. PRRS - pneumonia | 12. Gastric ulceration |
| 13. Streptococcal disease (non-*S. suis*) | 13. Pneumonia other cause |
| 14. Gastric ulceration | 14. Serositis dt *Mycoplasma hyorhinis* |
| 15. Intestinal volvulus or torsion | 15. PRRS - foetopathy |

Note: further diagnoses may be added for records for submissions made in quarter 1 of 2024 which are finalised at a later date.

Surveillance data for diagnostic submissions in quarter 1 of 2024 are illustrated in Figure 1.

**Figures 1a to 1d: summary surveillance data for 585 submission records in quarter 1 of 2024 (508 in quarter 1 of 2023)**

**Figure 1a: pig age**

| Age Category | |
|---|---|
| Adult | 79 |
| Mixed | 5 |
| Neonatal | 14 |
| Postwean | 325 |
| Prewean | 32 |
| Unknown/other | 130 |

**Figure 1b: disease syndrome**

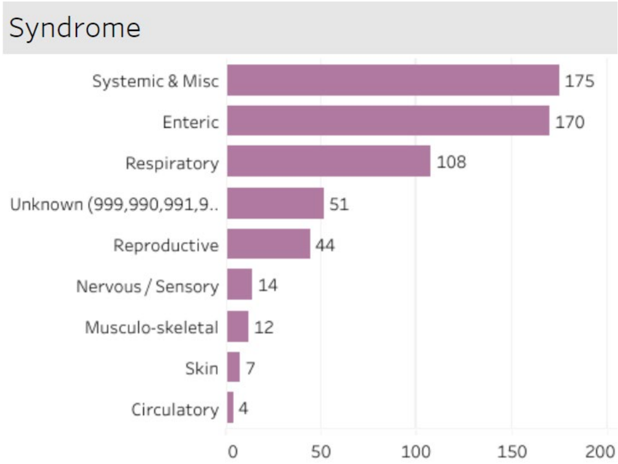



**Figure 1c: submission type**

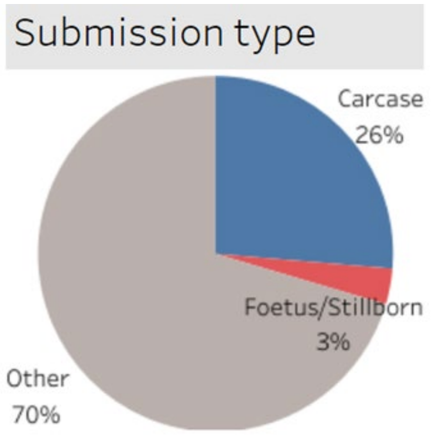
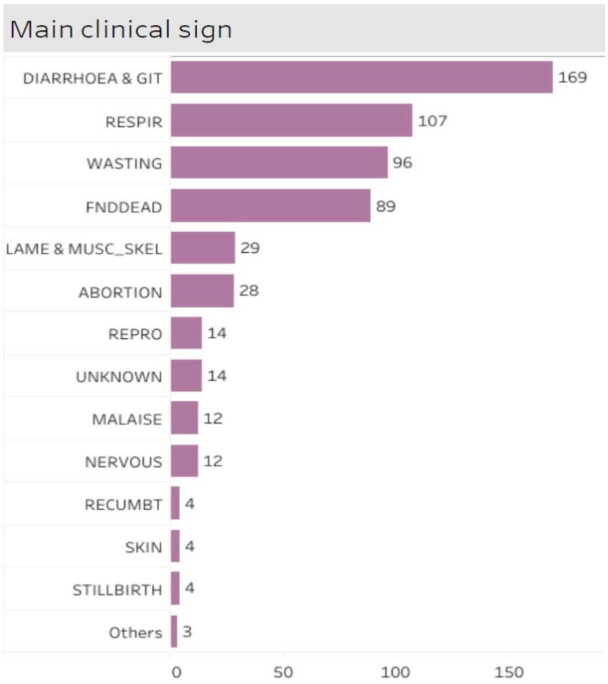



**Figure 1d: main clinical sign reported**




These diagnostic submissions are voluntary and subject to several sources of bias. The profile of submissions for the first quarter of 2024 differed from that of the same quarter in 2023 in that the most frequent main clinical sign was diarrhoea and gastro-intestinal, however the most frequent syndrome was systemic and miscellaneous, closely followed by enteric.

As noted in the quarterly report for the last quarter of 2023 (APHA, 2023), total Great Britain (GB) diagnostic submissions in this quarter have increased compared to previous years. Total submissions for quarter 1 of 2024 were higher than in the same quarter in 2020 to 2023, being 24% higher than the average for these previous quarters. This was due to a rise in non-carcase submissions with the balance of submission types changing from being 36% carcases in quarter

1 of 2023 to 26% carcases in quarter 1 of 2024.

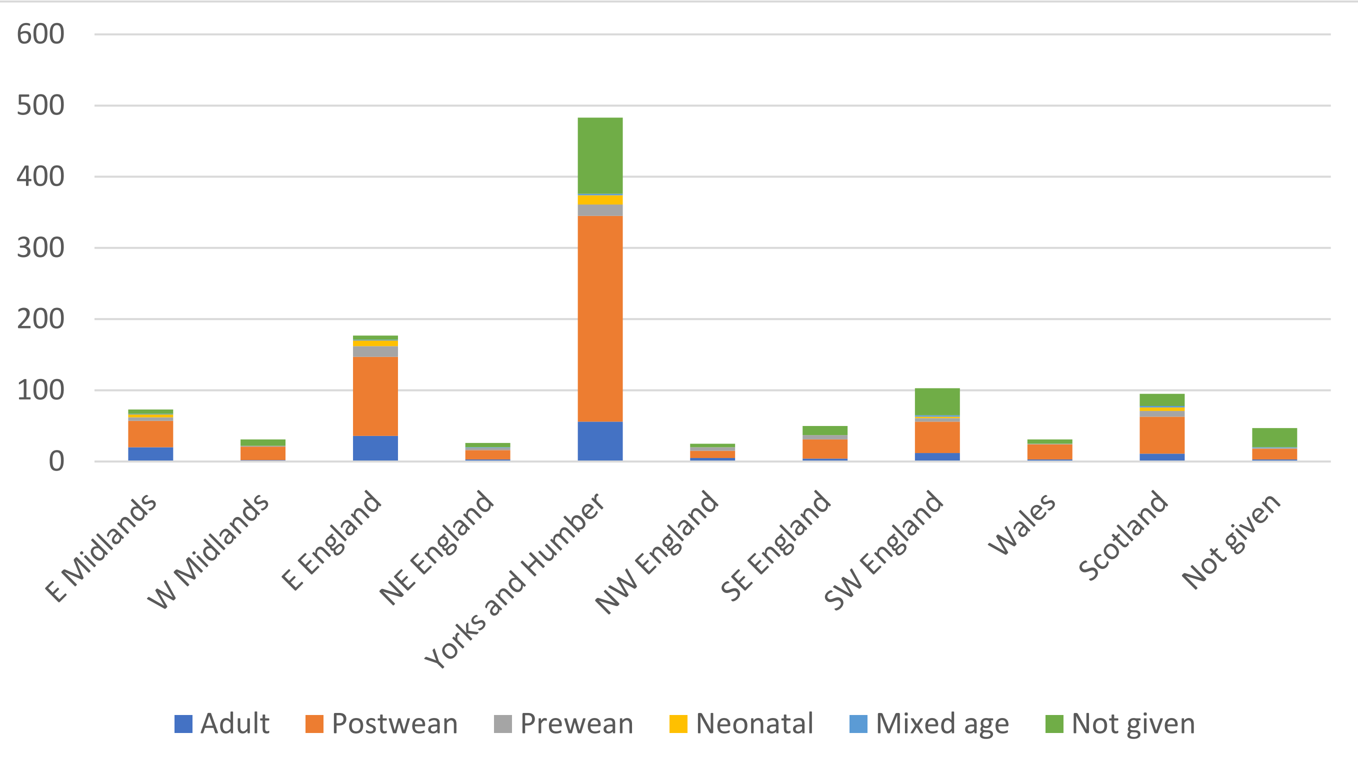
The throughput of non-carcase submissions to the GB scanning surveillance network in quarter 1 of 2024 increased by 43% compared to the average for quarter 1 in the previous four years (2020-2023), while the throughput of carcase submissions in quarter 1 of 2024 reduced by 18% compared to the average for quarter 1 in the previous four years.

This change in balance of sample type can affect the number and profile of diagnoses achieved as carcases enable more complete diagnostic investigation. In terms of numbers of diagnoses, the effect of reducing carcase submissions appears to be partially offset by the increased number of non-carcase submissions, with a total of 342 diagnoses made in quarter 1 of 2024 compared to 355 diagnoses in quarter 1 of 2023.

There is guidance available for veterinarians on sampling and testing pigs affected with different disease syndromes. Veterinarians are encouraged to contact their regional Veterinary Investigation Centre to discuss investigations with Veterinary Investigation Officers at APHA and SRUC.

Figure 2 shows that most pig submissions come from the two regions with most commercial pigs, and that submissions from the Yorkshire and Humberside region are most numerous. Initiatives to encourage more submissions that fulfil the needs of scanning surveillance are being discussed.

**Figure 2: Pig submission records for six months October 2023 to March 2024 by region and pig age category** – data extracted from enhanced pig dashboard 7-5-24




An updated GB pig population report from APHA's Livestock Demographic Data Group (LDDG) has been published. This report is based on GB pig movement data from 2020 to 2021. This provides maps showing both pig population and pig holding densities.

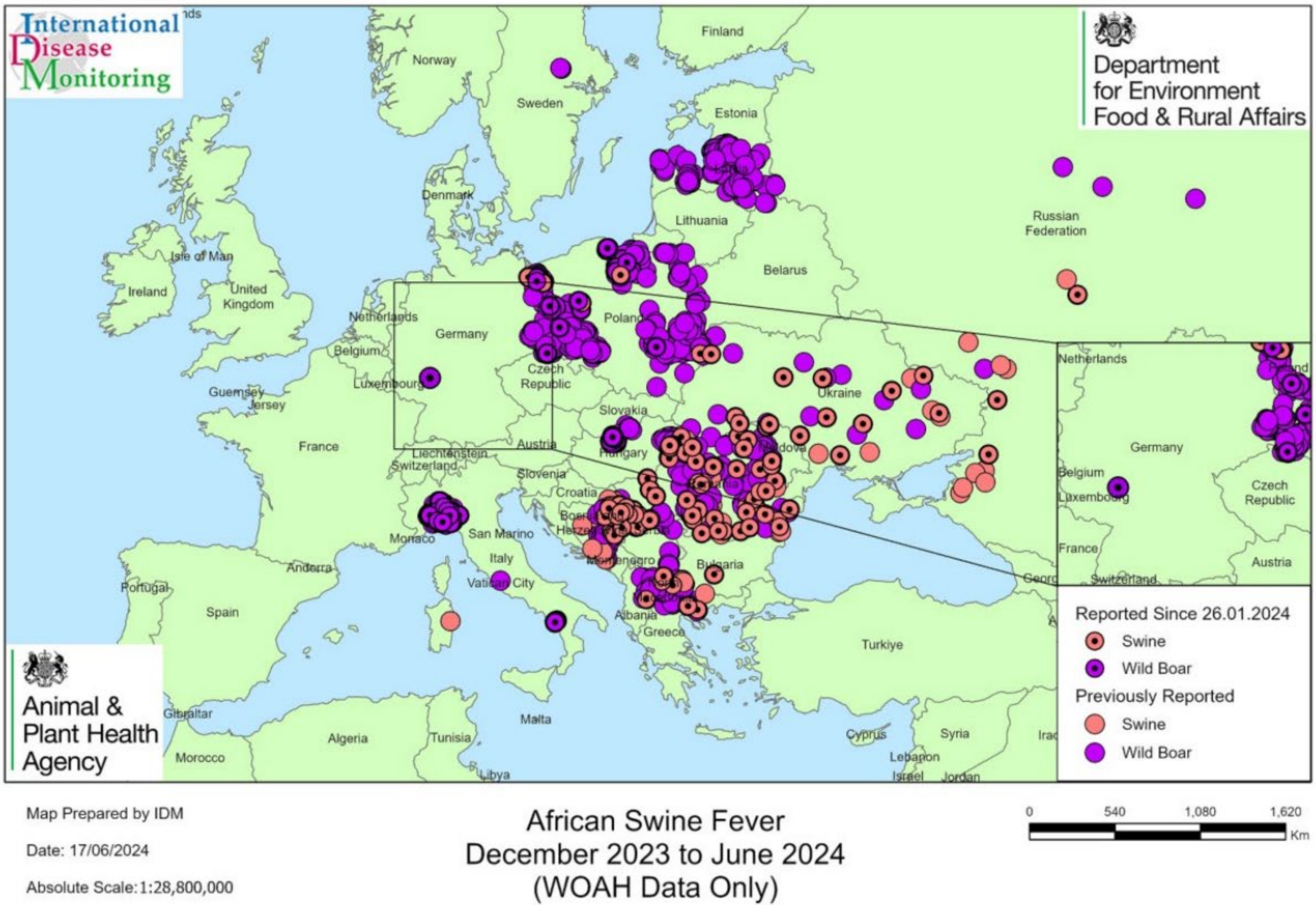
## New and re-emerging diseases and threats

### African swine fever spreads west in Germany

Updated assessments continue to be published on African swine fever (ASF) on GOV.UK. The most recent updates on the ASF situation in Europe were issued in January and June 2024. Several significant developments during 2024 were described.

The first case of ASF in the state of Hesse in western Germany was confirmed in a wild boar in mid-June west of Frankfurt as illustrated in Figure 3. The state of Hesse neighbours the highest pig-producing state in Germany, North Rhine-Westphalia. Also in Germany, the first domestic pig outbreak of 2024 was confirmed on June 5th. This is the ninth domestic pig outbreak in Germany since the first report in domestic pigs in 2020. It involved a finisher unit in Mecklenburg–Western Pomerania state in the north-east of Germany.

**Figure 3: ASF reports for domestic pigs (swine) and wild boar in Europe for December 2023 to June 2024 WOAH data only (mapped 17 June 2024)**




Poland has also reported its first domestic pig outbreak of 2024 on June 4th, the most recent prior to this was in October 2023. The affected premises was in the east of the country and had a small herd of ten pigs.

Another first report of ASF was made by Albania in wild boar in February 2024, this brings the total number of ASF-affected countries in Europe to 28. A total of four ASF cases were reported in the northeastern area, close to the Kosovan Border and 30km from the border with North Macedonia. The 27th country to be affected in Europe was Montenegro which recorded its first occurrence of ASF on the 17th of January. Veterinary authorities detected two dead wild boar

500 meters from the border with Bosnia and Herzegovina.

Further spread of ASF in wild boar in the affected regions in northern Italy has led to expansion of restriction zones northwards and westwards as well as new initiatives to control the wild boar population. The Italian government announced that troops are to be deployed to markedly reduce Italy's wild boar population in some areas over the next five years. The northernmost ASF detection in Italy to date is around 60km from the border with Switzerland where authorities are preparing measures to prevent ASF spread in their wild boar population in the event of an outbreak (Pig Site, 2024).

Sweden has reported six more ASF-positive wild boar carcases in 2024, they believe these to be historical cases related to the outbreak in autumn 2023. ASF was reported in Sweden for the first time in wild boar on 6 September 2023. The carcases have been found in Fagersta only, close to the epicentre of the outbreak and Sweden still plans to apply for ASF disease freedom in autumn 2024.

The year of 2023 saw the highest number of outbreaks in domestic pig ever reported in EU member states. A publication on ASF in wild boar and domestic pigs in Europe shows a higher winter occurrence in wild boar in some countries, although there is variation by country (Rogoll and others, 2023). In contrast, domestic pig ASF outbreaks tend to show a peak over summer months. The paper discusses the different factors which may be influencing the data.

Maps showing information on the European Union (EU) ASF restriction zones are available. Monthly IDM summaries are also included in the disease surveillance items in the Veterinary Record. The Swine Health Information Centre (SHIC) global reports include a round-up of ASF each month.

An EU project (VAX4ASF) involving multiple partners aims to create a next-generation vaccine against ASF. The Pirbright Institute is involved in its development, along with sixteen other countries.

Recombinant strains of ASF virus (ASFV) genotypes I and II were detected in domestic pigs in 2023 within northern provinces of Vietnam and were described in a dispatch article (Le and others, 2024). The finding was made during surveillance in these regions in September and October 2023 following the detections of recombinant strains of ASFV in China in 2022 (Zhao and others, 2023). There are currently two live-attenuated ASFV vaccines licensed in Vietnam. However, the recombinant strains found in North Vietnam and China are resistant to the single p72 genotype II vaccines. This may negatively impact the success of current disease control strategies and the ability to evaluate the efficacy of vaccination campaigns in Vietnam and potentially elsewhere in south-east Asia.

Meat and meat products brought into the UK from affected countries as personal imports and illegal imports represent the most significant risk of introduction of exotic notifiable diseases including ASF, Classical swine fever and foot and mouth disease (FMD). There are Government restrictions on the movement of pork and pork products into Great Britain to help safeguard pigs from the threat of ASF; it is illegal to bring non-commercial pork or pork products weighing over two kilograms in from EU member states and European Free Trade Association states unless they are produced to the EU's commercial standards. These restrictions do not apply to commercial imports. It remains illegal to trade in pork or wild boar meat from ASF-affected areas or to bring in meat products from Asia or Africa.

Information on ASF is disseminated to veterinary practices and Pig Veterinary Society members. The work of veterinary practitioners to raise awareness about ASF amongst UK pig keepers is vital, together with advising their clients on resolving biosecurity weaknesses to reduce the risk of introduction of disease.

Pig keepers are reminded that it is illegal to feed pigs catering, kitchen or domestic waste, or meat or meat products. Providing dedicated clothing and boots for staff and visitors, limiting visitors to a minimum, and preventing outside vehicles or equipment which may be contaminated from coming on to the farm are also all valuable procedures to reinforce. Images of the clinical signs and pathology of ASF are available. Suspect cases must be reported promptly to APHA and this is followed by an official veterinary investigation.

## Porcine epidemic diarrhoea and other porcine enteric coronavirus surveillance

Porcine Epidemic Diarrhoea (PED) due to any PED virus strain remains notifiable in England and Scotland and suspicion of disease, or confirmation of infection, must be reported (Defra, 2015 and Scottish Government, 2016). No more suspect incidents of PED have been reported since the case in May 2022 on a small pig premises in England in which PED was ruled out and iron deficiency anaemia was diagnosed.

Enhanced surveillance for PED continues and diagnostic submissions from cases of diarrhoea and/or enteropathy in pigs (non-suspect PED) submitted to APHA have been routinely tested by PCR for PED virus (PEDV) and transmissible gastroenteritis virus (TGEV) on a weekly basis. None have been positive for PEDV or TGEV in over 1,550 diagnostic submissions tested under Agriculture and Horticulture Development Board (AHDB) Pork funding from June 2013 to March 2024.

This enhanced surveillance has included testing for porcine deltacoronavirus (PDCoV) since February 2023 under the same funding and no PDCoV has been detected to date. This surveillance aims to detect any of these three porcine enteric coronaviruses, should they occur as a new and (re-)emerging cause of porcine diarrhoea in pigs and thus a potential threat to pig health and welfare. The last diagnosis of PED and of TGE recorded in the Great Britain national diagnostic database (VIDA) was in 2002 and 1999, respectively. PDCoV has not been detected to date.

## Serum-tonsil archive from healthy pigs

Establishing and maintaining archives of pig material is part of preparedness for potential new and emerging threats and also allows assessment of pathogen prevalence for key endemic diseases such as porcine circovirus 2 and porcine reproductive and respiratory syndrome virus (Powell and others, 2016). Past archives have proven valuable in assessing the national herd status for new and emerging pathogens, including porcine circovirus 3 (APHA, 2021) and porcine epidemic diarrhoea. Archives were previously established in 2013 and 2019. A new archive of sera and tonsils from 800 healthy pigs in England sampled at eight abattoirs in late 2023 to early 2024 has been completed. This was achieved through APHA and AHBD collaboration, with funding provided through a Collaborative Action for Pork Safety (CAPS)

Project from the Food Safety Research Network and from APHA’s scanning surveillance for pig diseases project.

## Unusual diagnoses or presentations

### Microcephaly and cerebral dysplasia

Very unusual brain pathology was noted when two four-week-old pedigree rarebreed pigs were submitted to the University of Bristol, one of APHA’s partner postmortem providers. The pigs were born into a litter of nine to a multiparous sow. Clinical signs since birth were poor growth, failure to thrive and abnormal behaviour manifesting as not coming to feed with the other pigs and being “a bit off”. The pigs were in a small herd on a mixed livestock species holding kept by an organic producer and no vaccination was performed. The remaining pigs were stated to be healthy.

The brains of both pigs had similar gross pathology with small cerebral hemispheres and the whole cerebrum appeared smaller (Figure 4). Histopathology confirmed microcephaly and cerebral dysplasia in both pigs. There were some non-suppurative inflammatory lesions in the brain of one, spinal cord of the other, and kidney of one. Mild, multifocal, lymphoplasmacytic interstitial pneumonia was also present in one pig.

**Figure 4: Small cerebral hemispheres in a pig (microcephaly)**


There is little information in the literature on microcephaly in pigs which is more commonly found in other species, particularly ruminants associated with infection in early gestation with certain teratogenic viruses including pestiviruses or Orthobunyaviruses (e.g.Schmallenberg virus). It can occur in pigs due to *in utero* infection with mosquito-borne flaviviruses (natural infection with Japanese encephalitis virus and experimental infections with Zikavirus). The non-suppurative inflammation detected in several tissues provides some support for a teratogenic viral insult, however, these lesions may reflect concurrent viral disease, incidental to the microcephaly.

Non-infectious causes resulting in microcephaly include a genetic cause, maternal hyperthermia or profound vitamin A deficiency. Healthy littermates and an absence of eye deformity in the two pigs make vitamin A deficiency unlikely. Microcephaly is one feature of several complex neurodevelopmental syndromes with a proven genetic basis in humans, cattle and sheep (Floriot and others, 2015; Nicholas and others, 2023; Rudd Garces and others, 2024).

Next generation sequencing has identified porcine cytomegalovirus and porcine astrovirus in central nervous system tissues, neither of which are described to date as causes of microcephaly, although they may be responsible for the inflammatory lesions detected. Pestiviruses were not detected by either NGS or pan-pestivirus PCRs. Finding evidence of endemic viruses in four-week-old pigs is not unexpected. Further investigations are in progress to determine whether either virus is implicated in the microcephaly lesions.

Alongside a possible viral cause, a genetic basis for the pathology is also being investigated. This requires the affected pig genome to be sequenced and analysed, looking in the first instance for target genes known to be associated with microcephaly in humans or other animals.

### *Bacillus licheniformis* abortions

Abortions were submitted for diagnostic investigation from one herd over several years. In several of these there was evidence of bacterial placentitis associated with isolation of *Bacillus licheniformis* from foetal stomach contents. This is usually a sporadic disease issue in pigs; in this herd there were three diagnoses of abortion due to *B. licheniformis* though they occurred sporadically over a prolonged period (years) and not all litters submitted were affected with *B. licheniformis*.

*B. licheniformis* is an environmental organism and is a more common agent of abortion in cattle in which it is associated with spoiled feed (e.g. hay, silage, bedding) and tends to be seen more in winter months.

No literature was found specifically about *B. licheniformis* abortion in pigs but, as it is an environmental organism causing opportunistic infection, it was advised to review areas allowing build-up of the organism such as water tanks and pipes, biofilms and feed bins. Recommendations were also made to check for and prevent spoilage of bedding and to undertake a thorough clean of feed bins, feed handling equipment and the water system. Interestingly the organism was being used as a probiotic in weaners.

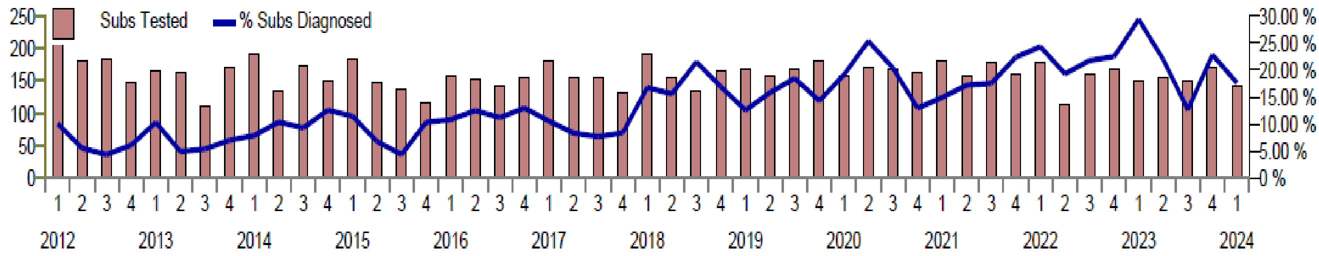
## Changes in disease patterns and risk factors

### Porcine reproductive and respiratory syndrome virus dashboard update

Porcine reproductive and respiratory syndrome (PRRS) is one of the most significant endemic viral infections in UK pigs. PRRS impacts pig health and welfare adversely and drives antimicrobial use through bacterial infections which result from, or are exacerbated by, its immunosuppressive effect. The APHA's interactive PRRS dashboard has been updated to include surveillance and diagnostic data from the GB scanning surveillance network for submissions diagnosed with PRRS in 2023. The dashboard shows 140 diagnoses of PRRS recorded in VIDA in 2023 and the annual diagnostic rate has shown an upward trend in recent years. All diagnoses made were due to PRRSV-1 and no PRRSV-2 has been detected in British pigs to date.

The diagnostic rate for PRRS in Great Britain fell slightly in quarter 1 of 2024 but remains at a significant rate, although lower than the peak in the first quarter of 2023 when the diagnostic rate exceeded the previous peak in quarter 2 of 2020 (Figure 5). The data underline the importance of PRRS as an endemic pathogen in GB pigs. PRRS is the priority for disease control in the pig component of the Animal Health and Welfare pathway alongside a focus on biosecurity improvement to control endemic pig diseases and help prevent the introduction of exotic disease threats. No PRRSV-2 has been detected in UK pigs to date.

**Figure 5: Diagnostic rate of PRRS by year and quarter as a percentage of diagnosable submissions to the Great Britain scanning surveillance network**



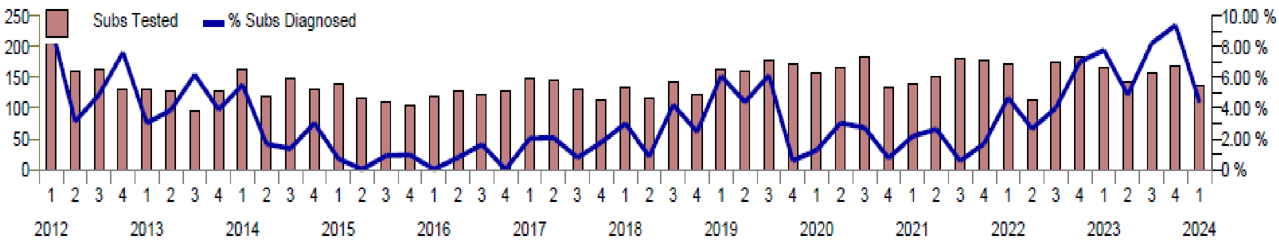

As shown in the updated PRRS dashboard for Great Britain, diagnoses were made during 2023 in England, Scotland and Wales. The dashboard identifies the five most common diagnoses made alongside PRRS in pigs subjected to post-mortem examination at postmortem sites within the GB scanning surveillance network. These are: disease due to *Streptococcus suis* and streptococcal meningitis; salmonellosis (all serotypes); serositis due to *Mycoplasma hyorhinis*; systemic disease due to *Glaesserella parasuis;* and disease due to *Pasteurella multocida* (principally pneumonia). Identification of PRRS and these other diseases during comprehensive diagnostic investigations allows veterinarians to target treatment, and disease prevention and control strategies more effectively.

### Swine dysentery diagnoses continue in 2024

An upward trend in the number of diagnoses of swine dysentery made through the Great Britain scanning surveillance network (at APHA and SRUC laboratories) has been noted since the end of 2021 and cases have continued to be diagnosed in 2024. In more recent years, veterinarians have noticed that some confirmed cases of swine dysentery have been in pigs showing relatively mild to moderate diarrhoea rather than typical mucus and blood in diarrhoea that is associated with swine dysentery.

The diagnostic rate of swine dysentery caused by *Brachyspira hyodysenteriae* fell in quarter 1 of 2024 compared to the previous quarter as shown in Figure 6. A number of these were reported to the pig industry's Significant Diseases Charter which issued alerts to raise awareness about swine dysentery outbreaks. Twelve diagnoses were made on nine premises in quarter 1 of 2024 in pigs in four counties in England (Norfolk, East Riding and North Lincolnshire, Derbyshire and Northumberland) and one in Scotland. Thirteen diagnoses were made on 12 premises in quarter 1 of 2023 in pigs in six counties in England. These can be seen on the interactive GB pig disease surveillance dashboard.

**Figure 6: Diagnostic rate of swine dysentery by year and quarter as a percentage of diagnosable submissions to the Great Britain scanning surveillance network**




Whole genome sequencing (WGS) and minimum inhibitory concentration (MIC) testing by broth microdilution is undertaken on a representative *B. hyodysenteriae* isolate from a submission from each premises (where successfully isolated and provided to APHA) under funding from APHA's pig disease scanning surveillance project. WGS enables multilocus sequence typing (MLST). MLST is a tool for characterisation of isolates of a bacterial species by analysing sequence data of seven conserved genes in each *B. hyodysenteriae* isolate. This results in a combination of alleles known as a sequence type (ST) for each isolate. The multilocus sequence types of *B. hyodysenteriae* isolates from pigs in Great Britain, as well as the genes or SNPs associated with reduced antimicrobial susceptibility that they possess, are represented on the [B. hyodysenteriae MLST dashboard].

Antimicrobial sensitivity testing has not detected any *B. hyodysenteriae* isolates with MIC concentrations exceeding the breakpoint for clinical resistance in quarter 1 of 2024. A November ST251 isolate was the most recent to show clinical tiamulin resistance and also had MICs for other licensed antimicrobials tested at or above clinical breakpoint values. All the tiamulin-resistant isolates identified from 2020 to 2023 to date (none were identified from 2017 to 2019) have been ST251 and from pigs in the north-east of England. Prior to these, the most recent isolate with multi-drug resistance was identified in 2016 and was ST8. No further ST251 isolates have been identified to date in 2024. Apart from ST251-associated cases, clinical antimicrobial resistance does not appear to be a main factor behind the upward trend in swine dysentery diagnoses since 2021.

Table 4 shows the STs identified so far for isolates from submissions to APHA or SRUC in the first three months of 2024. Each year several novel allelic profiles are identified; these are submitted to the pubMLST database and allocated a new ST. There are already three novel STs identified in 2024 (ST339, 340 and 341). One additional ST (243) was identified for the first time in the UK, this has previously been described in a single 2013 isolate from Europe. There is no evidence from the sequencing that the increased cases are due to the spread of a dominant sequence type of *B. hyodysenteriae*. Five different sequence types were identified in 2021, seven in 2022, ten in 2023 and eight so far in 2024.

The National Pig Association and AHDB Pork have raised awareness and advice on prevention is provided through AHDB Pork on [swine-dysentery] and [biosecurity]. This includes encouraging pig producers to sign up to the [Significant Diseases Charter] and promotion of the #Muck Free Truck [lorry wash message] on the need for pig producers, processors and hauliers to ensure livestock lorries are properly cleaned. This campaign was launched several years ago by the National Pig Association and AHDB Pork, and endorsed by the four Chief Veterinary Officers, in response to the threat posed by ASF and other livestock diseases, including swine dysentery.

**Table 4: Sequence types of *Brachyspira hyodysenteriae* isolates from submissions received in quarter one of 2024**

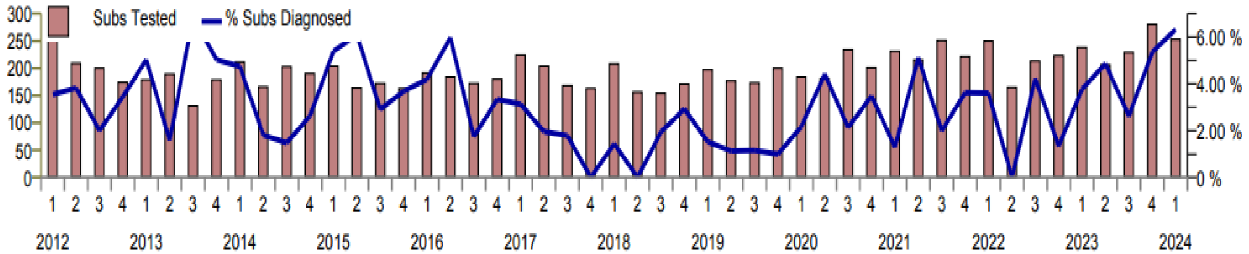
Note that further STs of isolates from quarter 1 of 2024 may be identified if more isolates are sequenced from this time period.

| ST identified | Number of isolates | Counties of origin in 2024 | ST identified in UK isolates prior to 2024 |
|---|---|---|---|
| 8 | 1 | East Riding and North Lincolnshire | Yes |
| 88 | 2 | East Riding and North Lincolnshire | Yes |
| 242 | 1 | East Riding and North Lincolnshire | Yes |
| 243 | 1 | Derbyshire | No |
| 319 | 1 | Northumberland | Yes (first detection 2023) |
| 339 | 1 | Fife | No |
| 340 | 1 | Norfolk | No |
| 341 | 2 | Norfolk | No |

**Increase in diagnostic rate of disease due to *Glaesserella parasuis***

The diagnostic rate of disease due to *Glaesserella parasuis* (Gps) has doubled over the last two quarters, as shown in Figure 7. The number of diagnoses in 2023 was 40 compared to 21 in 2022. Seventeen diagnoses have been recorded to date from submissions to the GB scanning surveillance network in the first three months of 2024.

**Figure 7: Diagnostic rate of disease due to *Glaesserella parasuis* by year and quarter as a percentage of diagnosable submissions**

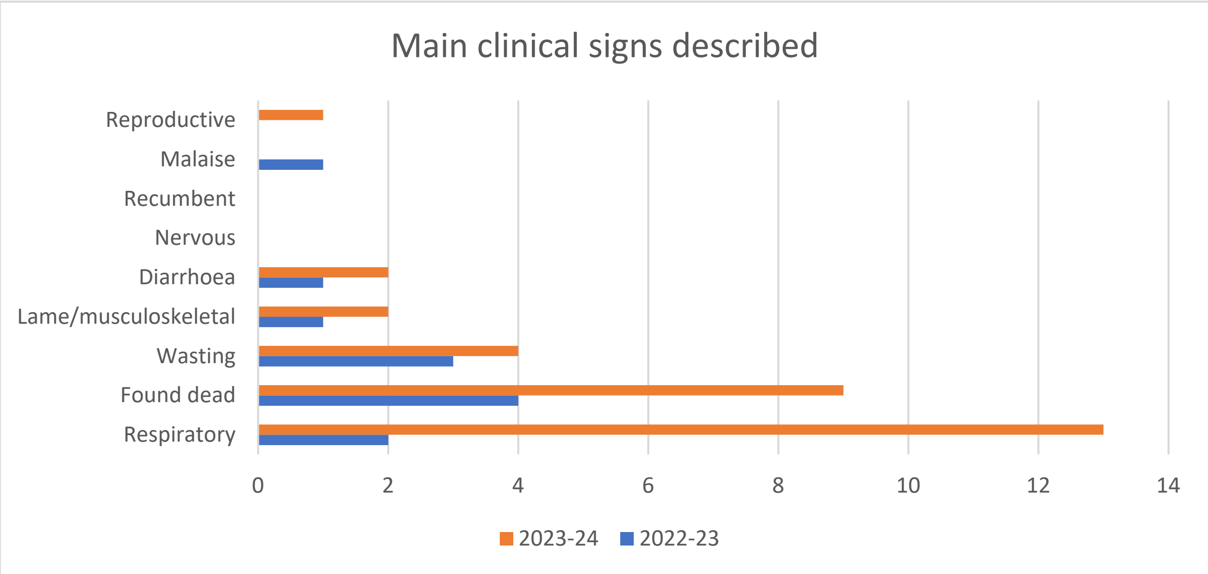



Thirty-two diagnoses were made during the six months during which the diagnostic rate increased, quarter 4 2023 and quarter 1 of 2024.

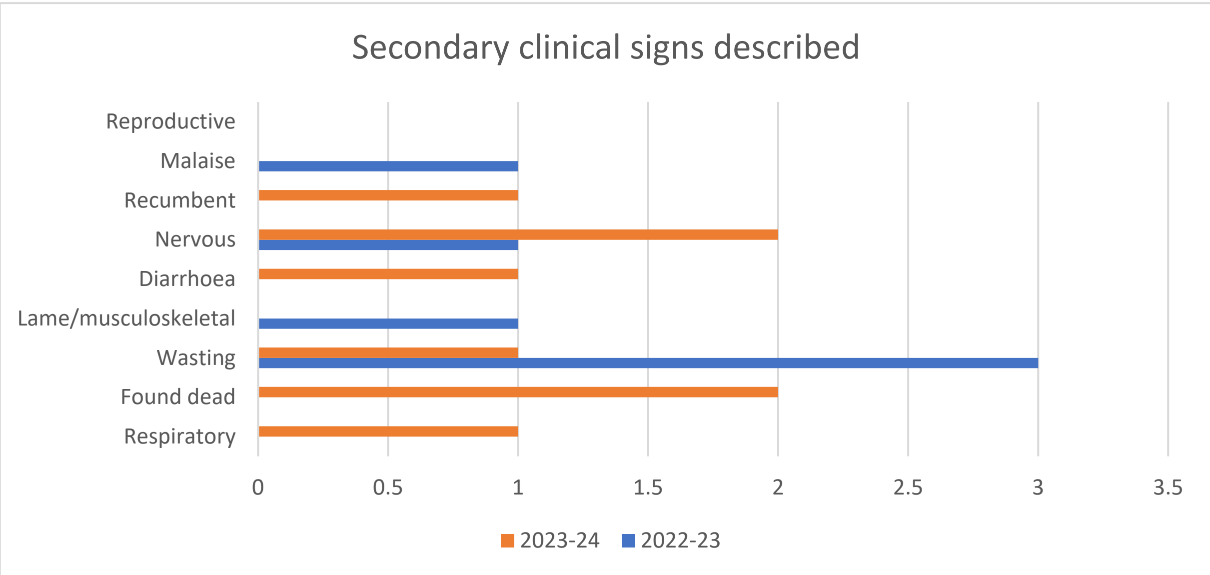
Diagnoses of disease due to Gps can include a range of clinical manifestations including septicaemia, meningitis, polyserositis (including polyarthritis) and pneumonia. This is reflected in the range of main and secondary clinical signs described for submissions in which Gps disease was diagnosed in the last two quarters combined (quarter 4 of 2023 and quarter 1 of 2024), as illustrated in Figures 8a and 8b. The presence of other diseases concurrent with disease due to Gps in some submissions also influences the clinical signs. Figures 8a and 8b show clinical sign data for the 12 Gps diagnoses made in the same six month-period in the previous years (quarter 4 of 2022 and quarter 1 of 2023). Respiratory signs are prominent in the last two quarters compared to the same quarters in 2022 and 2023.

**Figure 8: Main (8a) and secondary (8b) clinical signs described in submissions diagnosed with *Glaesserella parasuis* disease in two different six-month periods**

**8a**




**8b**



Concurrent diagnoses were made in 12 of the 32 diagnoses of disease due to Gps in quarter 4 of 2023 and quarter 1 of 2024; nine of the 12 were submissions of pigs for postmortem examination. PRRS, swine influenza and streptococcal disease (mainly due to *Streptococcus suis*) were the three most frequently diagnosed concurrent diseases for this time period as indicated in Table 5. Concurrent diagnoses detected in eight of 12 submissions in which disease due to GPs was diagnosed in quarters 4 of 2022 and quarter 1 of 2023 were similar, with PRRS and streptococcal disease again most frequent. Concurrent serositis due to *Mycoplasma hyorhinis* was detected in two Gps cases and swine influenza was detected in one.

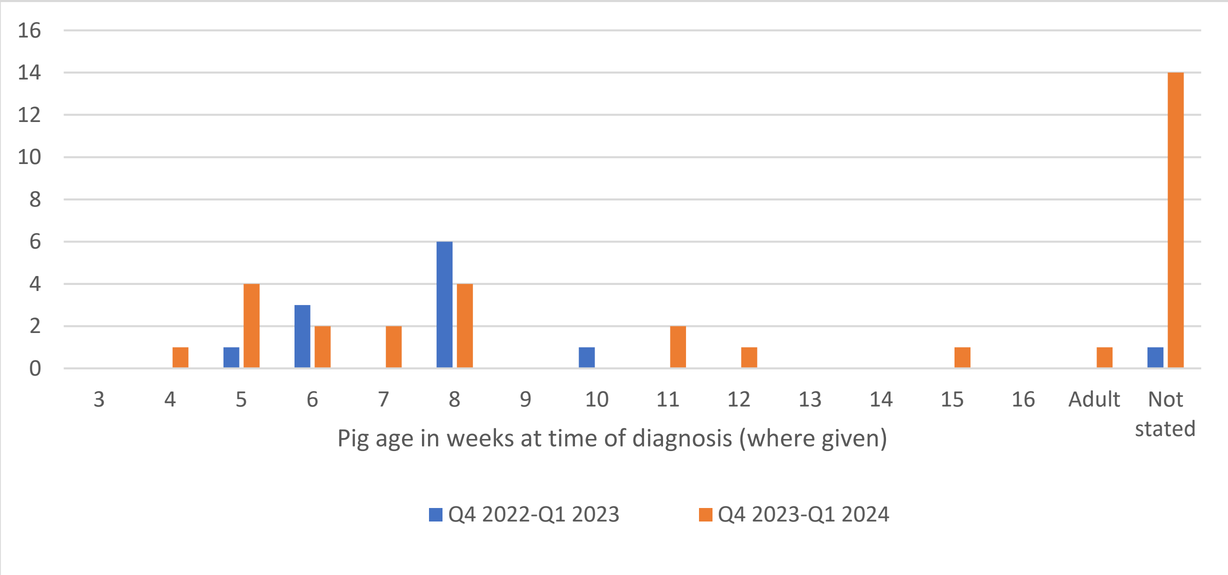
**Table 5: Diagnoses made concurrent with disease due to *Glaesserella parasuis* in two different six-month periods**

| Concurrent diagnosis | Number of submissions in which diagnosis made 2022-23 | Number of submissions in which diagnosis made 2023-24 |
|---|---|---|
| PRRS | 6 | 4 |
| Streptococcal disease | 4 | 5 |
| Swine influenza | 1 | 3 |
| Serositis *M. hyorhinis* | 2 | 0 |
| Salmonellosis | 1 | 1 |
| Pasteurellosis | 0 | 1 |
| Gastric ulceration | 0 | 1 |
| Rotaviral enteritis | 0 | 1 |
| None✶ | 4 | 20 |

✶only disease due to *Glaesserella parasuis*. All were non-carcase submissions.

The surveillance data for the two time-periods includes pig age at the time of submission, where this information was provided by the submitting veterinarian. The age profiles are shown in Figure 9. Most cases were diagnosed between five and eight weeks of age. A wider age range is present for the most recent six-month period, however this may reflect the larger number of diagnoses (32 compared to 12) and there is no evidence of an unexpected number of cases at an unusual age. Unfortunately, the pig age was not provided for a substantial number of submissions.

**Figure 9: Age of pigs in weeks (where given) at time of submission of *Glaesserella parasuis* cases in two different six-month time periods**




Peaks in the diagnostic rate of Gps disease incidents in 2013 and 2015 were described in previous quarterly reports (APHA, 2015). At that time, there was anecdotal evidence from pig practitioners that the increased laboratory diagnoses reflected increased number of disease outbreaks suspected to be related to Gps in the field. To investigate whether a change in serotype was involved in these increases, archived Gps isolates were serotyped. No new serotypes were identified, nor was there evidence of one particular serotype dominating. Serotypes 4 or 5 were identified in 53% of 2014-15 isolates, these two serotypes were considered likely to be controlled with commercial vaccines.

The trend in the diagnostic rate of disease due to Gps will be reviewed in subsequent quarters.

### Reduced penicillin susceptibility in a *Streptococcus suis* isolate

A markedly autolysed lactating gilt found dead was submitted for post-mortem examination from an outdoor herd. Detailed examination was compromised and although *Clostridium novyi* was detected by fluorescent antibody test in the liver, a definitive diagnosis of clostridial hepatitis was not made due to the degree of general autolysis and fact that the pig may have been dead up to 24 hours before being examined. A *Streptococcus suis* serotype 13 was isolated from the pericardium, raising the possibility of streptococcal disease.

Subsequent antimicrobial sensitivity testing by disc diffusion identified resistance to penicillin. Further testing found that the isolate had a minimum inhibitory concentration (MIC) for benzyl penicillin of 0.125 µg/ml. The isolate is considered susceptible to benzyl penicillin applying the current (2024) CLSI veterinary clinical breakpoint for benzylpenicillin and *S. suis* which is “susceptible < 0.25 µg/ml and resistant > 1 µg/ml”. This breakpoint was derived for respiratory infection of pigs with *S. suis*.

As significant *S. suis* disease in pigs may involve central nervous system (CNS) tissue, such as meninges, rather than lung, it may be appropriate to apply different breakpoints. The EUCAST human clinical breakpoints for *Streptococcus pneumoniae* meningitis and benzylpenicillin in humans are “sensitive < 0.06 mg/l and resistant > 0.06 mg/l”, while for *Streptococcus agalactiae* meningitis in humans the breakpoints for benzylpenicillin are “sensitive < 0.125 mg/l and resistant > 0.125 mg/l”. Lower breakpoints are necessary for conditions such as meningitis, when a lower drug concentration can be achieved in the central nervous system compared to that which can be achieved in viscera. APHA suggest that these EUCAST human clinical breakpoints should be considered when assessing susceptibility of a *S. suis* isolate to benzylpenicillin if there is CNS rather than visceral involvement in the affected pigs.

APHA test the MIC values of *S. suis* isolates for benzyl penicillin in a batch once a year. The *S. suis* serotype 13 isolated from this gilt has an elevated penicillin MIC compared to other *S. suis* tested and is resistant if the human *S. pneumoniae* meningitis breakpoint is applied. In this case, there was no streptococcal disease recognised in the herd (in breeding or young pigs). Medication for suspected streptococcal disease had not been used on the farm; the attending veterinarian described antimicrobial use in the herd as minimal and the submitted pig had not been treated.

Penicillin resistance is unusual in *S. suis* isolates from pigs in diagnostic submissions to APHA. None were reported in the most recent UK Veterinary Antimicrobial Resistance and Sales Surveillance (UK-VARSS) report for 2022 (VMD, 2023 and Table 5). Quarterly or monthly surveillance reports have described a small number of previous detections of clinical isolates of *S. suis* from pigs with raised penicillin MIC values above the human clinical breakpoint for *S. pneumoniae* or *S. agalactiae* central nervous system (CNS) infection (APHA, 2018; APHA, 2022).

Resistance to tetracycline in *S. suis* from pigs is common and other resistance data extracted from the UK-VARSS report for *S. suis* in 2022 is shown in Table 5.

**Table 5: Extracted from UK-VARSS 2022 report (VMD, 2023). Resistance (interpreted using breakpoints) of *Streptococcus suis* from infections of pigs in England and Wales in 2022. The table shows the number of resistant isolates out of the total number tested and the percentage of resistant isolates**

| Antibiotic | *Streptococcus suis* |
|---|---:|
| Ampicillin | 0/72 (0) |
| Enrofloxacin | 0/72 (0) |
| Lincomycin | 26/71 (36.6) |
| Penicillin | 0/71 (0) |
| Tetracycline | 55/72 (76.4) |
| Trimethoprim/ sulfonamide | 12/72 (16.7) |
| Tylosin | 31/71 (43.7) |

## Horizon scanning

### Webinar on Influenza A viruses in the United States from SHIC and AASV

The Swine Health Information Center collaborated with the American Association of Swine Veterinarians to host a webinar on influenza A viruses in April 2024. The webinar provided up to date information on influenza viruses, particularly influenza A, in domestic livestock species with a focus on pigs. This was particularly relevant to the US audience given the recent emergence of high pathogenicity H5N1 avian influenza (HPAI) virus in dairy cattle in several US states. The webinar included an overview of the clinical presentation and epidemiology of the multi-state dairy herd outbreak. Another speaker reviewed biosecurity considerations for pig farms to reduce the risk of spread of notifiable HPAI H5N1 into pigs.

In Great Britain, the number of positive reports of HPAI H5 has decreased considerably in both wild birds and poultry in the first half of 2024, compared to the previous two years. APHA's July 17th 2024 update on HPAI in Great Britain and Europe reported no domestic poultry outbreaks in Great Britain since February 2024 and just two HPAI-positive "found-dead" wild birds since their previous report in February 2024, the most recent being collected on April 5th 2024. Avian influenza virus infection is notifiable in both wild and kept mammals in Great Britain. More information is provided on GOV.UK here.

Swine influenza is distinct from avian influenza. Swine influenza is not notifiable or reportable in pigs in Great Britain and is endemic in pigs in most pig-producing countries. Understanding the current swine influenza strains circulating in the GB pig population is achieved through voluntary diagnostic submissions to APHA from pigs with respiratory signs and/or respiratory pathology. This surveillance is through a Government-funded swine influenza surveillance project, the link provided indicates how veterinarians can access diagnostic testing for swine influenza virus by PCR at no charge. The analyses within this surveillance provide information on virus subtypes, evolution and distribution. They also support the development of diagnostic tests and, potentially, vaccines. Significant findings are included in pig disease surveillance reports and in publications.

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The material in this report has been compiled by the Animal and Plant Health Agency (APHA) Surveillance Intelligence Unit in collaboration with the APHA Surveillance andLaboratory Services Department.

The report is available on GOV.UK at: https://www.gov.uk/government/collections/animal-disease-surveillance-reports.



Any enquiries regarding this report should be sent to APHA's Surveillance Intelligence Unitby emailing SIU@apha.gov.uk.

More information about scanning surveillance reports is available on APHA's Vet Gatewayat http://apha.defra.gov.uk/vet-gateway/surveillance/index.htm.

APHA is an executive agency of the Department for Environment, Food & Rural Affairs,and also works on behalf of the Scottish Government and Welsh Government.