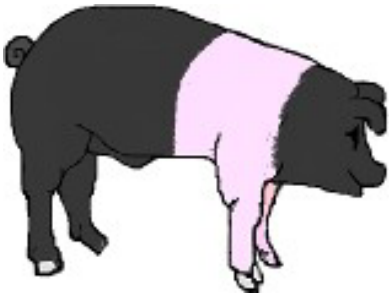
Animal & Plant Health Agency



SRUC

Great Britain pig quarterly report: disease surveillance and emerging threats

Volume 30: Quarter 3 of 2024 (July to September)

Highlights

Contents

Introduction and overview

This quarterly report reviews disease trends and disease threats for the third quarter of 2024 (July to September). A full explanation of how data are analysed is provided in the annexe available on GOV.UK.

This report is compiled using data available at the time of writing. It contains analyses carried out on disease data gathered from APHA, Scotland's Rural College (SRUC) Veterinary Services and partner post-mortem providers, as well as 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.

Pig disease surveillance dashboard outputs

Diagnoses made most frequently in the third quarter of 2024 through the Great Britain (GB; England, Wales and Scotland) scanning surveillance network are listed in Table 1. Note that further diagnoses may be added for submissions made in quarter 3 of 2024 which are finalised after the generation of this report. Diagnoses can be interrogated further using the interactive pig disease surveillance dashboard, which was launched in October 2017. Surveillance data for diagnostic submissions in quarter 3 of 2024 are illustrated in Figures 1a-1c.

These diagnostic submissions are voluntary and subject to several sources of bias. The profile of submissions for the third quarter of 2024 was similar to that of the same quarter in 2023, in that the most frequent main clinical sign was diarrhoea and gastro-intestinal and the most frequent syndrome was enteric. Enteric disease was more prominent than other syndromes in quarter 3 of 2024, compared to the same quarter in 2023.

As found in the last three quarters, total GB diagnostic submissions in this quarter increased compared to the same quarter in previous years (2020-2023) and total submissions were 33% higher than the average for these previous quarters. This increase was due to a rise in both carcase and non-carcase submissions, although the balance of submission types changed from 18% carcases in quarter 3 of 2023 to 28% carcases in quarter 3 of 2024, which was similar to quarters 1 and 2 of 2024.

The throughput of non-carcase submissions to the GB scanning surveillance network in quarter 3 of 2024 increased by 32% compared to the average for quarter 3 in the previous four years (2020-2023), while the throughput of carcase submissions in quarter 3 of 2024 increased by 33% compared to the average for quarter 3 in the previous four years.

Changes in the number of submissions and the balance of sample types can affect the number and profile of diagnoses achieved. Submission of carcases enables more complete diagnostic investigation. In terms of numbers of diagnoses, a total of 469

diagnoses were recorded at the time of writing in quarter 3 of 2024 compared to 308 diagnoses recorded in quarter 3 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 disease investigations with Veterinary Investigation Officers at APHA and SRUC.

Table 1: Great Britain scanning surveillance 15 most frequent diagnoses in quarter 3 of 2024 and for the same quarter in 2023

15 most frequent diagnoses in quarter 3 of 2024 (total 469)	15 most frequent diagnoses in quarter 3 of 2023 (total 308)
1. Colibacillosis - enteric	1. Salmonellosis – *S*. Typhimurium
2. *Brachyspira pilosicoli* colitis	2. Colibacillosis - enteric
3. *Lawsonia* sp. associated disease	3. *Lawsonia* sp. associated disease
4. Salmonellosis – *S*. Typhimurium	4. *Brachyspira pilosicoli* colitis
5. *Streptococcus suis* disease	5. *Brachyspira hyodysenteriae* – swine dysentery
6. Colibacillosis – oedema disease	6. Porcine reproductive and respiratory syndrome (PRRS) - systemic
7. Porcine reproductive and respiratory syndrome (PRRS) - systemic	7. *Streptococcus suis* disease
8. *Brachyspira hyodysenteriae* – swine dysentery	8. Swine influenza
9. Swine influenza	9. Klebsiella septicaemia
10. Salmonellosis - other	10. Pneumonia other cause
11. Gastric ulceration	11. Rotavirus
12. Streptococcal meningitis	12. Salmonellosis - other
13. Salmonellosis – monophasic variants	13. Pneumonia associated with PRRSV-1
14. Pneumonia other cause	14. Colibacillosis – oedema disease
15. Pneumonia associated with PRRSV-1	15. Streptococcal infection (excluding *S. suis*)

Figures 1a to 1d: summary surveillance data for 649 submission records in quarter 3 of 2024 (507 in quarter 3 of 2023)

Figure 1a: pig age

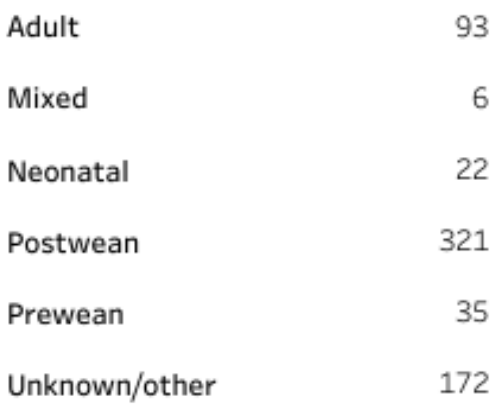


Figure 1b: disease syndrome

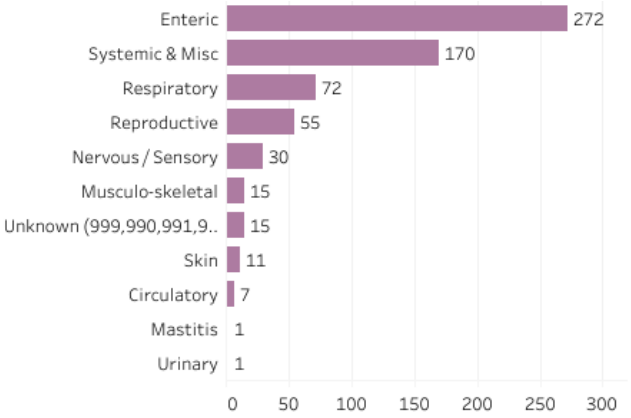
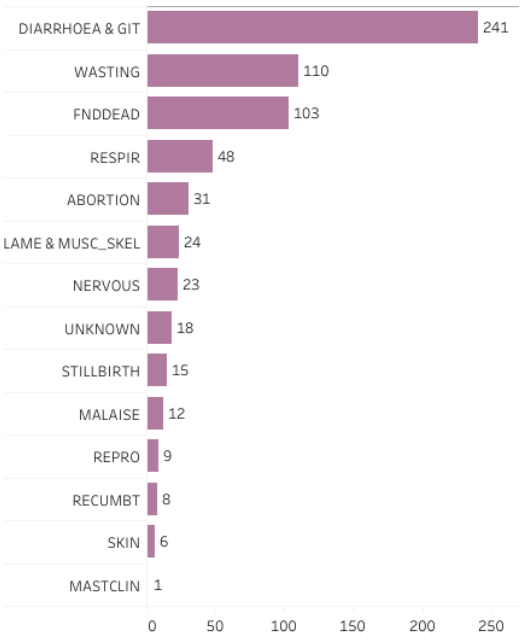


Figure 1c: main clinical sign reported



New and re-emerging diseases and threats

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; Scottish Government, 2016). No more suspect incidents of PED have been reported since the suspect 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 1649 diagnostic submissions tested under Agriculture and Horticulture Development Board (AHDB) Pork funding from June 2013 to September 2024.

This enhanced surveillance has included testing for porcine deltacoronavirus (PDCoV) since February 2023 under the same funding and no PDCoV has been detected in the UK 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 pose a potential threat to pig health and welfare. The last diagnosis of PED and of TGE recorded in the GB national diagnostic database (Veterinary Investigation Diagnosis Analysis [VIDA]) was in 2002 and 1999, respectively.

Unusual diagnoses or presentations

Further cases of abnormal hindlimb gait associated with possible vitamin B5/B6 deficiency

Two submissions from different units of pigs showing similar, unusual clinical signs were received by the Shrewsbury VIC and Wales Veterinary Science Centre partner post-mortem provider, two months apart. In one, six to ten, 21-week-old pigs demonstrated ataxia and weakness primarily affecting the hindlimbs, with one pig appearing to ‘dog sit’ (Figure 2). No pigs died, although some were euthanased on welfare grounds. The other pigs on this 1000-place unit appeared to be unaffected. In the other case, approximately 20, 20-week-old pigs out of 1000 demonstrated hindlimb ataxia and swaying back legs. Goose stepping was not reported in either case.

Two typically affected pigs from each farm were euthanased on-farm and submitted for post-mortem examination. As in a previous, similar case reported in the quarter 4 of 2023 (APHA, 2023), post-mortem examination was grossly unremarkable with no evidence of vertebral disc protrusion, vertebral instability, abscesses, trauma or osteomyelitis, or of

musculoskeletal disease involving the hindlimbs. Histopathology revealed myelopathy and radiculopathy with axonal degeneration affecting proprioceptive pathways of spinal cord and dorsal spinal nerve roots. These histopathological lesions are most suggestive of pantothenic acid (B5) and/or pyridoxine (B6) deficiency. Copper deficiency and certain toxicities (arsenic and mercury) are also possible causes. Liver copper concentration was normal in one of the two submissions and marginally low in the other, as described in the similar case in 2023, although the distribution of degenerative changes in the spinal cord was different from those described in copper deficiency.

The pig units involved in all three incidents investigated in 2023 and 2024 shared a common feed source. Feed analysis to investigate possible deficiencies has been recommended, to include trace elements and vitamins. Such investigations are still ongoing, meaning that a definitive diagnosis has not yet been reached. In both of these 2024 cases, however, a positive treatment response to parenteral multivitamin B was observed in several of the remaining affected pigs on-farm. The vitamin levels for the diet have since been adjusted in light of the findings and no further reports of these clinical signs have been received.

Figure 2: Pig with ataxia and hindlimb paresis (courtesy of the George Veterinary Group)

Disseminated tuberculosis due to *Mycobacterium bovis*

An elderly pet pig living in woodland along with around 20 other pigs presented with sudden onset inappetence and was ‘off its back legs’. The pig was in good body condition. Following euthanasia on-farm, the boar was submitted to an APHA partner post-mortem provider. Post-mortem examination revealed multiple masses in the cutaneous tissue (Figure 3), lungs, liver, spleen, several lymph nodes, mesocolon, peritoneum, pleura and

spermatic cord. The case was reported to APHA as suspect tuberculosis and the holding was placed under restriction and official investigation was initiated.

Histopathology revealed that the masses were granulomas and PCR testing of a lung lesion was positive for *Mycobacterium bovis*. The number, size and extent of lesions in different organs make it likely that the tuberculosis infection was relevant to the clinical disease in the pig.

Tuberculosis (TB) due to *M. bovis* is uncommon in pigs and is usually restricted to the lymph nodes, where nodules are unlikely to result in clinical signs (Crawshaw and others, 2013). Domestic pigs are usually regarded as dead-end hosts for *M. bovis*, and infection does not appear to spread easily from or between pigs. Possible sources of *M. bovis* for pigs includes consumption of unpasteurised infected dairy products and direct or indirect contact with infected wild animals or livestock.

Figure 3: Cutaneous granuloma (arrowed) in a pig with tuberculosis due to *Mycobacterium bovis*

Acute mortality with skin ‘scald’ in growing pigs

Twenty-six out of 820 pigs were found dead over 48 hours in late September, with marked reddening of pinnae and skin over the ventral abdomens and caudal aspects of the hindlimbs, which appeared scalded or burnt. Deaths were mainly from two of the eight pens. There were a small number of live pigs showing milder skin reddening and malaise, which recovered. No further deaths occurred related to this incident.

Three days prior to the onset of mortality, there had been a feed outage for approximately 14 hours, followed by a new feed delivery of a conventional, homemix dry meal pig diet. Pigs had received in-feed tylosin phosphate for two weeks to treat proliferative

haemorrhagic enteropathy due to *Lawsonia intracellularis.* Water intake was normal and there had been no interruption to supply.

Post-mortem examinations on-farm by the attending veterinarian did not find lesions suspicious of swine fevers and three, freshly dead pigs were submitted to the Starcross Veterinary Investigation centre for post-mortem examination. All three pigs showed: severe, patchy skin reddening with overlying, raised, dry, dark-red/brown plaques (Figure 4); lung congestion; and prominent meningeal blood vessels. Two out of three pigs had clotted blood surrounding the brain stem in the foramen magnum. Congestion was present in different tissues across the three pigs including the liver and kidney of one pig and the larynx and base of the tongue of another.

Extensive investigation including bacteriology, biochemistry and histopathology have not found a cause. Microscopic findings in the skin were consistent with a severe, acute, irritant contact dermatitis. There were no other histopathological findings of note, in particular, brain histopathology was not suggestive of water deprivation and there was no history of water outage on the farm. Cases of skin disease and mortality have been linked to tiamulin administration (Taylor, 2013) and magnesium toxicity (Gourreau and others, 2015). The magnesium concentration in the urine of one pig did not suggest magnesium toxicity and there was no history of tiamulin administration for these pigs.

This case bears strong similarity to seven previous cases of skin ‘scalding’ and acute, transient mortality investigated by APHA, which have been described in the quarter 4 2016, quarter 3 2018 and quarter 3 2020 pig disease surveillance reports (APHA, 2016; 2018; 2020). All cases occurred between August and October on solid-floored indoor straw units. Deaths have involved between three and more than 100 pigs over 24 hours, following which other affected pigs recovered fully. Deaths were restricted to a proportion of pens in five cases. There was a history of very recent feed outage and/or a new feed delivery in three cases. A further four incidents had a very recent history of whole-group, in-water oral antibiotic use (with tetracycline, amoxycillin/clavulanic acid and trimethoprim/sulfamethoxazole).

Despite extensive investigations, no diagnoses have been established for these cases. Investigations have involved collection of epidemiological and clinical history, farm visits with examination of live pigs and post-mortem examinations with bacteriology and histopathology. Differential diagnoses considered have included septicaemia, water deprivation with urine scald, magnesium toxicity, mycotoxicosis, acute zinc toxicity and tiamulin reaction. Cases were investigated in conjunction with APHA’s toxicologist to consider and negate potential threats to public health.

In all cases, gross pathology has involved severe, mainly ventral, skin lesions resembling scald, with visceral congestion and haemorrhages in seven cases, at sites not typically associated with swine fevers. Histopathology of a wide range of tissues, including brain, has been unremarkable, apart from lesions consistent with a severe, acute, irritant contact dermatitis. In some cases, also completed was biochemistry on serum and/or urine; feed

analysis for mycotoxins and nutritional imbalances; and whole genome sequencing (WGS) of *Escherichia coli* from the small intestine.

Where tested, biochemistry has been unremarkable, in particular, magnesium has not been raised. No feed imbalances have been detected and WGS of *E. coli* tested in one case did not detect genes for urease production. In another case, deoxynivalenol was detected in feed but not at a clinically significant concentration. Mycotoxin testing is ongoing for the most recent case.

Given that this case represents the eighth case in this series of similar clinical presentations, APHA aim to communicate advice to UK veterinarians on investigating cases resembling these clinical findings, by writing and disseminating a sampling strategy (APHA, 2025). In future similar cases, comprehensive sampling at the time of incidents should include post-mortem examination of freshly dead pigs, biochemical testing on live affected pigs and, potentially, analysis of feed.

One risk factor for this clinical presentation appears to be a feed outage followed by a new feed delivery. One hypothesis for the cause of this clinical presentation is, therefore, mycotoxicosis due to mouldy feed being dislodged during feed bin refilling or accumulation of a feed fraction residue. This potential risk factor for this clinical presentation reinforces the need to avoid feed outages for pigs and practice regular and effective feed bin cleaning.

Figure 4: Severe, well-demarcated skin discolouration over the caudal aspects of hindlimbs.

Changes in disease patterns and risk factors

Trends in diagnoses of oedema disease and enteric disease

Oedema disease is a cause of acute nervous signs and sudden deaths, which typically affects pigs in the early post-weaning period. The disease occurs when a toxigenic strain of *E. coli* colonises the small intestine, proliferates rapidly and produces Shiga toxin, which enters the bloodstream. The toxin causes vascular damage resulting in oedema, which is most commonly seen in the subcutis over the forehead and/or eyelids, gastric wall and mesocolon. It also occasionally affects the larynx resulting in unusual vocalisation.

There has been an increase in the annual diagnostic rate of disease due to *E. coli* since 2022. *E. coli* disease includes enteric colibacillosis, oedema disease and colisepticaemia; the increase has mainly been due to a rise in diagnoses of enteric colibacillosis. Diagnoses of oedema disease have remained relatively stable, until the most recent quarter in which 14 diagnoses have been recorded through the GB scanning surveillance network so far in submissions from July to September 2024 (Figure 5). Although the numbers are small, this compares to four diagnoses of oedema disease in the second quarter of 2024 (six in the third quarter of 2023) and is the highest number of diagnoses of oedema disease ever recorded in any one quarter in VIDA (since 1998). At the same time as this increase in the diagnostic rate of *E. coli*, the diagnostic rate for salmonellosis has decreased in pigs since quarter 3 of 2023 (Figure 6).

The factors underlining these changes in enteric disease patterns are unknown. Whether the trends seen persist in future quarters will be kept under review. If the increase in enteric colibacillosis continues, APHA may undertake a survey of practitioners attending pigs, to explore practitioner opinions on the extent of changes in enteric disease patterns, the characteristics of any changes and the factors underlining them. Factors involved may include dietary changes, attempts to reduce antimicrobial use, the removal of zinc oxide from postweaning pig diets, changes in antimicrobial susceptibility and more. Interestingly, changes in *E. coli* disease have also been described in a non-peer reviewed study in the United States (US), where an increased number of cases associated with *E. coli* bearing F18 fimbriae was observed from 2019 to 2022 and the proportion of isolates susceptible to enrofloxacin decreased in *E. coli* (with F4 and F18 fimbrial antigens) over the same period (Wright, 2024).

Figure 5: Diagnoses of disease due to *Escherichia coli* made through the Great Britain surveillance network. The diagnostic rate refers to the number of diagnoses made, divided by the number of diagnosable submissions.

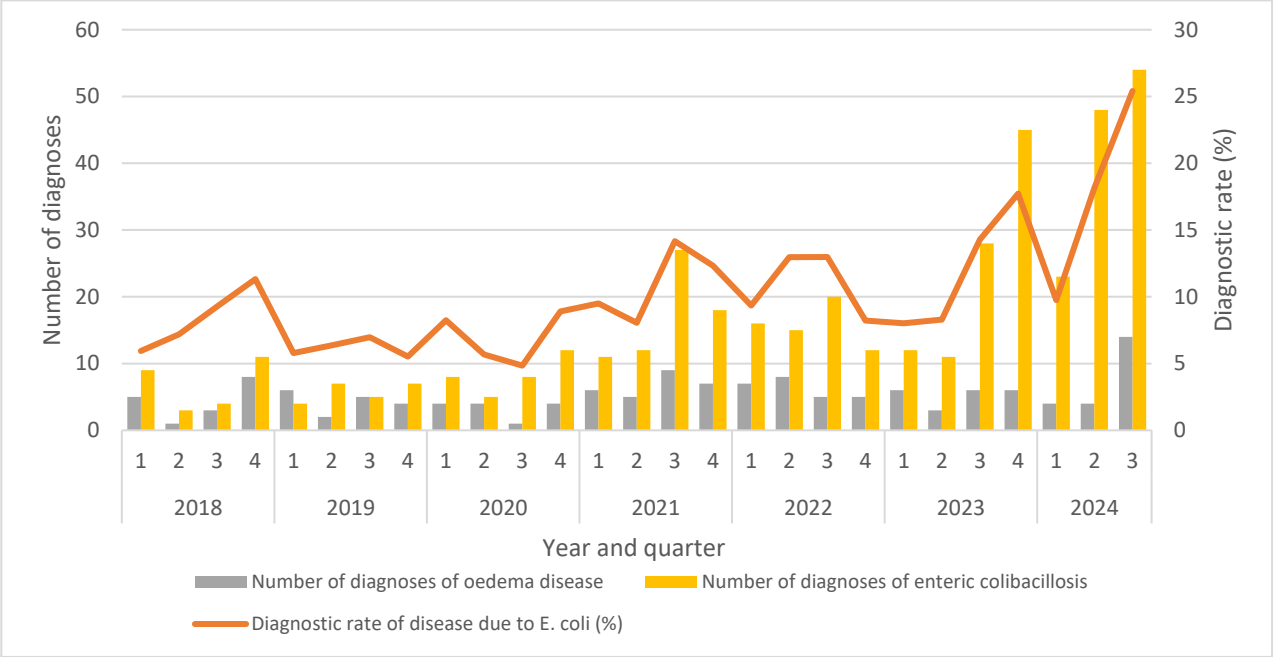
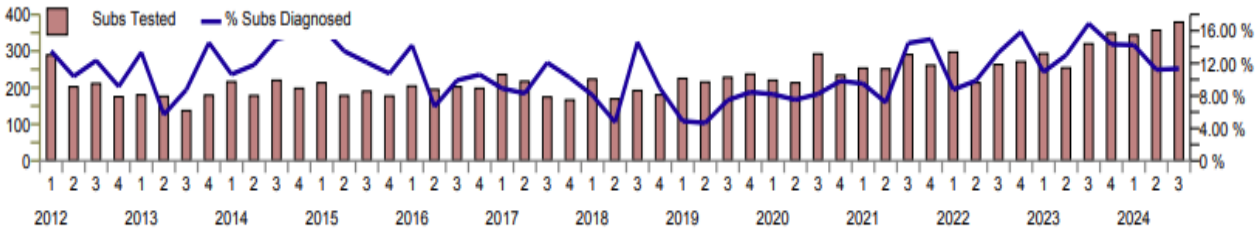


Figure 6: Diagnostic rate of salmonellosis, all serotypes, by year and quarter as a percentage of diagnosable submissions to the Great Britain scanning surveillance network.



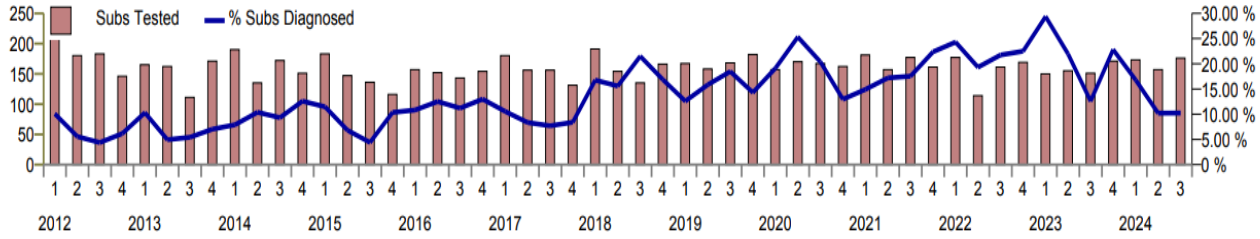
Porcine reproductive and respiratory syndrome virus update

Porcine reproductive and respiratory syndrome (PRRS) remains one of the most significant endemic viral infections in UK pigs. The APHA's interactive PRRS dashboard provides surveillance and diagnostic data from the GB scanning surveillance network for submissions diagnosed with PRRS from 2012 to 2023. All diagnoses made through the GB surveillance network were due to PRRSV-1, with no PRRSV-2 detected in British pigs to date.

The diagnostic rate for PRRS in GB fell in the first nine months of 2024 but remains at a rate of around 10% of diagnosable submissions (Figure 7). 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 improvements to control endemic pig diseases and prevent the introduction of exotic disease threats.

Figure 7: Diagnostic rate of PRRS by year and quarter as a percentage of diagnosable submissions to the Great Britain scanning surveillance network



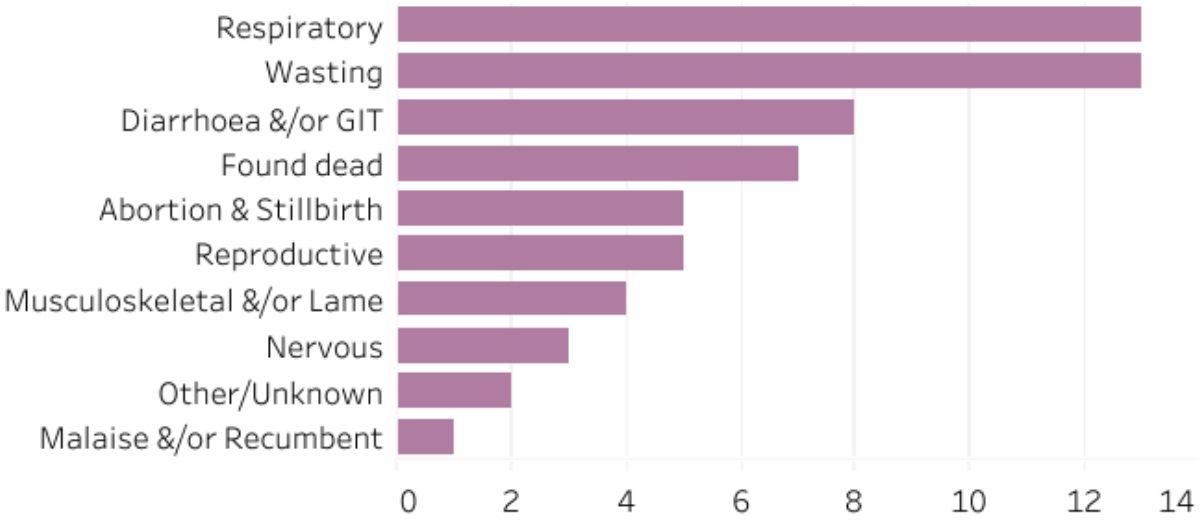
In the first three quarters of 2024, 70 diagnoses of PRRS have been recorded in VIDA to date. Four of these related to reproductive disease in breeding pigs and 66 related to systemic or respiratory disease. As in the first six months of 2024, most diagnoses were made in pigs of four to eight weeks of age (where the age of pigs was provided), which are likely to be immediately post-weaned pigs. This likely reflects the opportunity for PRRSV spread following mixing of pigs at weaning, when pig's maternal immunity is waning and vaccinal immunity, where vaccines are used at or near weaning, is still establishing.

Sixty three percent of PRRS diagnoses were made in carcase submissions, in which full diagnostic investigation can be undertaken. Concurrent diseases were found in all but four of the 44 diagnoses of systemic and respiratory PRRS made in carcase submissions in the first three quarters of 2024. In contrast, concurrent diagnoses were made in just six of the 22 non-carcase submissions in which systemic or respiratory PRRS was diagnosed. Swine influenza was diagnosed with PRRS in nine submissions and was the most common concurrent diagnosis made in the first nine months of 2024. The other most frequent concurrent diagnoses were disease due to *Pasteurella multocida*, *Glaesserella parasuis*, *Mycoplasma hyorhinis* and *Brachyspira pilosicoli*. The presence of these additional diseases reflects the immunosuppressive effect of PRRS. This adds to the adverse impact that PRRS has on pig health and welfare and drives antimicrobial use to treat the bacterial infections which result from, or are exacerbated by, PRRS.

The main clinical signs described in submissions in which PRRS was diagnosed in the first nine months of 2024 are shown in Figure 8. Clinical signs may reflect the concurrent diagnoses made, rather than being directly due to PRRS.

As part of PRRS surveillance at APHA, ORF5 gene sequencing is undertaken under pig disease surveillance funding on the sample with the lowest Ct value (likely highest viral load) in each PCR-positive submission to APHA. This monitors diversity in the PRRSV detected and checks there have not been introductions of novel genetically diverse PRRSV-1 strains into the UK. Sequencing completed so far in 2024 has not detected any which suggest a novel introduction.

Figure 8: Main clinical signs in submissions in which PRRS was diagnosed in quarters 1 to 3 of 2024.

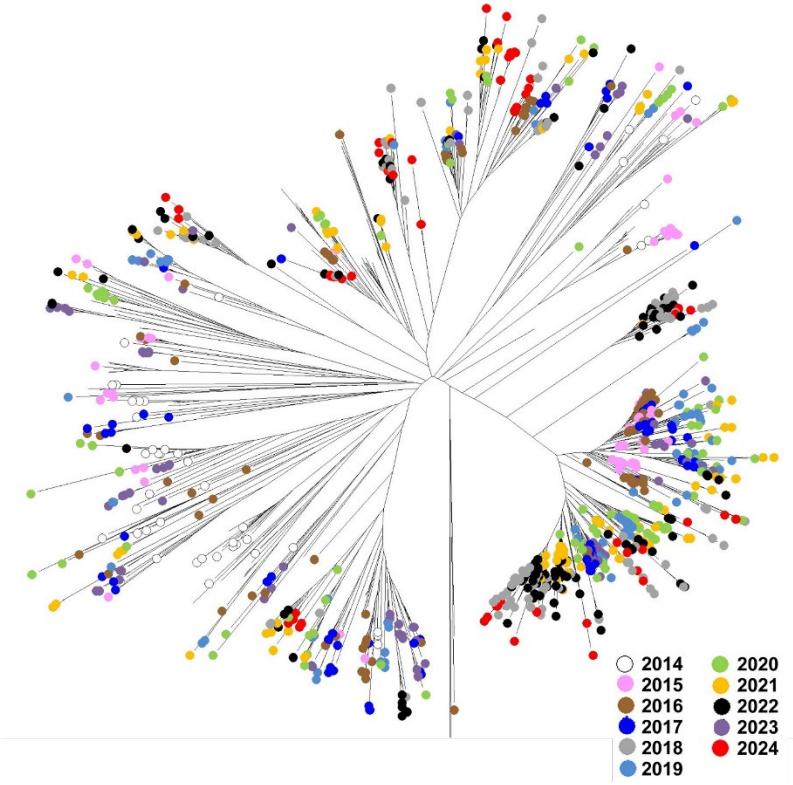


The genetic diversity of the PRRS sequenced continues to evolve and at least 15 different lineages/clades are seen. Examining the lineages of PRRS identified over a ten-year period (from 2014 to 2024 - Figure 9) for the years that each lineage was identified, the data show that the detection of a lineage over time varies between the different lineages. Some have been identified regularly long-term, some have been detected for a period and then have not detected again and some have been detected sporadically over an extended period. It is acknowledged that the sequence dataset is incomplete and is also biased towards strains causing disease outbreaks.

Viruses in which the ORF5 gene sequence has 98.5% or greater similarity to one of the live PRRSV vaccines are termed “vaccine-like”. As the ORF5 sequence analysis is based on just 4% of genome, vaccine-like viruses are analysed further by sequencing part of the nonstructural protein 2 (nsp2) to help identify any potential recombinants. No further recombinants have been found since a recombinant PRRSV-1 vaccine (or vaccine-like) and field virus was described in pigs in England (Frossard and others, 2013). All of the other vaccine-like PRRSV examined to date have had nsp2 and ORF5 sequences that are consistent and do not raise concern that they represent potential recombinants.

The proportion of sequenced PRRSV found to be vaccine-like ranged from 22 to 31% in the years 2019 to 2022. In 2023, only 13% of the PRRSV sequenced at APHA were found to be vaccine-like. This may have reflected, in part, issues with the supply of certain live vaccines. Vaccine-like viruses represent 21% of those sequenced so far in 2024.

Figure 9: A phylogenetic tree of the different PRRS lineages that were identified from 2014 to 2024, with coloured dots showing the years that each lineage (branch of the phylogenetic tree) has been detected.



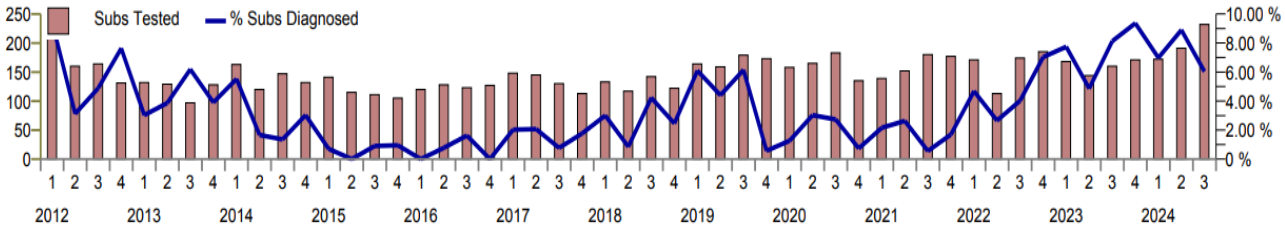
Swine dysentery diagnoses continue in 2024

An upward trend in the number of diagnoses of swine dysentery made through the GB scanning surveillance network (at APHA and SRUC laboratories) has been noted since the end of 2021 (Figure 10). Cases have continued to be diagnosed in all quarters of 2024. In more recent years, veterinarians have noticed that some confirmed cases of swine dysentery have been in pigs showing mild to moderate diarrhoea rather than the typical muco-haemorrhagic diarrhoea that is associated with swine dysentery.

Fourteen diagnoses have been recorded to date in VIDA during quarter 3 of 2024. Submissions were from 13 premises in eight counties in GB (East Riding and North Lincolnshire, Essex, Lincolnshire, Norfolk, Northeast Wales, North Yorkshire, Powys, and Surrey). This compares to quarter 2 of 2024 when 16 diagnoses were made on 14 premises in nine counties in GB. These diagnoses can be seen on the interactive GB pig disease surveillance dashboard.

AHDB's webpages on biosecurity and swine dysentery, including the #MuckFreeTruck campaign, contain comprehensive information on appropriate biosecurity before, during and after a visit to a pig holding. Farms which are signed up to the pig industry's Significant Diseases Charter (which is now a requirement for Red Tractor assured farms) must report a diagnosis of swine dysentery to the Charter. Alerts are then issued to participants of the Charter to raise awareness about swine dysentery outbreaks.

Figure 10: 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 GB, as well as the genes or SNPs associated with reduced antimicrobial susceptibility that they possess, are represented on the B. hyodysenteriae MLST dashboard.

Table 2 shows the STs identified by WGS completed so far for isolates from submissions to APHA or SRUC in 2024. Twelve different STs have been identified so far in 2024.

Each year several novel allelic profiles are identified; these are submitted to the pubMLST database and allocated a new ST. Three novel STs have been identified so far in 2024 (ST339, 340 and 341). An isolate was first identified as ST341 in March 2024. Since then, a total of 13 isolates have been identified as belonging to this ST, making ST341 the most frequently identified ST this year. These ST341 isolates originate from eight premises in five counties. None of the ten isolates tested by MIC to date from this emerging ST341 have shown clinical resistance to antimicrobials licensed for use for treatment of swine dysentery in pigs.

In recent years (2020 onwards), one particular ST (ST251) has been associated with multi-drug resistance, including clinical resistance to tiamulin. Two ST251 isolates have been identified so far in 2024, both of which originated from the same holding. MIC testing of one of these isolates showed clinical resistance to tiamulin, doxycycline and tylosin. The other isolate showed clinical resistance to tiamulin, lincomycin and tylosin. 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.

Typically, *B. hyodysenteriae* strains are strongly haemolytic on blood agar. This haemolytic activity is considered contributory to virulence in vivo (Card and others, 2019). There has been one weakly haemolytic ST identified in 2024 so far, which belongs to MLST ST167. ST167 is associated with a weakly haemolytic variant of *B. hyodysenteriae*. It has been detected in five other isolates in 2008, 2010 and 2020, from various counties in England.

Weakly haemolytic *B. hyodysenteriae* isolates have also been reported in Europe (Card and others, 2019), these were different STs from ST167 and were very different (>7000 single nucleotide polymorphisms, SNPs) in their core genomes.

Table 2: Sequence types of *Brachyspira hyodysenteriae* isolates detected so far in submissions received in 2024. *Note that further STs from 2024 will be identified as more isolates are sequenced from this time period.*

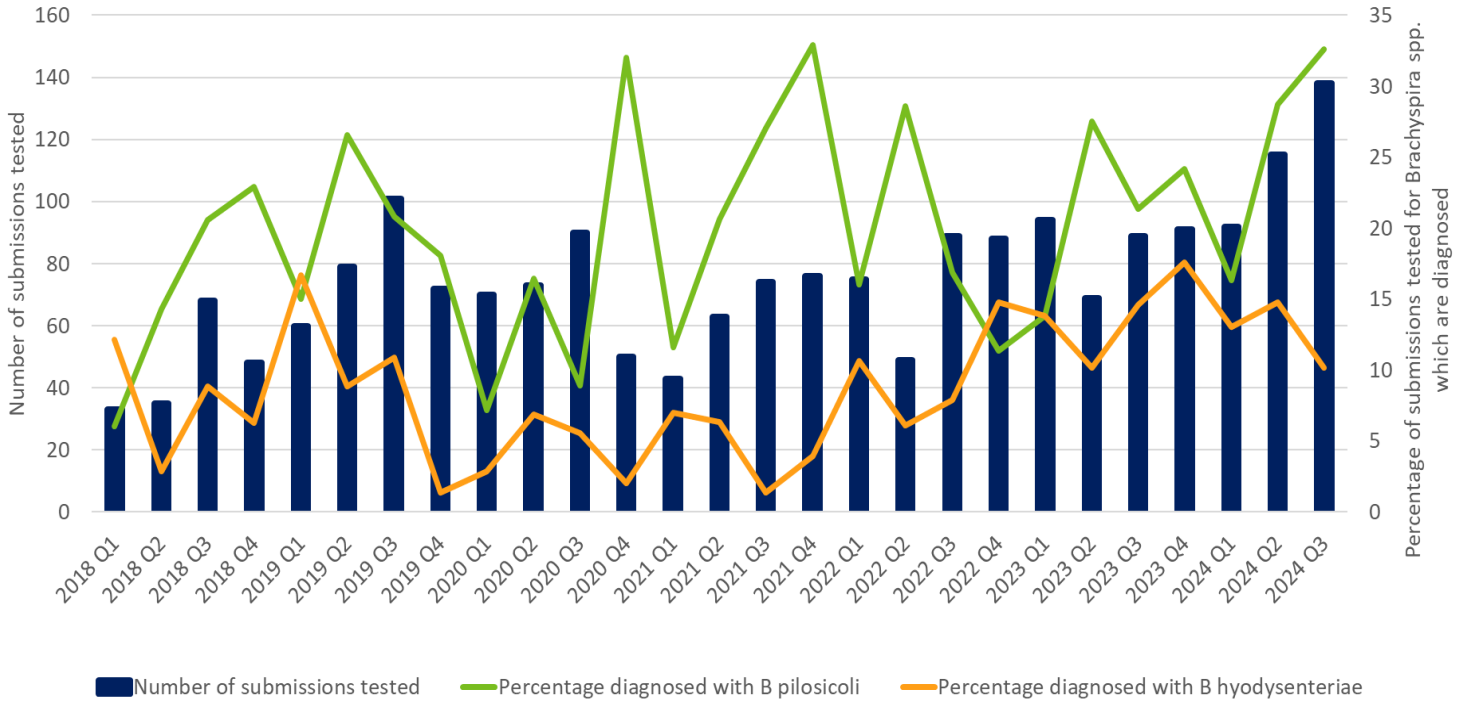
ST identified	Number of isolates	Counties of origin in 2024	ST identified in UK isolates prior to 2024
8	1	East Riding and North Lincolnshire	Yes
52	1	Devon	Yes
88	6	East Riding and North Lincolnshire and North Yorkshire	Yes
167	1	East Riding and North Lincolnshire	Yes
242	1	East Riding and North Lincolnshire	Yes
243	1	Derbyshire	No (previously identified in Europe)
251	3	East Riding and North Lincolnshire	Yes
270	1	Essex	Yes
319	1	Northumberland	Yes (first detection 2023)
339	1	Fife	No
340	1	Norfolk	No
341	13	Norfolk, Suffolk, Northumberland, Tyne and Wear, Worcestershire	No

Increase in the diagnostic rate of *Brachyspira pilosicoli*

Brachyspira pilosicoli is the cause of intestinal spirochetosis in pigs, which tends to cause a milder diarrhoea and colitis than *B. hyodysenteriae.* In the last quarter, there were 54 diagnoses of *B. pilosicoli* colitis. This is more than any other quarter since 2002 and is more than the previous two quarters combined (51). The increase in the number of diagnoses can partly be explained by an increase in the number of submissions tested for *Brachyspira spp*. by culture and PCR in the last two quarters (Figure 11). That being said, the diagnostic rate as a percentage of the number of submissions tested has also increased. The reasons for this rise in the diagnostic rate of *Brachyspira pilosicoli* are unknown; the number of diagnoses and the diagnostic rate will be kept under review in subsequent quarters. Increased MIC testing of *B. pilosicoli* isolates is also planned on a batch basis.

Increased diagnostic testing for *Brachyspira spp*. is likely to reflect heightened awareness around swine dysentery and the recent upward trend in diagnoses. Despite this, Figure 11 shows that the diagnostic rate of swine dysentery, when expressed as a percentage of the number of submissions tested, did not increase in quarter 3 of 2024, unlike the increase seen for *B. pilosicoli*.

Figure 11: Diagnostic rate of *Brachyspira pilosicoli* and swine dysentery by year and quarter as a percentage of the number of submissions tested by the Great Britain scanning surveillance network.



Horizon scanning

Human H3N2 influenza virus in a pig in Northern Ireland

The Agri-Food and Biosciences Institute (AFBI) have described detection of an H3N2 influenza virus in a pig in Northern Ireland in samples collected as part of a research project. The farm on which this subtype was detected observed respiratory disease consistent with swine influenza at the time of sampling, however as pandemic 2009 H1N1 (clade 1A.3.3.2) was also detected in the samples collected, it is not clear whether clinical signs can be attributed to the H3N2 virus. Additional samples collected in November 2024 are being analysed.

The endemic strains of swine influenza A virus (SwIAV) in Northern Ireland pigs are H1huN2 (HA clade 1B.2.7) and pandemic H1N1 2009 (HA clade 1A.3.3.2). Whilst pig-adapted H3N2 is detected in pigs in some European countries (Simon and others, 2014), H3N2 has not been detected in pigs in the United Kingdom since 1997. Phylogenetic analysis of the H3N2 virus detected in a pig in Northern Ireland indicated that it is closely related to the current human seasonal H3N2 clade 3C.2a1b.2a.2a.3a.1 subclade J.2 and may, therefore, represent a recent reverse zoonotic transmission event. Such reverse zoonoses events have been recorded elsewhere with H3N2, particularly in the US, but not previously in pigs in the United Kingdom.

It is not predicted that this strain would have a greater virulence or zoonotic potential than existing strains endemic in pigs in the UK but, as H3N2 infection has not been detected in UK pigs since 1997, immunity of the national pig herd to H3N2 viruses may be low.

These findings highlight the importance of following guidance on minimising the risk of introducing human-origin influenza A viruses to pig herds, as well as on controlling SwIAV in herds with endemic issues. Advice is available in the Swine Influenza in Pigs: Code of Practice. The guidance states that people with clinical signs which could be due to influenza, or anyone in close contact with someone with influenza, should avoid contact with pigs. Some farmers and pig companies encourage seasonal influenza vaccination of personnel in close contact with pigs (farm staff, vets), with an aim of reducing the risk of pigs acquiring infection from humans.

This finding also highlights the need for diagnostic tests for swine influenza to be regularly reviewed to confirm they remain fit for purpose to detect endemic and exotic SwIAV strains.

High pathogenicity avian influenza H5N1 in a pig in the US

The US Department of Agriculture Animal and Plant Health Inspection Service announced at the end of October 2024 that high pathogenicity avian influenza (HPAI) H5N1 was detected in one pig on a backyard farm. A second pig on the holding was confirmed as

positive for HPAI H5N1 in early November. The pigs were on a mixed livestock smallholding in Oregon, on which poultry had been confirmed with H5N1 infection. The pigs were not intended for human consumption.

None of the five pigs on the holding showed clinical signs associated with influenza. All five pigs were tested for influenza virus as a precautionary measure, because of confirmed HPAI H5N1 influenza virus detection in poultry on the premises and shared access to a pond. The pigs were euthanased after a number of oral swabs tested positive for HPAI H5N1 by PCR.

HPAI H5N1 RNA was detected at low levels in a number of tissues from two pigs. Sequencing of the H5N1 virus obtained from the poultry confirmed that, although this virus belonged to the clade 2.3.4.4.b, the genotype implicated was not the same as the H5N1 genotype infecting cattle in the US. A webinar providing more information on H5N1 in pigs was given by the Swine Health Information Centre.

Although this detection represents an uncommon finding, it is not considered to pose a new or changed risk to GB or to human health. No cases of pigs infected with HPAI H5N1 have occurred in the UK and infections in pigs elsewhere are rare; the literature suggests that the currently circulating H5 strains are poorly adapted to pigs (European Food Safety Authority and others, 2024). Avian influenza virus infection is notifiable in both wild and kept mammals in GB. More information is provided on GOV.UK here.

African swine fever

Comprehensive information on African swine fever in Europe and Asia is available from several sources. African swine fever (ASF) update assessments are published by APHA's International Disease Monitoring (IDM) team on GOV.UK. The most recent update for Europe was published in July 2024 (Defra and APHA, 2024), although the situation has developed since this update. Monthly IDM summaries are also included in the disease surveillance items in the Veterinary Record. European Commission information is accessed here and maps are available showing the current European Union (EU) ASF restriction zones. The Food and Agriculture Organisation (FAO) Emergency Prevention System for Animal Health (EMPRES-AH) produces regular ASF disease situation updates for ASF in Asia and the Pacific.The Swine Health Information Centre (SHIC) global reports includes a detailed round-up of ASF in their global disease monitoring report each month.

Several pig media articles on aspects on ASF in Germany, Poland and Italy have been published and the Agriculture and Horticulture Development Board (AHDB) issued a reminder to pig producers in England of the threat of ASF to the national pig herd. AHDB offers resources for ASF contingency planning, including webinars, workshops, podcasts and advice on contingency planning.

EU member states are restricted from exporting pork products from regions impacted by ASF without mitigating measures, such as heat treatment (Defra and APHA, 2024). A significant recent development was the introduction of new safeguarding measures on

September 27th 2024 to restrict personal imports of pork and pork products from the EU single market area to GB, unless produced and labelled to EU commercial standards. No personal imports of unpackaged pork and pork products are permitted and the personal allowance of commercially produced and labelled goods is limited to 2kg (Defra, 2024).

Given the risk that porcine products of animal origin may pose, it is crucial that pig keepers demonstrate strict adherence to legislation around pig feeding. Veterinarians are well placed to ensure that keepers are aware of the legislation around pig feeding, including that it is illegal to feed catering waste of any description or domestic food waste to farm animals in the United Kingdom (UK). This includes waste from a vegan domestic kitchen and also covers pigs kept as pets.

A helpful on-line guide, with images of the clinical signs and pathology of ASF, can be distributed to veterinarians and pig keepers. This notes that, at the start of an outbreak, deaths may initially just involve one or two pigs. Significantly increased mortality may only develop later once the virus has spread further in the herd.

Veterinarians and pig keepers must show vigilance and be familiar with the clinical signs of the swine fevers. ASF is a notifiable disease, meaning that suspicions must be reported immediately. In England, this is by calling the Defra Rural Services Helpline on 03000 200 301. In Wales, contact 0300 303 8268 and in Scotland, contact your local APHA Field Services Office.

Outbreak of skin wounds and infection in Iberian pigs affected by *Streptococcus dysgalactiae* subspecies *equisimilis*

A case report was published of an outbreak of large skin wounds and necrotising soft tissue infection in Iberian pigs (García-Jiménez and others, 2024). These authors completed diagnostic post-mortem examinations on two young adult pigs with large, chronic lesions and secondary myiasis and took swabs from the edges of wounds from those with more acute lesions. *Streptococcus dysgalactiae* subspecies *equisimilis* was isolated from the skin wounds and lymph nodes of affected pigs. The isolate had low minimum inhibitory concentrations for β-lactams. The authors hypothesised that skin trauma and stress may have contributed to the development of the lesions.

This case is similar in clinical presentation and findings to an example of aggressive skin lesions in pigs described in GB, where *S. dysgalactiae* ssp. *equisimilis* was also isolated from lesioned tissue (Staton and others, 2019). In such cases, if material is available, culturing skin lesions as well as regional lymph nodes directly draining skin lesions can allow isolation of the causative bacterium, especially as cultures from skin are frequently contaminated with other bacteria.

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