EQUINE DISEASE SURVEILLANCE

2024 Q4 QUARTERLY REPORT

Produced by:

EIDS
Equine Infectious Disease Surveillance

UNIVERSITY OF CAMBRIDGE
Department of Veterinary Medicine

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VOLUME: 20, No. 4
Oct - Dec 2024

INTRODUCTION

Welcome to the equine disease surveillance report for the fourth quarter of 2024, produced by Equine Infectious Disease Surveillance (EIDS), based in the Department of Veterinary Medicine at the University of Cambridge.

National disease data are collated through multiple diagnostic laboratories and veterinary practices throughout the United Kingdom, providing a more focused insight into the occurrence of equine infectious disease. Due to the global mixing of the equine population through international trade and travel, collaboration on infectious disease surveillance between countries occurs on a frequent basis to inform and alert. Both national and international information will be summarised within this report.

Any comments and feedback on the report are welcomed and we encourage contributions on focus articles. To view previous reports, see www.equinesurveillance.org and to receive reports free of charge, via email on a quarterly basis, please contact equinesurveillance@vet.cam.ac.uk.

HIGHLIGHTS IN THIS ISSUE

NEWS ARTICLES:

- Bird flu virus infections in horses: heeding some scientific caution with recent findings of antibodies in a small number of horses in Mongolia
- EIDS launch a new UK equine post-mortem examination surveillance database
- Equine Industries Committee: update from Defra on African Horse Sickness and reducing livestock disease risks from moving horses internationally
- Extra precautions needed in moving horses from mainland Europe: reducing infectious disease risks for livestock species in the UK

FOCUS ARTICLE:

- The Horserace Betting Levy Board (HBLB) International Codes of Practice: responding to the challenge of emerging threats to the horse breeding industry since 1977

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NOTE:

The data presented in this report must be interpreted with caution, as there is likely to be some bias in the way that samples are submitted for laboratory testing. For example, they are influenced by factors such as owner attitude or financial constraints, or are being conducted for routine screening as well as clinical investigation purposes. Consequently, these data do not necessarily reflect true disease frequency within the equine population of UK.

WITH THANKS TO THE FOLLOWING SUPPPORTERS

Department for Environment Food & Rural Affairs

BEVA

Llywodraeth Cymru Welsh Government

Department of Agriculture, Environment and Rural Affairs

Scottish Government Riaghaltas na h-Alba gov.scot

BIRD FLU VIRUS INFECTIONS IN HORSES: HEEDING SOME SCIENTIFIC CAUTION WITH RECENT FINDINGS OF ANTIBODIES IN A SMALL NUMBER OF HORSES IN MONGOLIA

Equine Infectious Disease Surveillance (EIDS), based at the University of Cambridge and generously funded by the British horseracing and breeding industry, plays a vital and ongoing role in identifying and raising awareness about different emerging equine disease risks.
We followed with interest the recent thread and interview with Professor Pablo Murcia referring to his group's recently published work on detecting apparent immune responses against the bird flu virus known as H5N1 in a few horses in Mongolia.

We strongly agree with Professor Murcia's urging for ongoing vigilance and fully acknowledge the critical importance of the possibility of bird flu viruses emerging among horses, as history attests it having occurred previously. For example, this phenomenon readily explains the sudden emergence in North America in 1872 of an equine epidemic known as the 'great epizootic'. Although at that time influenza viruses had not yet been discovered, the 'great epizootic' behaved just like equine flu – in particular, the signs were severe but clinically typical and the disease spread rapidly through horses travelling on the railroad network between major cities across the American continent, equivalent to today's long-distance movement of horses and their infections by road and air transport.

We write this piece in the EQDSR as some members of the scientific community are exercising caution regarding the evidence from Professor Murcia's work, albeit we recognise the significance of the threat posed by cross-species transmission of influenza viruses between birds and other species, including horses. A letter to this effect has recently been published online by the Equine Veterinary Journal (EVJ). So, whilst recognising the threat we feel that it is important to consider the following points in order that the most balanced and informed perspective might be taken on where horses presently sit on the spectrum of risk of cross-species transmission of H5N1 bird flu virus.

1 The limited seropositivity findings actually provide some reassurance

There were 2160 blood samples included in the study and having applied several tests for detecting antibodies against influenza viruses, it was inferred that 99.6% of the samples were negative by one test (nine positives) and 99.9% were negative by a different test (two positives). As the two positive samples by the second test were from different herds, in different Mongolian provinces, in different years, this argues against there having been horse-to horse transmission.

2 Acknowledging the potential for false positive results in serological testing

It is generally accepted that no diagnostic test is 100% accurate all of the time and that should always be considered when evaluating results from studies applying diagnostic assays, as there may be the possibility of false positive and false negative results. The extent to which accurate results (and by simple subtraction false results) are likely is usually known for a diagnostic test and these measures are commonly referred to as the 'sensitivity' and 'specificity' of the test. Therefore, because the number of positive H5 antibody test results was so low it is possible that even with high test specificity, that the positive results reported may not truly confirm that these horses were exposed and mounted an immune response to an H5 influenza virus.

3 Only low-level antibody titres were reported on single samples

One of the antibody tests that was used provided a figure (known as a 'titre', based on how much the sample could be diluted whilst still detecting presence of antibody) for how much antibody was detected in two positive samples. This reported 'titre' was quite low compared to the amount of antibody that would usually be expected in an animal that had mounted an immune response against an influenza viral infection. It was not possible in this sort of cross-sectional study to provide the best evidence based on measuring antibody levels as a firm indicator of response to a viral infection – this would involve taking two samples from the same animal, the first taken before or at the time of the infection (known as an acute sample) and the second after recovery or clearance of the infection (convalescent sample). With this approach a marked increase in antibody levels seen between acute and convalescent samples in the same animal is a firm indication of the animal responding immunologically to the infection.

4 Lack of epidemiological analysis to contextualise the positive antibody findings

The horses with positive antibody findings had no history of observed clinical signs and although additional information on the animals was collected, no results were provided to put the antibody findings in any sort of context. Although relating antibody findings backwards to prior events can be very difficult, sometimes this approach can provide interesting insights into possible previous events. One example, nearly 18 years ago now, was our investigation of a respiratory disease outbreak in a pack of English foxhounds in which evidence of antibodies to H3N8 equine influenza was discovered (37.5% of 72 hounds were antibody positive), consistent with a prior viral exposure. Influenza as the cause of the investigated outbreak in 2007 was soon ruled out but simply comparing the dates of birth/age of the antibody positive and antibody negative hounds, indicated that the time of exposure must have been several years before, most likely in spring 2003, when equine flu was known to be actively circulating in horses in the UK.

So, we caution that a finding of a very low proportion of horses positive for antibodies to H5 influenza virus may not represent the optimal evidence for confirming cross-species transmission and heightened additional transmission risk from horses. False conclusions as to the extent of this having already occurred may have unwelcome unintended consequences for the equine industry. Further work is required to clarify the current risks, as well as the need for heightened surveillance and testing of cases of acute respiratory disease in horses, in particular including well vaccinated animals.

EIDS LAUNCH A NEW UK EQUINE POST-MORTEM EXAMINATION SURVEILLANCE DATABASE

Post-mortem examinations (PMEs) play a crucial role in disease surveillance; from monitoring endemic conditions like cyathostomins, identifying emerging or novel diseases to investigating clusters of unexplained cases that lack diagnoses. For 20 years, the Equine Quarterly Disease Surveillance Report (EQDSR) has collated and presented data on UK PMEs contributed by a network of around 10 laboratories and academic institutions. PME data in the EQDSR have conventionally been presented in bullet point text format for each of the principally affected body systems with the report subdivided as regional summaries based on the distribution of the reporting centres.

EIDS, in collaboration with Dr John Grewar from jData (Pty) Ltd, has recently developed a cloud-based online database to standardise PME surveillance data entry and facilitate streamlined evaluation of trends over time. In addition, EIDS aims to improve data granularity by requesting the county-based location of individual cases and additional data including case date and age, with all information stored anonymised in an encrypted database.

PME diagnoses reported in EQDSR since 2017 have now been retrospectively coded based on the VeNom (Veterinary Nomenclature) Coding system, developed by the Royal Veterinary College (https://venomcoding.org/). The new database accommodates multiple diagnoses per PME case, records the level of certainty of each diagnosis (e.g., suspect or confirmed), and logs the diagnostic methodologies used (e.g. macroscopic, histopathology, and/or additional testing). EIDS will request that PME surveillance contributors transition to using the new database for their future surveillance contributions, with guidelines for data input being made available soon.

For this quarter, the PME surveillance section at the end of this report demonstrates the new format that data can take as a result of the new data collection system. This includes summarising PME cases by age stage and the main body system involved. Over time, it is hoped that additional temporal and spatial data will be made available for inclusion. To enhance data utility and responsiveness, real-time data sharing will be encouraged, drawing inspiration from the Veterinary Investigation Diagnosis Analysis (VIDA) system, which captures diagnostic submissions to the Animal and Plant Health Agency (APHA), Scotland's Rural College (SRUC)

Veterinary Services Disease Surveillance Centres, and non-APHA partner PME providers. VIDA applies strict criteria to allow monitoring of diagnoses, clinical syndromes, disease trends and associated epidemiological features. Cases without a definitive diagnosis (referred to as 'diagnosis not reached' or DNR) are also analysed for potential evidence of new or re-emerging threats. By adopting similar principles, EIDS will enhance equine PME surveillance, which in turn will improve the overall quality of equine disease monitoring in the UK. In the future, EIDS and jData plan to create an interactive online platform that allows users to evaluate temporospatial features of UK equine PME data.

EQUINE INDUSTRIES COMMITTEE: UPDATE FROM DEFRA ON AFRICAN HORSE SICKNESS

At the Equine Industries Committee (EIC) meeting held on 5th February 2025, Dr Helen Roberts (Policy Advisor Exotic Disease Control - Defra) informed EIC that a desktop exercise for African Horse Sickness (AHS) is planned for 2025. This will test Defra's communications with private vets and industry in the event of an AHS outbreak and will check the control strategy and updates to the legislation and control measures are in order.

During February and March 2024 a team from the UK Government and Pirbright visited South Africa to meet with the competent authorities to review the processes with regard to the possibility of direct imports to the UK. The report is currently with the South African Competent Authorities (SA CA) for their feedback and once returned to Defra, this will be considered by the Animal Disease Policy Group (ADPG).

EXTRA PRECAUTIONS NEEDED IN MOVING HORSES FROM MAINLAND EUROPE: REDUCING INFECTIOUS DISEASE RISKS FOR LIVESTOCK SPECIES IN THE UK

Dr Helen Roberts (Policy Advisor Exotic Disease Control - Defra) reminds EQDSR readers that there has recently been a case of Foot and Mouth disease (FMD) detected in Germany, near Berlin, in extensively grazed water buffalo. This is the first FMD outbreak in the EU since 2011 and Defra have taken measures to prevent incursion to the UK, including restricting the import of untreated products of animal origin, animal by-products and of course susceptible animals from Germany. However, these restrictions also include the movement of hay and straw because of the risk of fomite transmission associated with such products. Therefore, Defra would like to make all those in the UK involved in moving horses across Europe aware that if you are travelling to Germany with horses, please make sure NOT to come back with locally bought hay and straw. In addition, to reduce risks from FMD and African swine fever (ASF), horses should not have contact with wild boar or deer or livestock pastures while in Germany, and owners should ensure vehicles are cleaned before they come into contact with other animals in the UK. The restriction zones for ASF are available here: Map summarising the zoning measures for African Swine Fever in the Union.

THE HORSERACE BETTING LEVY BOARD (HBLB) INTERNATIONAL CODES OF PRACTICE: RESPONDING TO THE CHALLENGE OF EMERGING THREATS TO THE HORSE BREEDING INDUSTRY SINCE 1977

Sidney Ricketts*, James Crabtree^ and Richard Newton†

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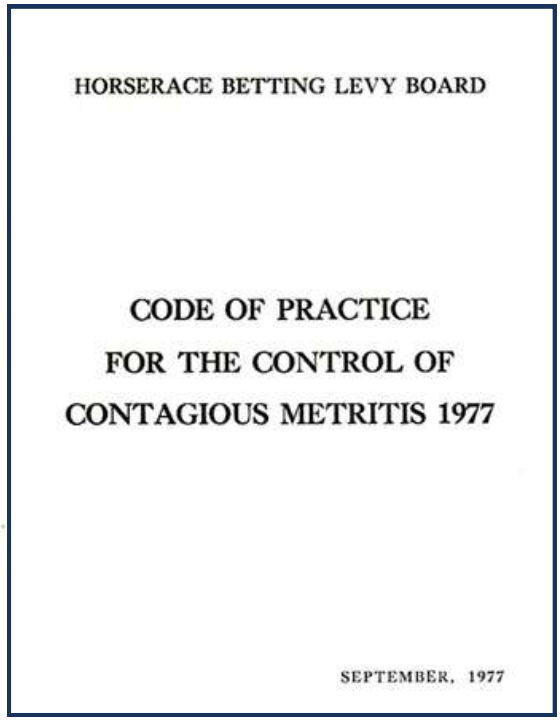
The 2025 horse breeding season sees the release of the 49th consecutive edition of the Horserace Betting Levy Board Codes of Practice for the prevention and control of specified infectious diseases. This article outlines the trigger for the first edition of the Codes back in 1977 and summarises their evolution with the addition of new codes and guidelines addressing a changing landscape of disease threats in the past five decades. The ongoing challenge of engaging the non-Thoroughbred breeding industry in adopting the Codes is recognised and the latest additions and updates to the 2025 Codes are outlined.

Contagious equine metritis: the trigger for the first HBLB Code of Practice

During the 1977 Thoroughbred breeding season, an apparently highly infectious venereal disease was first diagnosed at the National Stud, Newmarket. At that time, the occasional *Klebsiella pneumoniae* and *Pseudomonas aeruginosa* venereal infections were well recognised, but this outbreak was apparently different. Mares covered by individual stallions presented with a greyish, serous, vulvovaginal discharge and the then routine aerobic bacterial culture on normal blood and MacConkey agar did not give rise to any growth. As an infectious cause had not yet been determined, the disease was given the name 'Contagious Equine Metritis 1977' to differentiate it from other causes of metritis and subsequently it was simply referred to as CEM.

Cytological examinations of cervical swabs from infected mares revealed acute polymorphonuclear leucocyte response with signs of gram-negative coccobacilli phagocytosis, suggesting a non-identified bacterial infection. A discharge sample was submitted by arrangement to the Cambridge Public Health Laboratory at Addenbrooke's Hospital, then headed by Dr Edward Taylor. The swab was cultured under conditions necessary to grow the human gonococcus using enriched 'chocolate' agar (erythrocytes lysed by heating), in microaerophilic conditions, and an apparently previously undescribed gram-negative coccobacillus was isolated. Dr Taylor first called this organism *Haemophilus equigenitalis*, as he believed this was the closest genus that he could determine at that time but international taxonomists eventually confirmed that this was in fact a 'new' genus and as a dedication it was named *Taylorella equigenitalis*.

In the 1977 breeding season, soon after the infection was first detected, the Horserace Betting Levy Board (HBLB) set up a 'special committee', which met in Newmarket, chaired by Professor Sir David Evans, an eminent microbiologist. The committee comprised Charles Frank, (Thoroughbred Breeders' Association), Dr David Powell (Animal Health Trust) and Dr John David (University of Bristol Veterinary School), with others co-opted, including Newmarket practitioners Donald Simpson (National Stud), Richard Greenwood, (Greenwood, Ellis & Partners) and Sidney Ricketts (Rossdale & Partners) and other veterinary scientists and UK Government representatives. In September 1977 the committee developed the first 'HBLB Code of Practice for the Control of Contagious Metritis 1977' (Figure 1).


HORSERACE BETTING LEVY BOARD

CODE OF PRACTICE
FOR THE CONTROL OF
CONTAGIOUS METRITIS 1977

SEPTEMBER, 1977

Figure 1: cover of the first edition of the HBLB Code of Practice for contagious metritis 1977

The CEM outbreak resulted in significant disruption and financial losses to the Thoroughbred breeding industry in the UK and other involved countries from cessation of breeding and restricted movement of horses, during 1977 and until the infection was satisfactorily controlled. In 1978, a meeting was arranged at the Animal Health Trust, Newmarket, and delegates from all over UK and the wider world attended. The clinical, epidemiological and laboratory aspects were discussed and the importance of following the HBLB Code of Practice was stressed. Unfortunately, several countries suggested that their non-Thoroughbred horse breeding industries were unlikely to comply. Despite CEM being an endemic disease now in many non-Thoroughbred populations in Europe and perhaps in North America, such non-compliance among non-Thoroughbreds remains today. Unfortunately, this presents a perpetual risk of re-introduction for CEM to the UK, particularly from the importation of non-Thoroughbred competition horses who are then presented for or are used for breeding and as evidenced by the CEM incursions seen in Great Britain in the past five years (Table 1).

Table 1: Summary of confirmations of *Taylorella equigenitalis* (contagious equine metritis organism, CEMO) infection in Great Britain since 2020. Data obtained from the International Collating Centre (ICC).

Year	Area	Age	Breed	Sex	Origin	Imported
2022	Notts.	7	Warmblood	Stallion	Netherlands	Apr 2022
2022	Glos.	11	Hanoverian	Stallion	Germany	2020
2021	Devon	3	Arab	Stallion + 2 covered mares	Poland	Oct 2020
2020	E. Scotland	6	Warmblood	Stallion	Europe	Nov 2019

Evolution of the Codes in response to emerging threats over the intervening years

The HBLB Codes committee (technically now a sub-committee of the HBLB Veterinary Advisory Committee) has met annually since 1977 to review clinical and research findings, to add new information and to republish the Codes annually to provide up to date advice. The Codes committee has been progressively enlarged to include delegates from France, Ireland, Germany and Italy and the whole document is now referred to as the 'International Codes of Practice'.

Since the recognition of CEM and the creation of the first HBLB Code in 1977, the Codes have evolved to encompass multiple further diseases, many following their re-emergence as the cause of major outbreaks. By 2000 there were separate codes of practice on bacterial venereal pathogens, equine viral arteritis (EVA) and equine herpes virus-1 (EHV-1), with a new set of guidelines provided on strangles (Figure 2).

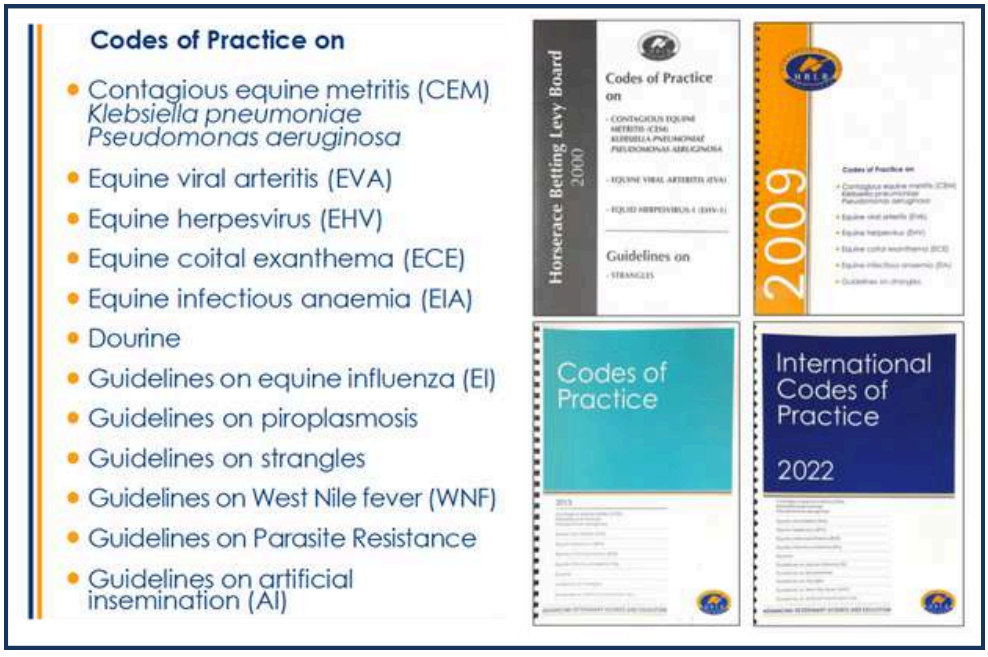


Figure 2: left) the contents of the 2025 edition of the Codes and **right)** the covers of the HBLB Codes of Practice from 2000, 2009, 2013 and 2022.

By 2009 the Codes included additional full codes of practice on equine coital exanthema (EHV-3) and equine infectious anaemia (EIA), which followed a major outbreak of EIA in Ireland in 2006. In 2012 a full code on Dourine was included following the re-emergence of the disease in Italy the preceding year and in 2013, guidelines on artificial insemination were added to align with non-Thoroughbred breeding practices. By 2022, three further guidelines had been added, covering equine influenza following the large epidemic of 2019, West Nile fever after its recent emergence further north in Europe and piroplasmosis, which was added in 2022.

Beyond the Thoroughbred: working with BEVA on artificial insemination guidelines

For many years the health standards of the Thoroughbred industry and the HBLB Codes of Practice have been used as a reference point for non-Thoroughbred breeding operations. Since 1991, the 'British Equine Veterinary Association's (BEVA) Guide to the Use of Artificial Insemination (AI) in Equine Reproduction' (hereafter referred to as 'the AI guide') has defined and described the role of the veterinary surgeon in relation to their responsibilities in equine artificial breeding operations and in 2022 it underwent a further revision (Figure 3). Since 2013 the BEVA AI guide has formed the basis of the guidelines on artificial insemination in the HBLB Codes of Practice.

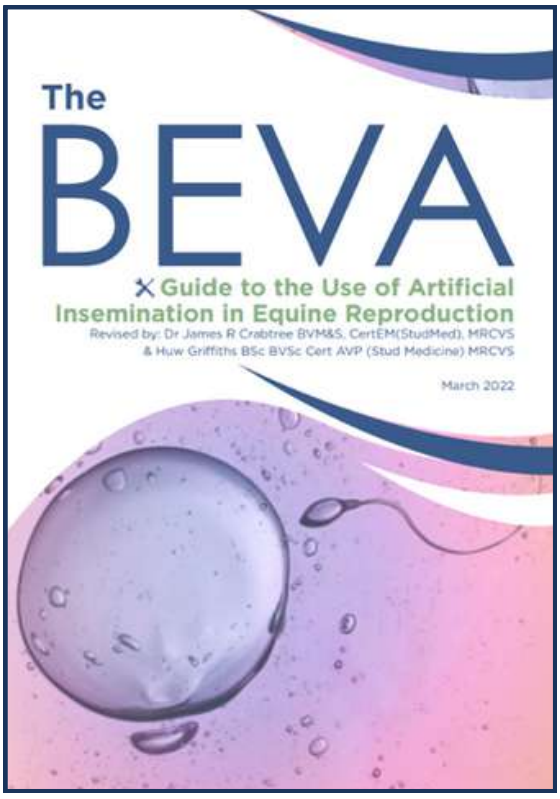


Figure 3: cover of the 2022 revised edition of the BEVA AI Guide

The BEVA AI guide and HBLB Codes of Practice guidelines on AI aim to inform veterinary surgeons to ensure that:

- Standards of knowledge for all parties involved in artificial breeding programs conform fully with best practice
- Fertility is not compromised by use of AI
- The spread of contagious infectious diseases is effectively controlled
- The welfare of the animals being used for AI is safeguarded

The AI guide recommends that the artificial insemination of mares and the processing and production of semen for shipment must be under veterinary supervision. In addition, it refers to the HBLB Codes with respect to the screening for disease in stallions to prevent the spread of contagious infectious diseases, specifically *Taylorella equigenitalis, Klebsiella pneumoniae* (capsule types 1, 2 and 5), *Pseudomonas aeruginosa*, EVA and EIA. BEVA also provides a 'shipped semen certificate' to ensure that a stallion's disease screening results are appropriately presented to the receiving veterinary surgeon or AI technician along with the accompanying semen shipment. The recommendations for disease screening of mares to be inseminated depends on where the mares are located and the risk of onward disease transmission. As mares are not visiting the stallion to be naturally covered, they do not technically represent a risk of disease spread to the stallion, although when they are brought together with other mares there are risks of spread of disease either via direct or iatrogenic transmission.

Many facilities and veterinary practices bringing mares together for insemination will screen mares for the five infections outlined previously as a minimum, with additional strangles and herpes virus screening possibly also adopted.

Challenges do arise when a stallion or stud owner resists the recommendation for disease screening of stallions and/or mares. Many non-Thoroughbred breed societies do not require that breeding stallions registered with them are health screened as a pre-requisite for breeding status or to issue covering certificates. This coupled with the fact that pre-breeding disease screening is not required by law for domestic purposes within national boundaries (with the exception of movements between the mainland UK and Northern Ireland), means that artificial breeding can continue without the supervision or involvement of the veterinary surgeon and without the recommended disease screening. In such situations, veterinary surgeons are placed in a difficult position. In receipt of semen without appropriate disease clearance, discussion needs to be had with the mare's owner to advise that the semen can't be used without risking the health of the individual mare and other horses in the immediate and local vicinity. After this discussion many owners will opt not to inseminate the mare and the semen is appropriately quarantined and discarded. Many facilities bringing mares together from different locations, such as veterinary practices, will have a policy that semen without appropriate disease clearance will not be used, in line with the BEVA AI guide and the HBLB Codes of Practice guidelines on AI.

On the other hand, international movement of equine semen is tightly controlled with conditions laid down by European law. In brief, this requires semen to be collected in an approved semen collection centre (approved by the Animal and Plant Health Agency in the UK), and stallions to have residency and health screening requirements to allow semen to be collected and shipped internationally, be that for chilled or cryopreserved semen. Collection centres in the European Union (approved by member states' competent authorities), can import semen into the UK under the same rules. This, along with the combination of imports of semen having to be assessed or inspected by an official veterinarian at an incoming border control post (BCP) when entering the UK, and by a private veterinary surgeon at the receiving destination, has increased surveillance of incoming semen, reducing the disease risks associated with such movements. However, the current import requirements for live horses does not require 'registered horses' (including stallions) to undergo any health testing and for 'unregistered horses' to undergo screening for only EVA and EIA and not *Taylorella equigenitalis*. This means that live horse imports remain the most likely source of disease being introduced from the EU and post import quarantine and disease screening should be considered to mitigate this risk. It is notable that, with the exception of the cases in Devon in 2021, the other three recent occurrences of *Taylorella equigenitalis* in non-Thoroughbreds were detected through disease screening prior to semen collection in accordance with the HBLB Code guidelines on AI.

As well as including the guidelines on AI, the HBLB Codes of Practice are also used as a reference for the establishment of 'freedom of disease' after a positive identification of an infectious agent and, if the disease is notifiable, it reminds the reader the actions that must be taken to report the disease's occurrence. For *Taylorella equigenitalis* the HBLB Codes have been used as the basis for the industry-led protocol for the control of CEM in Great Britain, which functions to manage the disease whilst retaining its notifiable disease status and this applies to occurrence of the disease in any and all breeds of horse in the UK.

The HBLB Codes of Practice have acted as a critical reference marker for the non-Thoroughbred breeding industry and are relied upon and referenced in industry documents and guidelines. Although not specifically written for the artificial breeding industry, the underlying principles of the Codes of Practice for the prevention and control of specific equine diseases remain valid and highly relevant to it.

The 2025 Codes: responding again to the latest threats and scientific developments

The further adaptation to emerging issues and scientific developments has again been seen in the latest edition of the HBLB International Codes of Practice released in January ahead of the 2025 breeding season.

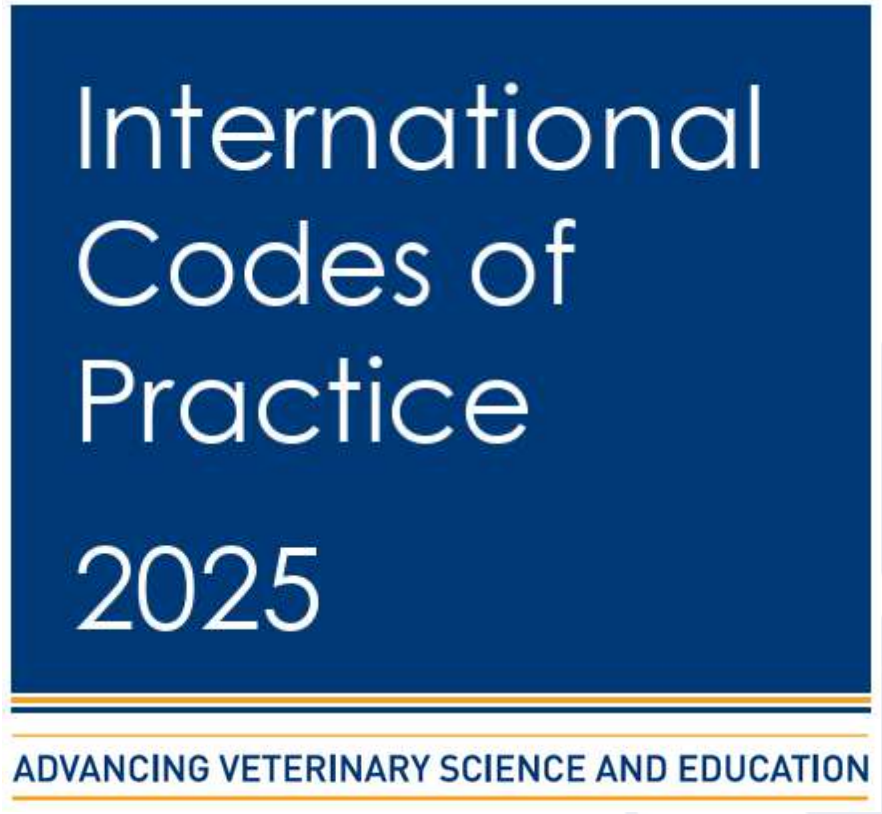
Most notably there is an entirely new set of guidelines dedicated to the emerging issue of parasite resistance. These new guidelines have been principally written by the current chair of the Codes of Practice Sub-Committee, Dr Mark Bowen, on the basis that parasite resistance, as part of the overarching syndrome of antimicrobial resistance, should be considered a disease in its own right. The term parasite resistance reflects the emerging phenomenon that gastrointestinal parasites are increasingly able to survive and reproduce despite anthelmintic drug administration. Failure to act to limit parasite resistance will lead to irreversible impacts on animal health and welfare and the risks of parasite resistance are greatest where large populations of youngstock are maintained together, such as on stud farms. In following the established format of guidelines in the Codes, there are sections on the condition, its importance, associated clinical signs and the spreading of the problem. There is a more extensive description of preventive approaches based on limiting anthelmintic use in a coordinated approach to parasite control, with details provided on appropriate pasture management and approaches to selective anthelmintic use in adult horses and strategically applied anthelmintic use in young stock. Later sections cover testing, diagnosis, treatment and management of parasite resistance.

The guidelines on strangles have also been substantially revised, reflecting the ongoing challenge, especially in frequently moving horses, to effectively manage and prevent infections with *Streptococcus equi*, which may be subclinical and long-standing, as well as clinically apparent. Revised guidance is provided on interpreting strangles serology in individual, as well as groups of horses and sole reliance on single antibody blood tests conducted prior to movement, as assurance of low infectious risk continues to be cautioned against. Reference is now made to Strangvac (Dechra veterinary products), the fusion-protein strangles vaccine, highlighting its conventional intramuscular route of administration but as a subunit vaccine its inherent inability to induce signs of strangles and interfere with both agent detection and serological diagnostic assays. The latter feature makes vaccination with Strangvac complementary to, rather than contra-indicated, in using diagnostic testing in strangles outbreak management.

In addition to these two more substantive revisions to the 2025 HBLB International Codes of Practice, amendments have also been made to:

- the section on prevention through vaccination in the guidelines on West Nile fever
- the guidelines on artificial insemination, emphasising their relevance to biosecurity relating to semen collection and processing
- the notes on transport of horses in Appendix 7
- the information on equine vaccines provided in Appendix 8

View the codes here: www.codes.hblb.org.uk/



The views expressed in this focus article are those of the author and independent of the Equine Quarterly Disease Surveillance Report.

UK Infectious Disease Reports

This section summarises notifiable disease investigations followed by laboratory confirmed endemic infectious disease outbreaks reported in the United Kingdom during the fourth quarter of 2024. Each reported outbreak may involve more than one animal. To view current outbreak reports, see www.equinesurveillance.org/iccview.

No reported outbreak(s) in a region does not necessarily mean the area is free from the disease. When a particular disease is reported as 'endemic', disease outbreaks are common and at an expected level.

NOTIFIABLE DISEASES

The APHA Veterinary Exotic Notifiable Disease Unit (VENDU) co-ordinates the investigation of suspected exotic notifiable disease in Great Britain on behalf of Defra, Welsh Government and Scottish Government. Further information about notifiable diseases is available on https://www.gov.uk/government/collections/notifiable-diseases-in-animals.

It should be noted that all information relating to equine notifiable disease investigations (including suspect cases that are subsequently negated) will appear in this section and are not broken down by body system. APHA non-negative test results that are referred to below do not equate to confirmed positive cases and are therefore not included in quarterly laboratory results tables. Confirmed positive results are based on APHA investigations and follow confirmation on official samples. Non-notifiable diseases will appear in their relevant system section.

SURRA

In September, non-negative serology results were reported from pre-export samples in two geldings at the same premises. Following APHA investigations in October 2024 both horses were confirmed to be clinically well, one was negative on serology after official blood sampling was completed and disease was negated. The second horse had non-negative results from official samples and further testing was completed at the WOAH reference laboratory with negative results. These results alongside the history and clinical picture enabled suspicion of disease to be negated in early October.

WEST NILE VIRUS

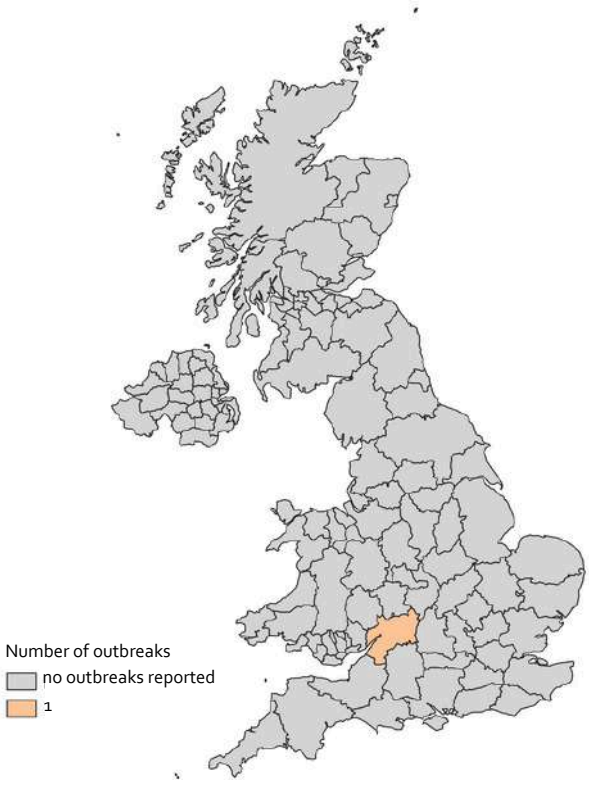
There have been no 'test to exclude' (TTE) cases for WNV.

Equine Herpes Virus

EHV-1 NEUROLOGICAL INFECTION

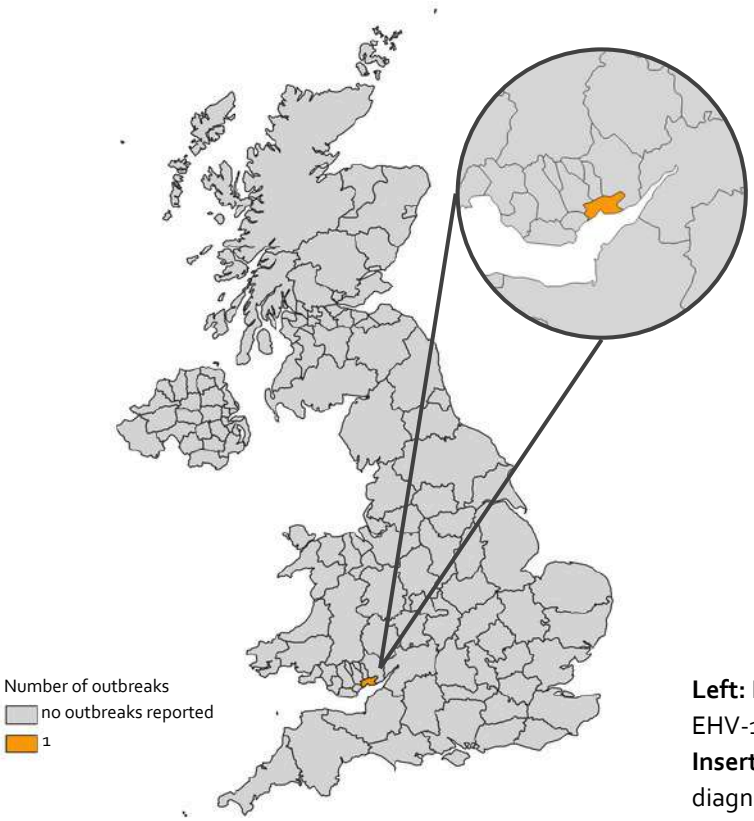
On 25 October 2024, Axiom Laboratories reported a presumptive case of EHV-1 neurological disease in an unvaccinated 24-year-old mare on a premises in Gloucestershire. Clinical signs, first noted on 18 October 2024, included ataxia, weakness on tail-pull and poor proprioception.

Positive diagnosis was confirmed on 24 October 2024, by presence of moderate to high complement fixation (CF) test antibody titres in the absence of recent vaccination. There are a further five in-contacts on site and disease control measures are being taken under veterinary supervision.



Right: Frequency of reported laboratory diagnosed outbreaks of EHV-1 neurological infection across the UK during 2024 Q4.

EHV-1 RESPIRATORY INFECTION



On 8 November 2024, Axiom Veterinary Laboratories reported a case of EHV-1 respiratory disease in 11-year-old non-Thoroughbred gelding on a premises in Newport, Wales.

Clinical signs were first noted on 4 November 2024 and included: pyrexia, inappetence, lethargy and harsh/dry cough. Positive diagnosis was confirmed by PCR on a nasopharyngeal swab taken on 7 November 2024. There are other animals on the premises, several of which are also affected.

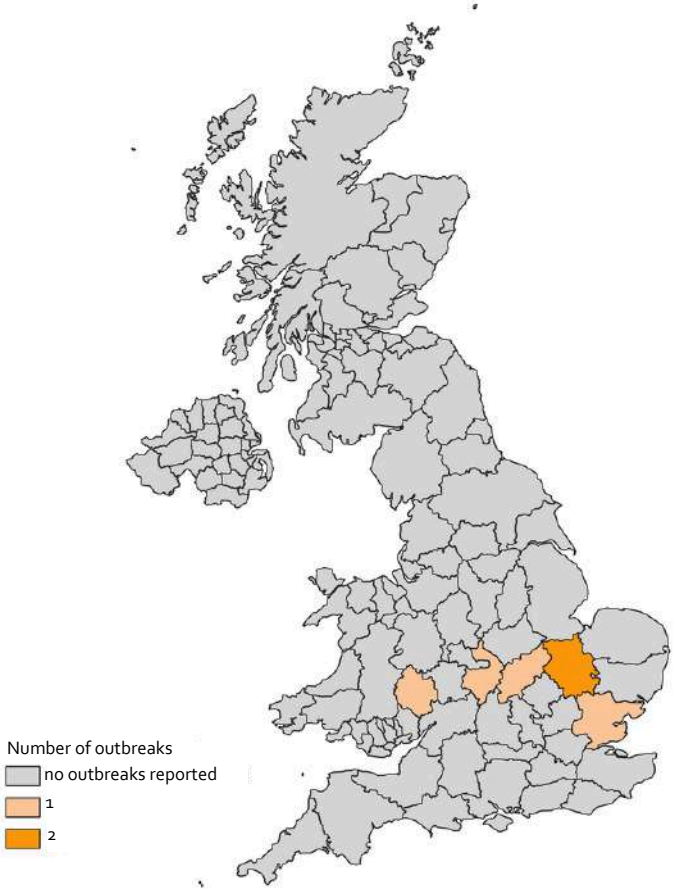
Left: Frequency of reported laboratory diagnosed outbreaks of EHV-1 respiratory infection across the UK during 2024 Q4.
Insert: Zoomed in pane of the map highlighting the region of the diagnosis.

EHV-4 RESPIRATORY

SUMMARY

In October 2024, Rossdales Laboratories and Three Counties Equine Hospital each reported one outbreak of Equine Herpes Virus-4 respiratory (EHV-4 disease). In November 2024, Rossdales Laboratories reported three outbreaks. In December 2024, Rossdales Laboratories reported one outbreak.

Information regarding these six reported outbreaks is summarised in Table 1.



Frequency of reported laboratory diagnosed outbreaks of EHV-4 respiratory infection across the UK during 2024 Q4.

Table 1: EHV-4 respiratory infection outbreaks reported 1 Oct to 31 Dec 2024.

Total outbreaks reported	**6**	
	n	**%**
Total horses sampled	6	100%
Sample type		
Swab	6	100%
Nasopharyngeal	6	100%
Signalment		
Sex of horse indicated	6	100%
Female	3	50%
Male	3	50%
Breed of horse	6	100%
Non UK-native horse	1	17%
Native UK horse	1	17%
Sports horse	3	50%
Crossbreed	1	17%
Age of horse	6	100%
Range	3 months - 8 years	
IQR	9 months - 7 years	
Median	3 years	
Clinical signs reported*	20	
Lethargy	5	25%
Nasal discharge	5	25%
Pyrexia	3	15%
Inappetence	2	10%
Lymphadenopathy	2	10%
Coughing	3	15%
Vaccination status	4	67%
Unvaccinated	4	100%
Premises type	6	100%
Private	4	67%
Commercial	2	33%
Month		
October	2	
November	3	
December	1	

**From 6 diagnoses*

Twenty-seven additional outbreaks of EHV-4 respiratory infection were reported to EIDS, however, no epidemiological data could be obtained, due to either the submitting veterinary practice not providing the necessary data or a request for the information not to be circulated. ***EIDS encourages veterinary surgeons receiving positive laboratory results to contact EIDS*** *and provide additional details allowing for anonymised reporting of disease occurrence, thereby greatly enhancing the level of ongoing surveillance of equine infectious diseases in the UK.*

NB: *Figures in the UK Infectious Disease Report may differ, due to EIDS lacking permission to report some outbreaks or not receiving real-time epidemiological data*

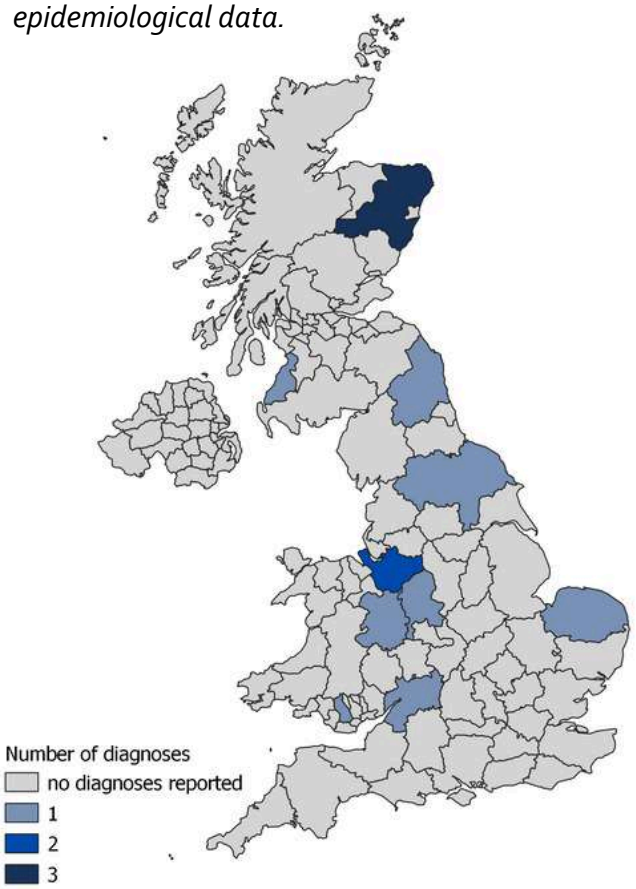
Equine Influenza

SUMMARY

In October 2024, Rossdales Laboratories reported two outbreaks, Liphook Equine Hospital reported one outbreak, Axiom Veterinary Laboratories reported three outbreaks and Rainbow Equine Hospital reported one outbreak of equine influenza (EI). In November 2024, Rainbow Equine Hospital reported one outbreak and Axiom Veterinary Laboratories reported three outbreaks.

Information regarding these 11 reported outbreaks is summarised in Table 2.

NB: *Figures in the UK Infectious Disease Report may differ, due to EIDS lacking permission to report some outbreaks or not receiving real-time epidemiological data.*



Frequency of reported laboratory diagnoses of EI across the UK during 2024 Q4, totalling 13 diagnoses from 11 outbreaks.

Six additional EI outbreaks were reported to EIDS, however, no epidemiological data could be obtained, due to either the submitting veterinary practice not providing the necessary data or a request for the information not to be circulated.

Table 2: Equine influenza outbreaks reported 1 Oct to 31 Dec 2024.

Total outbreaks reported	11	
	n	**%**
Total horses sampled	13	100%
Sample type		
Swab	13	100%
Nasopharyngeal	13	100%
Signalment		
Sex of horse indicated	8	62%
Female	4	50%
Male	4	50%
Breed of horse	11	85%
Native UK pony	7	64%
Native UK horse	4	36%
Age of horse	11	85%
Range	4 months - 24 years	
IQR	1 - 6 years	
Median	3 years	
Clinical signs reported*	40	
Coughing	10	25%
Lethargy	6	15%
Nasal discharge	11	28%
Pyrexia	6	15%
Inappetence	5	13%
Lymphadenopathy	1	2%
Ocular discharge	1	2%
Vaccination status	11	85%
Unvaccinated	11	100%
Premises type	10	91%
Livery	1	10%
Private	4	40%
Riding school	3	30%
Stud	1	10%
Competition	1	10%
Month		
October	9	
November	4	
December	0	

**From 11 diagnoses*

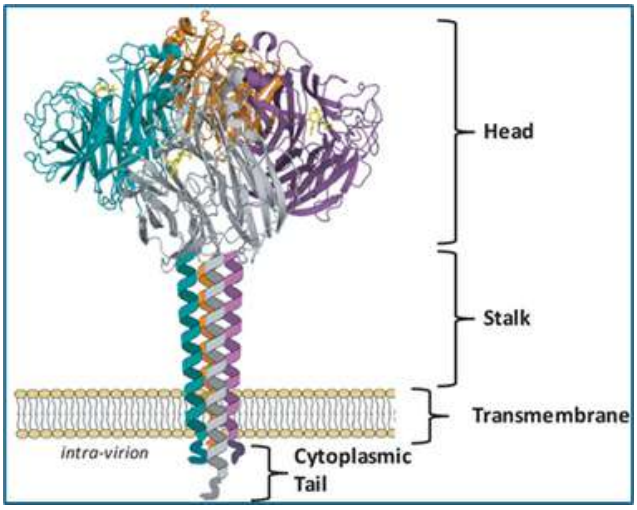
HBLB SURVEILLANCE SCHEME

Veterinary surgeons suspecting EI can submit samples for PCR testing with the scheme covering the cost of the laboratory testing. Veterinary surgeons wishing to use this scheme can sign up here: www.equinesurveillance.org

2024 Q4 EI SEQUENCE ANALYSIS

In the last three months of 2024, 17 equine influenza (EI) positive samples were submitted for analysis. From these, fifteen HA sequences were obtained, along with eight whole genome sequences. This brings the total number of viruses sequenced from samples submitted in the UK during 2024 to 43. All the viruses sampled in the last three months of 2024 are of the same lineage as the previous viruses sequenced in 2024 and all belong to the Clade 1 lineage. They are noteworthy for three amino acid changes found in three of the major antigenic sites (A, B and C) in the haemagglutinin (HA) protein (S143L, T192A, S92N) which have been present throughout 2024 but not present before 2024, plus one amino acid change outside the major antigenic sites (S30N) which has emerged in the fourth quarter of 2024 and has been identified in nine of the 15 sequenced viruses since October.

We have also identified a mutation located on the outside face of the tetrameric head of the neuraminidase (NA) protein (V357I) which was seen first in January 2024 in the same viruses that contained the 3 HA changes described above. Unlike haemagglutinin, neuraminidase lacks clearly defined major antigenic sites, with antigenic sites located across the entire head of the protein, making its relevance for viral immune escape less clear. The new variant of equine H3N8 found since the beginning of 2024 was identified by whole genome sequencing and its closest relative was last found circulating in the UK in 2022.



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The 2023 viruses appear to be on a separate evolutionary branch also derived from the variant found in 2022, and which have not been found since the end of 2023. The abrupt replacement of the previous circulating variant around the beginning of 2023 and again in 2024 is intriguing, but might suggest fresh introductions of new variants rather than endemic persistence in the UK. We see gradual evolution punctuated by sudden evolutionary jumps. It will be interesting to see whether 2025 will see a repeat of this evolutionary pattern.

Surveillance of Equine Strangles

Table 3: *S. equi* samples reported 1 Oct to 31 Dec 2024.

	n	%
Total horses sampled	79	100%
Sample type*	82	
Swab	54	66%
Nasopharyngeal	50	93%
Nasal	3	6%
Abscess material	1	1%
Guttural pouch lavage	21	26
Other	7	9%
Diagnostic tests		
PCR only requested	57	72%
PCR and culture requested	16	20%
iiPCR	1	1%
iiPCR and culture	1	1%
LAMP	1	1%
Culture only requested	3	4%
Signalment		
Sex of horse indicated	59	75%
Female	24	41%
Male	35	59%
Breed of horse	49	62%
Native UK pony	18	37%
Sports horse	13	27%
Crossbreed	4	8%
UK native horse	11	22%
Non-UK native horse	3	6%
Age of horse	56%	
Range	4 months - 27 yrs	
IQR	4 - 10 yrs	
Median	5 yrs	
Clinical signs reported**		
Nasal discharge	24	34%
Pyrexia	15	21%
Glandular swelling	6	9%
Abscess	7	10%
Other	4	6%
Coughing	8	11%
Lethargy	4	6%
Inappetence	2	3%
Reason for sampling reported		
Total reasons*	50	
Clinically ill horse	23	46%
Post infection screening	7	14%
Strangles suspected	6	12%
Post seropositive ELISA	5	10%
Pre/post movement screening	3	6%
In contact	6	12%

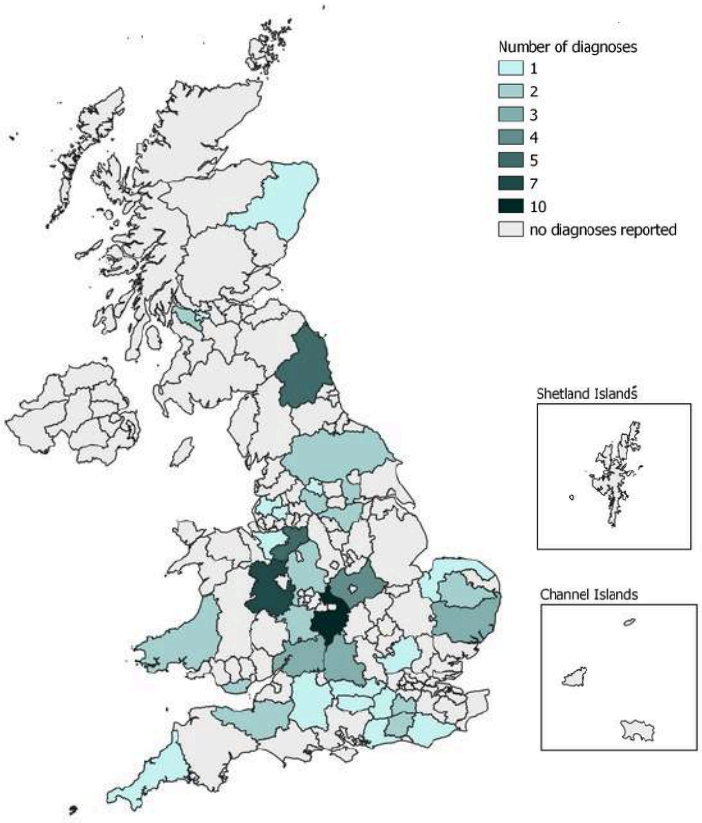
**can include multiple entries per submission*

***From 32 diagnoses*

The Surveillance of Equine Strangles network enables the ongoing assessment of the disease's true welfare impact, highlighting trends over time and different geographical areas across the UK. The SES network is comprised of twelve diagnostic laboratories based across the UK.

A total of 79 cases with positive diagnoses of *S. equi* were reported by SES Laboratory during Q4 2024 from samples submitted by 49 veterinary practices in the UK. Information regarding reported samples is summarised in Table 3.

NB: *Figures in the UK Infectious Disease Report may differ, due to EIDS lacking permission to report some outbreaks or not receiving real-time lab data.*

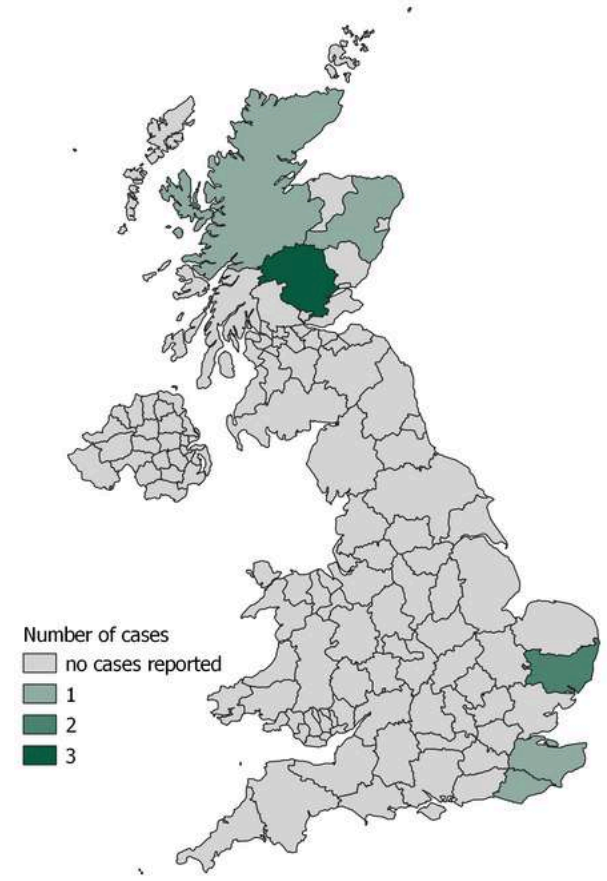


Frequency of reported laboratory diagnoses of *S. equi* across the UK from SES during 2024 Q4. Diagnoses are mapped by submitting vet practice location.

Equine Grass Sickness

An equine grass sickness (EGS) surveillance scheme was established in spring 2008 facilitating the investigation of changes in geographical distribution and incidence of EGS in Great Britain. Having up to date anonymised reports from across the country provide accurate representation of EGS cases nationwide and is vital to help continue epidemiological research into the disease.

Reporting cases of EGS to the Equine Grass Sickness Fund (EGSF) can be done by either the attending veterinary surgeon or the owner, at http://grasssickness.org.uk/casereports.



Frequency of EGS cases reported to the EGSF across the UK during 2024 Q4.

In Q4 2024 nine cases of EGS were reported to EGSF. Cases were reported across England (n= 4, 44%) and Scotland (n= 5, 56%). Information regarding reported cases is summarised in Table 4. Where premises history was known (n= 7/9), four premises had a history of EGS.

Table 4: Equine Grass Sickness cases reported to the EGSF 1 Oct to 31 Dec 2024.

	n	%
Total horses sampled	9	100%
EGS presentation	9	100%
Acute	6	67%
Subacute	1	11%
Chronic	2	22%
EGS outcome	9	100%
Survivor	0	-
Non-survivor	9	100%
EGS diagnoses	9	100%
Clinical signs alone	7	78%
Histological confirmation	2	22%
Month of diagnosis	9	100%
October	5	55%
November	2	22%
December	2	22%
Signalment		
Sex of horse indicated	8	88%
Female	5	62%
Male	3	38%
Breed of horse	9	100%
Native UK pony	5	67%
Native UK horse	2	22%
Non-native UK horse	1	11%
Sports horse	1	22%
Age of horse	8	88%
Range	0.6 - 14 years	
IQR	2 - 7 years	
Median	6	

Please note that figures for EGS contained in the laboratory report may differ to the number of cases reported here, which are reported by both owners and veterinary surgeons.

VIROLOGY

The results of virological testing for October to December 2024 are summarised in Tables 5 to 8. Please note, APHA's sample population is different to the other contributing laboratories as their tests are principally in relation to international trade.

GASTROINTESTINAL DISEASE

Table 5: Results of virological testing for gastrointestinal diseases between 1 Oct to 31 Dec 2024.
CLs = contributing laboratories

Test	Detection	Samples tested (n)	Positive (n)	CLs (n)
Adenovirus HI	Antibody	55	0	1
Coronavirus PCR	Agent	107	4	5
Rotavirus ELISA	Antibody	0	0	1
Rotavirus-A PCR	Agent	15	1	3
Rotavirus-B PCR	Agent	15	0	4
Rotavirus antigen ELISA/Strip test/LFT	Agent	6	0	7

HI Haemagglutination inhibition, LFT Lateral flow test

RESPIRATORY DISEASE

Table 6: Results of virological testing for respiratory diseases between 1 Oct to 31 Dec 2024.
CLs = contributing laboratories

Test	Detection	Samples tested (n)	Positive (n)	CLs (n)
EHV-2 PCR	Agent	17	3	3
EHV-5 PCR	Agent	17	3	4
Influenza HI (APHA)	Antibody	0	0	1
Influenza HI	Antibody	55	0	1
Influenza PCR (APHA)	Agent	384	0	1
Influenza PCR	Agent	534	11*	10
Influenza IFAT	Agent	0	0	1
Influenza LAMP	Agent	11	0	2
ERV-A/B CFT	Antibody	25	0	1
ERV PCR	Agent	2	0	1

EHV Equine herpes virus, HI Haemagglutination inhibition, LAMP loop mediated isothermal amplification, ERV Equine rhinitis virus, CFT Complement fixation test, IFAT immunofluorescent antibody test *Figures reported here may differ to the endemic diseases section due to EIDS not receiving details from the submitting veterinary practice or the owner requesting details not to be circulated

Table 7: Results of virological testing for multiple/miscellaneous/neurological diseases between 1 Oct to 31 Dec 2024. CLs = contributing laboratories

Test	Detection	Samples tested (n)	Positive (n)	CLs (n)
EHV-1 LAMP	Agent	12	0	2
EHV-1 PCR (APHA)	Agent	118	0	1
EHV-4 PCR (APHA)	Agent	118	0	1
EHV-1 PCR	Agent	959	0	11
EHV-1 VI	Agent	0	0	1
EHV-4 PCR	Agent	959	58	11
EHV-4 LAMP	Agent	12	1	2
EHV-4 VI	Agent	0	0	1
EHV-1 IFAT - Ag	Agent	0	0	1
EHV-1/-4 CFT	Antibody	255	7	2
EHV-1/-4 CFT (APHA)	Antibody	1	0	1
EHV-1/-4 IFAT - Ag	Agent	0	0	1
EHV-8 PCR	Agent	0	0	1
EIA ELISA	Antibody	202	0	9
EIA Coggins (APHA)	Antibody	8206	0	1
EIA Coggins	Antibody	4	0	7
Hepacivirus PCR	Agent	1	0	1
Parvovirus PCR	Agent	13	0	1
Papilloma virus PCR	Agent	2	1	1
WNV IgM ELISA (APHA)	Antibody	0	0	1
WNV IgG ELISA (APHA)	Antibody	0	0	1
WNV PCR (APHA)	Agent	0	0	1

EHV Equine herpes virus, LAMP loop mediated isothermal amplification, VI Virus isolation, CFT Complement fixation test, IFAT immunofluorescent antibody test, EIA Equine infectious anaemia, WNV West Nile Virus

**FIGURES REPORTED HERE DIFFERENT TO ENDEMIC SECTIPN EHV

Table 8: Results of virological testing for reproductive diseases between 1 Oct to 31 Dec 2024.
CLs = contributing laboratories

Test	Detection	Samples tested (n)	Positive (n)	CLs (n)
EHV-3 PCR	Agent	1	0	1
EHV-3 VI	Agent	0	0	1
EHV-3 VN	Antibody	1	0	1
EVA ELISA*	Antibody	1555	3	10
EVA PCR (APHA)	Agent	2	0	1
EVA PCR	Agent	1	0	1
EVA VN (APHA)**	Antibody	982	13	1
EVA VN**	Antibody	15	10	5

EHV Equine herpes virus, VI Virus isolation, VN Virus neutralisation, EVA Equine viral arteritis, *Positive samples then undergo VN testing as the confirmatory test, ** Due to the unavailability of the EVA vaccine since March 2023, all stallions now have lapsed vaccination status. If sero-positivity cannot be attributed to prior vaccination and confirmed by testing alongside archived serial samples that show a stable or declining titre, the case must be reported to APHA for investigation under the EVA Order 1995. Additionally, mares that are sero-positive within two weeks of mating must also be investigated.

BACTERIOLOGY

A summary of the diagnostic bacteriology testing undertaken by different contributing laboratories is presented in Tables 9 to 12. The BEVA laboratory registering scheme is for the testing of CEM (*Taylorella equigenitalis*), *Klebsiella pneumoniae* and *Pseudomonas aeruginosa*. Granting and maintenance of approval depends on a laboratory achieving correct results in quality assurance tests and reporting data to this report. BEVA publishes a list of approved laboratories annually. Fifteen BEVA approved laboratories in the UK contributed data.

REPRODUCTIVE DISEASE

Table 9: Results of bacteriological testing for reproductive diseases between 1 Oct to 31 Dec 2024.
CLs = contributing laboratories

Test	Detection	Samples tested (n)	Positive (n)	CLs (n)
CEM *Taylorella equigenitalis* PCR (BEVA)	Agent	353	0	11
CEM *Taylorella equigenitalis/asinigenitalis* culture^ (BEVA)	Agent	1148	0	15
CEM *Taylorella equigenitalis* PCR (APHA)	Agent	279	0	1
CEM *Taylorella asinigenitalis* PCR (APHA)	Agent	79	0	1
CEM *Taylorella equigenitalis/asinigenitalis* culture^ (APHA)	Agent	2817	0	1
Klebsiella pneumoniae capsule types 1 PCR	Agent	6	0	1
Klebsiella pneumoniae capsule types 2 PCR	Agent	6	0	1
Klebsiella pneumoniae capsule types 5 PCR	Agent	6	0	1
Klebsiella pneumoniae PCR (BEVA)	Agent	383	11	10
Klebsiella pneumoniae culture (APHA)	Agent	51	0	1
Klebsiella pneumoniae culture (BEVA)	Agent	1189	5	16
Pseudomonas aeruginosa PCR (BEVA)	Agent	353	0	9
Pseudomonas aeruginosa culture (APHA)	Agent	51	0	1
Pseudomonas aeruginosa culture (BEVA)	Agent	1194	10	17

CEM contagious equine metritis (*Taylorella equigenitalis*), ^*Taylorella asinigenitalis* and *Taylorella equigenitalis* are morphologically indistinguishable by culture and therefore if a sample is positive by culture, it should be screened for both species by multiplex PCR, BEVA British Equine Veterinary Association approved laboratories

RESPIRATORY DISEASE

Table 10: Results of bacteriological testing for respiratory diseases between 1 Oct to 31 Dec 2024.
CLs = contributing laboratories

Test	Detection	Samples tested (n)	Positive (n)	CLs (n)
Streptococcus equi ELISA Antigen A/C (ISL)†	Antibody	3455	276	6
Streptococcus equi ELISA M-protein (IDVET)	Antibody	0	0	1
Streptococcus equi PCR	Agent	2056	94	12
Streptococcus equi LAMP	Agent	11	0	2
Streptococcus equi culture	Agent	380	19	11
Rhodococcus equi ELISA#	Antibody	17	8	2
Rhodococcus equi PCR	Agent	36	0	4
Rhodococcus equi culture	Agent	44	1	7
Streptococcus zooepidemicus PCR	Agent	332	134	6
Streptococcus zooepidemicus culture	Agent	245	62	7

†seropositivity may be attributed to disease exposure, infection or carrier states, #seropositives include exposure to the virulent form of *R. equi* or the presence of maternally derived antibodies, LAMP loop mediated isothermal amplification. The *S. equi* agent detection tests presented here are for individual tests, not individual horses. Therefore, they differ from the SES data presented in Table 3, which represents individual cases

MISCELLANEOUS DISEASE

Table 11: Results of miscellaneous bacteriological testing between 1 Oct to 31 Dec 2024.
CLs = contributing laboratories

Test	Detection	Samples tested (n)	Positive (n)	CLs (n)
MRSA culture	Agent	585	0	10
Borrelia burgdorferi ELISA	Antibody	34	8	4
Borrelia burgdorferi PCR	Agent	1	0	1
Burkholderia mallei (Glanders) CFT (APHA)	Antibody	1170	0	1
Leptospira MAT	Antibody	0	0	1
Leptospira PCR	Agent	2	0	1
Anaplasma ELISA	Antibody	56	11	4
Anaplasma PCR	Agent	1	0	1

MRSA methicillin resistant *Staphylococcus aureus,* LFT Lateral flow test, CFT Complement fixation test, MAT microagglutination testing antibody

GASTROINTESTINAL DISEASE

Table 12: Results of bacteriological testing for gastrointestinal diseases between 1 Oct to 31 Dec 2024. CLs = contributing laboratories

Test	Detection	Samples tested (n)	Positive (n)	CLs (n)
Campylobacter culture	Agent	11	1	7
Clostridium perfringens ELISA	Toxin	253	1	4
Clostridium perfringens LFT	Toxin	108	8	3
Clostridium perfringens PCR	Agent	43	5	3
Clostridium difficile ELISA	Toxin	259	21	4
Clostridium difficile LFT	Toxin	108	1	4
Clostridium difficile PCR	Agent	47	0	3
Lawsonia intracellularis IPMA	Antibody	135	33	3
*Lawsonia intracellularis*** PCR	Agent	162	21	5
Salmonella Typhimurium‡ PCR	Agent	49	0	3
Salmonella Typhimurium‡ WGS (APHA)	Agent	12	12	1
Salmonella Typhimurium‡ culture	Agent	108	4	8
Salmonella Other *spp*‡ PCR	Agent	188	8	8
Salmonella Other *spp*‡ WGS (APHA)	Agent	10	10	1
Salmonella Other *spp*‡ culture	Agent	536	27	12
Enterobacter culture	Agent	1213	88	7
E. coli culture	Agent	1246	184	9

LFT Lateral flow test, WGS whole genome sequencing **identified using PCR applied to faeces, IPMA immunoperoxidase monolayer assay, ‡Under the Zoonoses Order 1989, it is a statutory requirement to report and serotype positive cases for *Salmonella spp*. A positive case may have repeat samples taken.

APHA *SALMONELLA* RESULTS

Twenty-two samples were submitted this quarter to the Animal and Plant Health Agency (APHA) and all were positive for Salmonella. Of these, the serovars/phagetypes reported were *S*. Agama (1 isolate), *S*. Anatum (1 isolate), *S*. Blockley (1 isolate), *S*. Enteritidis (1 isolate), *S*. Fulica (1 isolate), *S*. Kingston (1 isolate), *S*. Newport (3 isolates), *S*. Oslo (1 isolate), *S*. Typhimurium (11 isolates, phage types as follows: DT193 (1 isolate), DT75 (2 isolates), U323 (1 isolate), RDNC (2 isolates), NOPT (5 isolates)) and Monophasic *Salmonella* Typhimurium DT193 (1 isolate).

APHA *SALMONELLA* RESULTS CONT…

S. Enteritidis is typically associated with humans and poultry while *S*. Anatum and *S*. Typhimurium have been associated with a number of different sources including livestock, dogs, wildlife and feed with *S*. Typhimurium DT193, U323 and Monophasic *S*. Typhimurium DT193 often attributed to pigs. *S*. Newport and *S*. Agama are found in wildlife including badgers and *S*. Oslo appears to be circulating in equines and is also occasionally present in animal feed. This is the first isolation of *Salmonella* Blockley in horses in GB and like *S*. Fulica which was first isolated from horses in 2023, this serovar is rarely isolated from GB livestock. This wide range of associations highlights the zoonotic potential of *Salmonella* infections which is particularly important in companion animals such as horses.

For more information from APHA about *Salmonella* in Great Britain, please see the 2023 *Salmonella* in animals and feed surveillance report www.gov.uk/government/publications/salmonella-in-animals-and-feed-in-great-britain

PARASITOLOGY

A summary of parasitology testing undertaken by contributing laboratories is presented in Tables 13 and 14.

ECTOPARASITES AND OTHER SKIN PATHOGENS

Table 13: Results of ectoparasitology testing between 1 Oct to 31 Dec 2024. CLs = contributing laboratories

Test	Detection	Samples tested (n)	Positive (n)	CLs (n)
Mange *Sarcoptes scabiei*	Agent	206	1	13
Mange *Chorioptes spp*	Agent	203	4	13
Mange *Trombicula spp*	Agent	288	0	10
Mange *Demodex equi*	Agent	201	0	12
Lice *Damalinia equi*	Agent	209	19	10
Lice *Haematopinus asini*	Agent	212	0	9
Ringworm PCR	Agent	113	22	5
Ringworm culture	Agent	78	6	9
Ringworm microscopy	Agent	322	101	13
Dermatophilosis culture	Agent	22	6	5
Dermatophilosis microscopy	Agent	35	13	6
Candida culture	Agent	46	2	5
Candida microscopy	Agent	0	0	2

Table 14: Results of endoparasitology testing between 1 Oct to 31 Dec 2024. CLs = contributing laboratories

Test	Detection	Samples tested (n)	Positive (n)	CLs (n)
Ascarids faecal exam	Agent	33126	152	15
Strongyles (large/small) faecal exam	Agent	34007	8231	19
Strongyloides faecal exam	Agent	31706	306	12
Tapeworm ELISA saliva	Antibody	21584	5438	1
Tapeworm ELISA serum	Antibody	1719	588	1
Tapeworm faecal exam	Agent	32273	142	10
Oxyuris equi faecal exam	Agent	28270	4	7
Oxyuris equi tape strip	Agent	288	16	9
Dictyocaulus arnfieldi Baermanns	Agent	58	0	6
Fasciola hepatica faecal exam	Agent	75	2	6
Fasciola hepatica sedimentation	Agent	48	0	5
Fasciola hepatica serology	Antibody	0	0	1
Cryptosporidia mZN	Agent	7	0	2
Cryptosporidia PCR	Agent	1	0	2
Cryptosporidia snap test	Agent	16	0	5
Cryptosporidia faecal exam	Agent	6	0	2
Cryptosporidia strip test	Agent	6	0	1
Giardia snap test	Agent	17	0	3
Giardia smear test	Agent	6	0	1
Coccidia faecal exam	Agent	151	0	6

TOXICOSIS

A summary of diagnostic toxicosis testing undertaken by contributing laboratories is presented in Table 15. Results for toxicosis are based on histopathology or clinical signs.

Table 15: Results of toxicosis testing between 1 Oct to 31 Dec 2024. CLs = contributing laboratories

Test	Samples tested (n)	Positive (n)	CLs (n)
Grass Sickness*	9	3	2
Atypical myopathy/Seasonal Pasture Associated Myopathy	0	0	1
Hepatic Toxicosis - Ragwort	40	6	3
Hepatic Lipidosis	4	2	1
Hepatic Encephalopathy	2	2	1
Tetanus	0	0	1
Botulism	0	0	2

*Figures for EGS contained in the EGSF Report may differ to the number of cases reported here, which are laboratory reported cases only.

MISCELLANEOUS

A summary of miscellaneous testing undertaken by contributing laboratories is presented in Table 16.

Table 16: Results of miscellaneous testing between 1 Oct to 31 Dec 2024. CLs = contributing laboratories

Test	Detection	Samples tested (n)	Positive (n)	CLs (n)
Babesia caballi CFT (APHA)	Antibody	0	0	1†
Babesia caballi cELISA (APHA)	Antibody	768	0	1
Babesia caballi IFAT (APHA)	Antibody	865	0	1
Babesia caballi cELISA	Antibody	42	1	2
Theileria equi CFT (APHA)	Antibody	0	0	1†
Theileria equi cELISA (APHA)	Antibody	768	5	1
Theileria equi IFAT (APHA)	Antibody	865	1	1
Theileria equi cELISA	Antibody	42	0	3
Dourine CFT* (APHA)	Antibody	1030	8**	1
Dourine IFAT (APHA)	Antibody	15	0	1

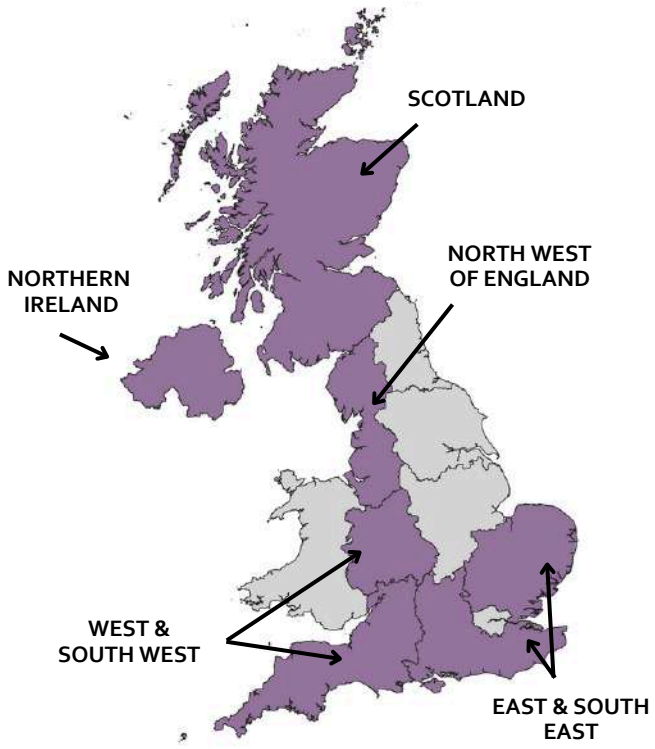
CFT Complement fixation test, IFAT Immunofluorescent antibody test , †due to a shortage of reagents the APHA are no longer offering the Piroplasmosis CFT and therefore there weren't any submissions for Q4 2024 nor will there be moving forward into 2025 (the ELISA and IFAT are not affected),*CFT suspect/positive samples are then tested by IFAT as a confirmatory test for Dourine, **eight samples from three horses which were IFAT tested and confirmed negative.

LABORATORY REPORT END

UK *Post-Mortem* Examination Reports

Details about *post-mortem* examinations (PME) were reported by seven UK Veterinary Schools and five other contributing laboratories. New in this quarter, the PME surveillance section demonstrates the new format that data can take as a result of the new data collection system (*see the news section for more information*). **This includes summarising PME cases by age stage and the main body system involved**. Over time, it is hoped that additional temporal and spatial data will be made available for inclusion.

During this quarter, PME reports were provided for 35 abortions, five foals, and 71 adult horses.



Right: Regional locations of PME surveillance contributors. Purple shading indicates regions where contributing laboratories are located

ABORTIONS

Between October and December 2024 there were a total of 35 abortions reported. A summary of their details are provided below in Table 17.

Table 17: Post-Mortem Examination (PME) details for abortions reported between 1 Oct to 31 Dec 2024.

PME Diagnosis	Diagnostic Certainty		Region of PME contributor
	Suspect	Certain	
Umbilical cord torsion	17	8	East & South East, North West
Ischaemic necrosis of cervical pole	-	5	East & South East
Umbilical cord compromise	1	-	East & South East
Diagnosis not reached (infectious causes ruled out)	-	3	East & South East, West & South West
Diagnosis not reached due to scavenging (infectious causes ruled out)	-	1	East & South East

NEONATAL DEATHS

Between October and December 2024 there were no neonatal deaths reported.

FOAL DEATHS

Between October and December 2024 there were a total of five foal deaths reported.

A summary of their details are provided below in Table 18.

Table 18: Post-Mortem Examination (PME) details for foal deaths reported between 1 Oct to 31 Dec 2024.

PME Diagnosis	Total	Region of PME contributor
Hepatic abscess, bacterial enteropathy, fibrinonecrotising colitis, sepsis, cyathostominosis, verminous arteritis	1	East & South East
Emaciation, enteritis (lymphocytic/plasmacytic), parasite infestation cyathostominosis/ascariasis/strongylosis, typhlocolitis, verminous arteritis (welfare case)	1	East & South East
Emaciation, parasite infestation ascariasis/strongylosis, verminous arteritis (welfare case)	1	East & South East
Septic tenosynovitis – digital flexor tendon sheath	1	West & South West
Pyogranulomatous interstitial pneumonia, colitis, renal mineralisation, hepatitis, lymphadenitis, *Rhodococcus equi* (suspected)	1	East & South East

ADULT DEATHS

Between October and December 2024 there were a total of 71 adult deaths reported.

A summary of their details are provided below in Tables 19 to 22.

Table 19: Post-Mortem Examination (PME) details for adult horse deaths relating to cardiovascular and endocrine reports between 1 Oct to 31 Dec 2024.

PME Diagnosis	Total	Region of PME contributor
Cardiovascular	**4**	
Endocardiosis, ventricular septal defect	1	East & South East
Vascular rupture – aorta, haemoabdomen	1	East & South East
Exercised induced pulmonary haemorrhage, suspected cardiac dysrhythmia	2	East & South East
Endocrine	**1**	
Pancreatic haemorrhage, peritonitis, gastric ulceration	1	Scotland

ADULT DEATHS CONT...

Table 20: Post-Mortem Examination (PME) details for adult deaths relating to gastrointestinal, haematopoietic and hepatic reports between 1 Oct to 31 Dec 2024.

PME Diagnosis	Total	Region of PME contributor
Gastrointestinal	**26**	
Gastric		
Gastric pyloric muscular hypertrophy and fibrosis, secondary gastric impaction	1	Scotland
Gastric impaction, gastric rupture	1	West & South West
Small intestinal		
Gastroenteritis	1	Scotland
Small intestinal strangulation – mesenteric defect	3	East & South East, West & South West, Scotland
Small intestinal strangulation – pedunculated lipoma	1	East & South East
Small intestinal strangulation, small intestinal rupture	1	West & South West
Epiploic foramen entrapment	1	East & South East, West & South West
Small intestinal volvulus	2	East & South East
Enteritis	1	Northern Ireland
Enteritis – idiopathic focal eosinophilic	1	Scotland
Necrotising enterocolitis (suspect)	1	Scotland
Proliferative enteropathy (*Lawsonia intracellularis*), peritoneal effusion	1	East & South East
Large intestinal		
Colitis	2	West & South West, Scotland
Caecocolic intussusception, cyathostominosis	1	East & South East
Cyathostominosis (suspect, awaiting histo results)	1	West & South West
Cyathostominosis, typhlocolitis	2	East & South East
Caecal impaction, gastric ulceration, subsolar abscess	1	West & South West
Miscellaneous		
Peritonitis	2	East & South East, West & South West
Equine grass sickness	1	Scotland
Mesenteritis, abscess, disseminated intravascular coagulation	1	West & South West
Haematopoietic	**1**	
Splenic torsion (suspect) and haemorrhage	1	Scotland
Hepatic	**2**	
Obstructive biliary tract disorder, hepatopathy, duodenal stenosis	1	East & South East
Hepatic encephalopathy, toxin exposure (suspect ingestion of black locust tree bark), tibial fracture	1	East & South East

ADULT DEATHS CONT...

Table 21: Post-Mortem Examination (PME) details for adult deaths relating to miscellaneous, musculoskeletal, neoplasia, neurological and no diagnosis reached reports between 1 Oct to 31 Dec 2024.

PME Diagnosis	Total	Region of PME contributor
Miscellaneous	**3**	
Multi-organ haemorrhage, suspected sepsis	1	East & South East
Arthritis, complete cataract, melanoma	1	West & South West
Hoof wall disorder, dental disease, suspected pituitary pars intermedia dysfunction	1	West & South West
Musculoskeletal system	**12**	
Fracture of hyoid apparatus	1	East & South East
Cervical vertebral stenotic myelopathy	1	Scotland
Fracture – cervical vertebral column	1	East & South East
Trauma – neck	1	Northern Ireland
Synovial sepsis, osteoarthritis – shoulder	1	East & South East
Osteoarthritis – metacarpophalangeal joint (chronic, presume septic)	1	East & South East
Tendinitis – deep digital flexor tendon	1	West & South West
Septic tenosynovitis – digital flexor tendon sheath	1	East & South East
Arthritis	2	West & South West
Atypical myopathy	1	Scotland
Fracture - pelvis (site unspecified)	1	Scotland
Neoplasia	**7**	
Fibrosarcoma - maxilla	1	East & South East
Neoplasm (unspecified) – mandibular	1	East & South East
Haemangiosarcoma - lung	1	West & South West
Intestinal lymphoma	1	Scotland
Lymphoma – splenic	1	East & South East
Lipoma (site unspecified)	1	West & South West
Malignant melanoma (site unspecified)	1	Scotland
Neurological	**2**	
Meningitis – septic, dental extraction, secondary sinusitis	1	East & South East
Intestinal hyperammonaemia	1	East & South East

ADULT DEATHS CONT...

Table 22: Post-Mortem Examination (PME) details for adult deaths relating to renal, reproductive, respiratory and welfare reports between 1 Oct to 31 Dec 2024.

PME Diagnosis	Total	Region of PME contributor
No diagnosis reached	**4**	
Eosinophilic enteritis, neurological disorder	1	East & South East
Weight loss	1	West & South West
Blindness, weight loss	1	West & South West
Exercise associated sudden death	1	East & South East
Renal	**1**	
Urolithiasis – uteric (suspected), uteric rupture, hydronephrosis, uroabdomen	1	Scotland
Reproductive	**1**	
Metritis	1	West & South West
Respiratory	**2**	
Bronchopneumonia	1	East & South East
Pleuropneumonia – *Streptococcus zooepidemicus*	1	East & South East
Welfare	**5**	
Testicular abscess, serositis, rib fractures, diaphragmatic rupture	1	East & South East
Emaciation, typhilitis, verminous arteritis	1	North West of England
Emaciation, ascites, pericardial effusion, pleural effusion, typhlitis, verminous arteritis	1	East & South East
Strangles, cyathostominosis	1	North West of England
Pyometra (*Streptococcus zooepidemicus*), dental disorder, cyathostominosis	1	North West of England

POST-MORTEM REPORT END

International Collating Centre

ICC 2024 Q4 SHORT REPORT

The International Collating Centre (ICC) Q4 2024 report has been circulated to subscribers. A short summary is presented below with the full version available online (https://equinesurveillance.org/iccview/resources/2024Q4summ.pdf), countries are coded according to ISO 3166 international standard. The ICC provides almost daily email updates on national and international equine disease outbreaks, contact equinesurveillance@vet.cam.ac.uk to subscribe. Current and previous outbreak reports can be found online in an interactive platform www.equinesurveillance.org/iccview/.

ICC 2024 Q4

430 reports issued
averaging 7 reports per working day

RESPIRATORY CONDITIONS (212 reports)

EHV-1
(n=24)

CA FR NL DE

SE ZA UK USA

EHV-1/-4
(n=1)

FR

EHV-2
(n=1)

BE

EHV-4
(n= 66)

FR DE NL

CH UK

EHV-5
(n=1)

CH

EQUINE INFLUENZA
(n=28)

CA FR SE

UK USA

STRANGLES
(n=90)

BE CA FR DE

NL SE CH USA

S. ZOOEPIDEMICUS
(n=1)

SE

GASTROINTESTINAL CONDITIONS (28 reports)

RHODOCOCCUS EQUI
(n=1)

FR

SALMONELLOSIS
(n=15)

DE NL

CORONAVIRUS
(n=11)

NL CH USA

ROTAVIRUS
(n=1)

AR

REPRODUCTIVE CONDITIONS (14 reports)

CEM
(n=2)

DE

EHV-1
(n=8)

AR FR JP

NL ZA SE

EHV-4
(n=1)

FR

LEPTOSPIROSIS
(n=3)

BE DE

NEUROLOGICAL CONDITIONS (111 reports)

EEE
(n=27)

CA USA

ZA

EEV
(n=1)

ZA

EHV-1
(n=15)

CA FR NL

SE UK USA

WNV
(n=68)

CA FR DE

IT TN USA

MISCELLANEOUS CONDITIONS (65 reports)

POTOMAC HORSE FEVER
(n=1)

USA

AHS
(n=2)

ZA NG

CORONAVIRUS
(n=3)

NL

EIA
(n=30)

BE CA IT USA

LEPTOSPIROSIS
(n=1)

IT

ANAPLASMOSIS
(n=6)

CA DE NL CH

PIGEON FEVER
(n=2)

USA

EGS
(n=9)

UK

PIROPLASMOSIS
(n=9)

FR IT NL ZA CH

LYME DISEASE
(n=2)

CA CH

International Collating Centre

The ICC continues to be a vital resource in the ongoing monitoring and management of equine health worldwide.

ACKNOWLEDGEMENTS

We are extremely grateful to the following 33 laboratories for contributing data for this report

- Agri-Food & Biosciences Institute of Northern Ireland
- Animal and Plant Health Agency
- Ashbrook Equine Hospital
- Austin Davis Biologics Ltd
- Axiom Veterinary Laboratories Ltd
- B&W Equine Group Ltd
- Biobest Laboratories Ltd
- BioTe
- The Donkey Sanctuary
- Donnington Grove Veterinary Group
- Hampden Veterinary Hospital
- The Horse Trust
- IDEXX Laboratories
- Langford Veterinary Services
- Liphook Equine Hospital
- MBM Equine
- Nationwide Laboratories
- Newmarket Equine Hospital
- Rainbow Equine Hospital
- Rossdales Laboratories
- Royal Veterinary College
- Sussex Equine Hospital
- Three Counties Equine Hospital
- University of Bristol
- University of Cambridge
- University of Edinburgh
- University of Glasgow
- University of Liverpool
- University of Surrey
- Valley Equine Hospital
- VPG (Veterinary Pathology Group) Exeter
- VPG (Veterinary Pathology Group) Leeds
- Westgate Laboratories Ltd

All laboratories contributing to this report operate Quality Assurance schemes. These schemes differ between laboratories; however, all the contagious equine metritis testing reported was accredited by BEVA, with the exception of the APHA, which acts as the reference laboratory.

We are extremely grateful to the Horserace Betting Levy Board (HBLB), Racehorse Owners Association (ROA) and Thoroughbred Breeders' Association (TBA) for their continued combined contribution to Equine Infectious Disease Surveillance.

We welcome feedback including contributions on focus articles to the following address:

Email: equinesurveillance@vet.cam.ac.uk
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Equine Quarterly Disease Surveillance Report
Volume 20, No. 4, Oct – Dec 2024