EQUINE DISEASE SURVEILLANCE

2024 Q1 QUARTERLY REPORT

Produced by:

EIDS
Equine Infectious Disease Surveillance

UNIVERSITY OF CAMBRIDGE
Department of Veterinary Medicine

EQUINE DISEASE SURVEILLANCE

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INTRODUCTION

Welcome to the equine disease surveillance report for the first 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

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- Reaching a notable milestone: two decades of the equine quarterly surveillance reports

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- Approval given for the recommencement of direct horse movements from South Africa to the European Union
- New Variant of H3N8 Florida clade 1 equine influenza detected in UK: a reminder for vigilance in the equestrian community

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- The Equine Grass Sickness Biobank, Database and Research Project: an update and call for support

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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

REACHING A NOTABLE MILESTONE: TWO DECADES OF THE EQUINE QUARTERLY SURVEILLANCE REPORTS

20th anniversary

This latest edition in the equine quarterly disease surveillance series from the Department for Environment, Food and Rural Affairs/Animal and Plant Health Agency (Defra/APHA), the British Equine Veterinary Association (BEVA) and Equine Infectious Disease Surveillance (EIDS), is notable as it represents the first report of Volume 20 of these surveillance updates. To help mark this 20th anniversary milestone and as part of their continued evolution, the reports are undergoing something of a revamp by the current team behind the reports. We extend our sincere thanks to all those who have contributed to the contents and production of the equine surveillance reports over the past two decades.

We are most grateful to all the past and present members of the project steering group in helping draft, critically review and improve each report and guide the project during its various contracts and challenges. Of those challenges, perhaps most notable was the COVID pandemic and the closure of the Animal Health Trust (AHT) in 2020, with the AHT having produced the reports from their inception with an initial pilot issue from late 2004. However, with the continued support of Defra, BEVA and the Thoroughbred racing and breeding industry and the retention of the EIDS team after the AHT closed, initially at the British Horseracing Authority (BHA) and then at Cambridge Vet School, it has been possible to reach the 20th anniversary of the reports, uninterrupted.

Special thanks go to the authors of the many focus articles who have given freely of their time and expertise to produce topical and insightful articles that greatly enhance the relevance and readability of the surveillance reports. The steering group are also hugely grateful to the support that the Veterinary Record have provided for many years in producing abridged versions of the quarterly updates and wherever possible reproducing the focus articles, thereby ensuring the reports are available to a much wider veterinary audience. Finally, but by no means least, we are most indebted to all the laboratories that through their continued contributions of details about their diagnostic tests each quarter have made the UK's equine quarterly disease surveillance reports an unparalleled source of regular and authoritative information on the state of the nation's equine health. We hope you will all continue to support the initiative and we remain extremely grateful for this support and as a small indulgence there are further reflections on the past 20 years in this special editorial.

How it all started

The first full volume equine quarterly disease surveillance report (cover page, top left panel in Figure 1) was issued in spring 2005, as part of a new collaboration between the Department for Environment, Food and Rural Affairs (Defra), the Animal Health Trust (AHT) and the British Equine Veterinary Association (BEVA).

Figure 1: The changing appearance of the equine quarterly disease surveillance reports (top left: Vol. 1, 2005; right: Vol.10, 2014; bottom left: Vol.15 2019 and right: Vol.20, 2024)

The addition of a national equine disease surveillance report to those already produced for farmed livestock and wildlife species was part of the UK Government's commitment to enhance veterinary surveillance. In the spirit of partnership that was being promoted through the Animal Health and Welfare Strategy, the new equine disease reports aimed to bring industry and government together to collate anonymised quarterly information on the numbers of diagnostic tests performed and discussion of positive results obtained for specified equine infections and disease syndromes arising from the broad network of diagnostic laboratories that serves the equine industry in the UK. The intention was also that these data would be accompanied by more in-depth discussions of unusual cases and outbreaks, current issues of concern for equine health and welfare and the promotion of research findings of relevance. The reports have strived to achieve this with the inclusion of news items and specially commissioned focus articles in each edition, aiming to keep readers up to date on topical issues of relevance to equine health and welfare, with a particular focus on infectious diseases, both nationally and internationally.

Evolving the scope and content of the reports

The years have inevitably seen the evolution of the quarterly disease surveillance reports, and this was evidenced by the efforts made in the first few years to increase the number of laboratories contributing data. Whilst that first full volume report in 2005, received data from 13 laboratories, the average contributors per report for the first three years was 16 or 17 laboratories, with this value increasing in the following three years from 19 laboratories in 2008, to 29 in 2009 and 31 different contributing labs in 2010; with the number of contributors remaining largely stable at around 30 laboratories since then.

Occasionally there have been opportunities to expand the range and detail of equine disease surveillance that is included in the quarterly reports. One notable example followed the launch of a dedicated nationwide UK surveillance scheme for equine grass sickness (EGS) in the spring of 2008 as a collaboration between the AHT, the Equine Grass Sickness Fund (EGSF) charity and the Universities of Edinburgh and Liverpool, with funding for the development phase coming from the Horse Trust. The quarterly surveillance report ran a focus article on the development of the EGS scheme in 2008 (Vol. 4, no.2), with the first dedicated EGS surveillance outputs included in 2009 (Vol. 5, no.1) (Figure 2) and updates have been included as a regular feature of the reports ever since. EGS surveillance data in the quarterly disease reports are now provided by the EGSF and it is timely that the focus article in the current surveillance report has been kindly provided by the same group.

Grass sickness surveillance data (www.equinegrasssickness.co.uk):
A total of five Equine Grass Sickness cases were submitted to the surveillance scheme between January and March this year. Of these five cases, three were reported from England with two (including one chronic case) from Scotland. One subacute case and one acute case were confirmed via post-mortem examinations while a further two cases (one acute and one subacute) were diagnosed clinically. The affected horses included two geldings and three fillies, with three horses aged between four and eight years and the remaining two horses both greater than eight years of age.

Figure 2: The first dedicated equine grass sickness (EGS) data supplied from the EGS surveillance scheme as it appeared in 2009 (Vol. 5 No.1)

Whilst the earlier reports largely assessed and reported the national equine disease picture, significant events emerging internationally, such as the equine infectious anaemia (EIA) outbreak in Ireland in 2006 and the first major incursion of equine influenza into Australia in 2007, were referenced in various reports, as well as the versions kindly published in the Veterinary Record (Figure 3). Subsequently, regular reporting on international disease occurrence started in 2008 (Vol. 4 no. 4).

UPDATE ON EQUINE INFECTIOUS ANAEMIA IN IRELAND
Florence Manning MRCVS, Epidemiology Unit, Animal Health Trust

The authorities in Ireland announced on 15 June 2006 that they had found Equine Infectious Anaemia in horses on two stud farms. This apparently followed the administration of an infected equine biological product for treatment of an unrelated condition. Some horses from those stud farms, which may had been exposed to the disease, had been sent to the UK. The State Veterinary Service acted quickly to ensure these horses were isolated and tested for the disease. Fourteen horses were placed under restrictions in England, Wales and Scotland. All of these have now tested negative on at least one occasion and the majority on two occasions.

Further cases of Equine Infectious Anaemia have since been confirmed in Ireland and test results are awaited for a small number of other suspected cases. The majority of animals involved were previously identified and restricted as high risk due to very close contact with earlier confirmed cases. The authorities in Ireland informed Defra on 25 July and 1 August of further GB tracings subsequent to these new confirmations. These tracings were located and restrictions are in place with initial sampling being undertaken. A number of horses are under restrictions in England, Wales and Scotland and this will continue until DEFRA is satisfied that they present no risk to the UK equine industry

Given the dynamic nature of infectious disease and its control, readers are referred to DEFRA's website for the most up to date information:

http://www.defra.gov.uk/animalh/diseases/notifiable/disease/infectiousanaemia.htm

A Code of Practice for Equine Infectious Anaemia is now available online via the DEFRA website (**Click here**)

Update on equine infectious anaemia in Ireland

ON June 15, the authorities in the Republic of Ireland announced that equine infectious anaemia (EIA) had been diagnosed in horses on two stud farms. This apparently followed the administration of an infected equine biological product for the treatment of an unrelated condition. Some horses from the stud farms, which may have been exposed to the disease, had been sent to the UK. The State Veterinary Service acted quickly to ensure that these horses were isolated and tested for the disease. Fourteen horses were placed under restrictions in England, Wales and Scotland. All of these have now tested negative on at least one occasion, and the majority on two occasions.

Further cases of EIA have since been confirmed in Ireland, and test results are awaited for a small number of other suspected cases. The majority of the animals involved had previously been identified and restricted as being at high risk due to very close contact with earlier confirmed cases. The authorities in Ireland informed DEFRA on July 25 and August 1 of further Great Britain tracings subsequent to these new confirmations. These tracings were located and restrictions are in place with initial sampling being undertaken. A number of horses are under restrictions in England, Wales and Scotland, and this will continue until DEFRA is satisfied that they present no risk to the UK equine industry.

Given the dynamic nature of infectious disease and its control, the most up-to-date information can be found on DEFRA's website at www.defra.gov.uk/animalh/diseases/notifiable/disease/infectiousanaemia.htm. A code of practice for EIA is also available on the website (www.defra.gov.uk/animalh/diseases/notifiable/pdf/eia-cop0806.pdf).

Summary of the Australian equine influenza outbreak

AN outbreak of equine influenza virus (EIV) infection occurred in the previously EIV-free country of Australia in August 2007. The outbreak resulted in huge financial losses for the equine industry, with many race meetings and other equine competitions cancelled during the second half of 2007. An inquiry was launched into the outbreak, and part of the report of the inquiry (the Callinan report) is summarised here. The full report is available at www.equineinfluenzainquiry.gov.au.

On August 8, 2007, 13 horses arrived in Australia on a flight from Japan. The horses landed in Melbourne; nine of the horses went into quarantine at Spotswood Quarantine Station (SQS) and the remaining four horses flew on to Sydney where they went into quarantine at Eastern Creek Quarantine Station (ECQS).

On August 17, an Irish stallion at ECQS was observed to have clinical signs consistent with EIV. On August 20, the horse in the neighbouring stable showed similar clinical signs. In response to this, several horses at ECQS had naso-pharyngeal swabs and blood samples taken for further investigation. Analysis of the swabs showed five horses in ECQS to be infected with EIV. Samples were also taken at SQS, where seven horses tested positive for EIV. Retrospective analysis of blood samples taken pre-export, in conjunction with samples taken at the time of clinical signs being seen, indicated that the horses had become infected at some point before August 13. Other horses in the quarantine stations were also tested, including horses from Ireland, the UK and the USA. Results indicated that these horses were not EIV positive at the time of arrival. The virus from ECQS (called Sydney/07) was determined, by the Animal Health Trust in collaboration with laboratories from Japan and Australia, to have identical haemagglutinin protein spikes to the EIV isolated in Japan (Ibaraki/07) that caused an outbreak in Japan at around the same time.

From testing, it was concluded that there was likely to have been a common source of infection bringing EIV into the quarantine stations. The results of the serological and virological testing indicated that the source of infection was most likely horses from Japan. The Japanese horses had undergone pre-export quarantine in Hokkaido between July 17 and August 6, and subsequently there were several reports of outbreaks of influenza at the Japanese quarantine stations where nine of the horses had been quarantined.

Investigations concluded that the most likely scenario for EIV introduction was that one of the stallions that entered ECQS on August 8 was already infected with EIV on arrival; other horses taken into SQS may also have been infected by the virus on arrival.

On August 22, two horses at a suburban equestrian centre in Sydney showed clinical signs of EIV infection. The two horses were tested and found to be positive for EIV infection on August 25. At around this time, other cases were being reported in New South Wales and on the outskirts of Brisbane in southern Queensland. Investigations revealed that all these affected horses had attended a one-day event near Maitland in New South Wales that was held on August 17.

A rapidly spreading outbreak of equine influenza in New South Wales and Queensland followed. By October 10, approximately 4500 premises were affected. The horse/horses that were first infected in the general Australian equine population have never been identified, but it is assumed that they attended the Maitland one-day event and transmitted infection to several susceptible horses, which, on their return home, spread the infection to other immunologically naive horses.

In order to try to contain the outbreak and minimise disease spread and the numbers of affected animals, restriction zones were set up around the affected areas with strict movement controls. Vaccination was also used in the areas around the outbreaks to form a 'buffer zone', again to help limit spread of the virus beyond the restricted areas. The ProteqFlu vaccine (Merial) was selected for use as it has 'DIVA' capability, that is, it is possible to distinguish with laboratory tests between infection-derived immunity and vaccine-derived immunity. This is very important for tracing the spread of the virus among a vaccinated population.

The last confirmation of active EIV infection in Australia was on December 25, 2007, and on February 28, 2008 movement restrictions were finally lifted, although serological monitoring of the equine population continued. On July 1, 2008, Australia was declared free of EIV.

The inquiry found four possible theories for how the virus escaped into the general Australian horse population: airborne spread from Sydney airport; contaminated people, equipment or vehicles associated with the transport to ECQS; airborne spread from ECQS; or contaminated people, equipment or other source from ECQS.

It was thought that cross-infection by dogs or birds, or by some other vector, such as straw carried by a bird, was unlikely. Airborne spread was thought to be an unlikely source of virus dissemination due to factors such as the prevailing weather conditions, low horse population density in the areas surrounding the airport and ECQS, and due to the timing of clinical signs in relation to the actual spread of the virus. The timescale of the outbreak (in relation to the disease incubation period) did not fit with contamination associated with transfer to ECQS.

Based on the above factors, and the timing of cases being identified in the general horse population (none reported before August 21), it was considered most likely that EIV was taken out of ECQS by movement of a person, animal or equipment contaminated with EIV after August 10.

The report concluded that grooms, farriers and vets who attended horses potentially infected with EIV at ECQS could have carried EIV out of ECQS and transmitted the virus to the general horse population. The report indicated that personnel left ECQS without following appropriate biosecurity procedures such as showering; however, veterinarians did wear overalls and wash their hands and faces before leaving. The inquiry also revealed that no records were kept of personnel movements to and from the quarantine station. The grooms at ECQS did not work with horses outside of the station, but vets and farriers did. No individual has been held responsible for the escape of the virus; however, it is thought most likely to have occurred via this route.

The findings of the report indicate that a failure of fundamental biosecurity measures occurred at ECQS. Some of the reasons given for the failures included chronic understaffing, lack of appropriate training of staff, and lack of adequate funding. Recommendations have been made, and action is to be taken to address these issues, as well as reviewing the whole pre- and postimport system of quarantine for horses entering Australia.

FOCUS ARTICLE

Summary of the report into the Australian equine influenza outbreak - what happened

Annie Cooke, BVetMed MRCVS of the Animal Health Trust.
Edited by Julie Ross, MA, VetMB, MRCVS, Dip.ACVIM of DEFRA.

As regular readers will be aware an outbreak of equine influenza virus (EIV) occurred in the previously EIV free country of Australia in August 2007. The outbreak resulted in huge financial losses for the equine industry with many race meetings and other equine competitions cancelled during the second half of 2007. An inquiry was launched into the outbreak and in this focus article part of the report of the inquiry (The Callinan report) is summarised. The full report is available on line (Click here).

On 8th August 2007, 13 horses arrived in Australia on a flight from Japan. The horses landed in Melbourne, nine of the horses went into quarantine at Spotswood Quarantine Station (SQS) and the remaining 4 horses flew on to Sydney where they went into quarantine at Eastern Creek Quarantine Station (ECQS).

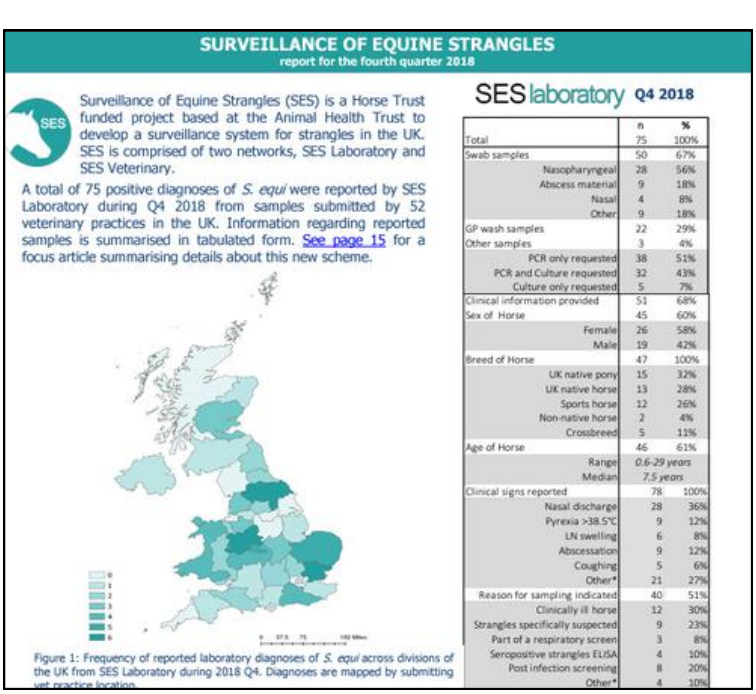
On 17th August an Irish stallion at Eastern Creek was observed to have clinical signs consistent with EIV. On the 20th August the horse in the neighbouring stable showed similar clinical signs. In response to these clinical signs several horses at ECQS had naso-pharyngeal swabs and blood samples taken for further investigation. Analysis of the swabs showed five horses in ECQS to be infected with equine influenza virus (EIV). Samples were also taken at SQS; seven horses tested positive for EIV. Retrospective analysis of blood samples taken pre-export, in conjunction with samples taken at the time of clinical signs being seen, indicated that the horses had become infected at some point before the 13th August. Other horses in the quarantine stations were also tested, including horses from Ireland, UK and USA. Results indicated that the horses from Ireland, UK and USA were not EIV positive at the time of arrival. The virus from Eastern Creek (called Sydney/07) was determined, by the Animal Health Trust in collaboration with laboratories from Japan and Australia, to have identical haemagluttinin protein spikes to the EI virus isolated in Japan (Iberaki/07) that caused an outbreak there around the same time.

From this testing it was concluded that there was likely to have been a common source of infection bringing EIV into the quarantine stations. The results of the serological and virological testing indicated that the source of infection was most likely horses from Japan. The Japanese horses had undergone pre-export quarantine on Hokkaido between 17th July and 6th August, and subsequently there were several reports of outbreaks of influenza at the Japanese quarantine stations where nine of the horses had been quarantined.

Investigations concluded that the most likely scenario for EIV introduction was that one of the stallions that went into ECQS on 8th August was already infected with EIV on arrival; other horses taken into SQS may also have been infected by the virus on arrival as well.

Figure 3: Updates on international disease occurrence as they appeared in blue text in quarterly surveillance reports and their subsequent reproductions in the Veterinary Record. Top: equine infectious anaemia (EIA) in Ireland in 2006. Bottom: The Callinan report on equine influenza in Australia in 2007.

Although strangles was long recognised as one of the most significant equine infectious diseases worldwide, before the end of 2018, there was relatively little information available in the quarterly disease surveillance reports on its occurrence in the UK. That situation changed with the advent of another dedicated surveillance initiative, whose development was generously funded by the Horse Trust. The Surveillance of Equine Strangles network, sometimes abbreviated to SES, was the basis of a focus article and the first extended presentation of strangles surveillance data in 2018 (Vol. 14 no. 4). SES is now an established surveillance system for the disease in the UK and is based on laboratory confirmed diagnoses of strangles through detection of the causative agent, *S. equi*. SES gathers substantial data on the number of diagnoses and accompanying information about strangles infections throughout the UK and has already contributed a great deal to research and analysis into the disease and *S. equi.*



	n	%
Total	75	100%
Swab samples	50	67%
Nasopharyngeal	28	56%
Abscess material	9	18%
Nasal	4	8%
Other	9	18%
GP wash samples	22	29%
Other samples	3	4%
PCR only requested	38	51%
PCR and Culture requested	32	43%
Culture only requested	5	7%
Clinical information provided	51	68%
Sex of Horse	45	60%
Female	26	58%
Male	19	42%
Breed of Horse	47	100%
UK native pony	15	32%
UK native horse	13	28%
Sports horse	12	26%
Non-native horse	2	4%
Crossbreed	5	11%
Age of Horse	46	61%
Range	0.6-29 years	
Median	7.5 years	
Clinical signs reported	78	100%
Nasal discharge	28	36%
Pyrexia >38.5°C	9	12%
LN swelling	6	8%
Abscessation	9	12%
Coughing	5	6%
Other*	21	27%
Reason for sampling indicated	40	51%
Clinically ill horse	12	30%
Strangles specifically suspected	9	23%
Part of a respiratory screen	3	8%
Seropositive strangles ELISA	4	10%
Post infection screening	8	20%
Other*	4	10%

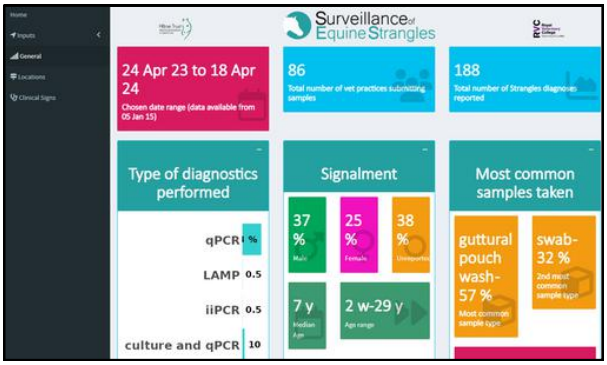


Figure 5: Surveillance of Equine Strangles (SES) data presented for the first time in 2018 (Vol 14 no. 4) and a section of the SES website landing page (www.tinyurl.com/EIDSstrangleshub)

'Focusing' in on what is important!

As already indicated, a special highlight of but also a challenge for the equine quarterly disease surveillance reports has been ensuring the regular production of topical and wherever possible seasonally relevant focus articles. The EIDS website (www.equinesurveillance.org) hosts the full archive of versions of the equine quarterly disease surveillance reports, including the pilot issue from the last quarter 2004 (Figure 6). Alongside the archive list is a function for searching specific topics among the 226 news and focus articles that have been indexed to the end of 2023 (Figure 6).

Figure 6: Historical report archive and article search function for the equine quarterly disease surveillance reports on the EIDS website (www.equinesurveillance.org)

A basic review and simple classification of the reports shows that of 100 focus articles produced between 2005 and 2023, 39 were based around viral diseases, 23 were linked to bacteria and associated diseases and 20 covered a range of other diseases with different causes, including parasites, toxins, other agents and one disease (EGS) for which the cause is yet to be determined! The remaining reports were not agent-based but covered a range of concepts and initiatives and taken all together confirm the breadth of topics covered by the focus articles in the equine surveillance reports in the past 20 years.

Whilst around half of the focus articles were on topics related to endemic diseases that are largely present, recurring or common in the UK equine population, more than a third of focus articles, covered diseases that are considered exotic to the UK. These articles especially highlight the importance of the surveillance reports for raising and maintaining awareness about emerging infectious threats for horses in this country. Notable examples have included midge-borne African Horse Sickness, which has been featured in five news and three focus articles between 2007 and 2023 and West Nile Virus, spread by mosquitoes and present in mainland Europe, which featured in three news and focus articles between 2005 and 2023 (listed in searches in Figure 7).

Quarter	Article type	Content
2023 Q4	News	Bluetongue and African horse sickness
2020 Q1	News	African horse sickness outbreak in Thailand
2019 Q2	Focus	African Horse Sickness - the current UK situation
2016 Q1	News	African Horse Sickness
2014 Q1	News	African Horse Sickness reported to OIE in South Africa and Mozambique
2013 Q1	Focus	African Horse Sickness ? the Disease Control Strategy of Great Britain
2008 Q1	Focus	Planning for African horse sickness in Europe: a workshop in South Africa
2007 Q1	News	African Horse Sickness - A new threat for the UK?

Showing 1 to 8 of 8 entries (filtered from 226 total entries)

Quarter	Article type	Content
2023 Q3	News	West Nile Virus – one to watch
2020 Q1	Focus	West Nile fever in Europe in 2018: an emerging problem or just an anomaly?
2013 Q3	News	West Nile Virus in South Europe
2011 Q3	News	West Nile Virus situation in Europe
2009 Q2	Focus	West Nile Virus
2005 Q4	Focus	West Nile Virus in horses

Showing 1 to 6 of 6 entries (filtered from 226 total entries)

Figure 7: Result of EIDS website searches for quarterly surveillance report news and focus articles on African Horse Sickness and West Nile Virus

Looking to the future

There will inevitably be new challenges for the equine quarterly disease surveillance reports as they enter a third decade, and these will likely reflect changes occurring within and challenges faced by the equine veterinary profession and the equine industries that it serves. As an example, the surveillance reports steering group through the EIDS group in Cambridge is already looking to address the wider adoption of readily accessible infectious disease diagnostic technologies that are becoming increasingly prevalent among first opinion practices, inevitably replacing at least some of the diagnostic testing that would usually be conducted by more specialist referral diagnostic laboratories who contribute to surveillance activities.

Lastly but importantly, the issues of antimicrobial and anthelmintic stewardship and resistance are also of increasing importance, not only for equine health and welfare but more widely across multiple species, including humans. Implementation of effective surveillance and careful monitoring of associated trends, using consistent methods adopted across the species, needs to be addressed among equine disease surveillance initiatives going forward and it is hoped that this will be progressed in future as part of the National Biosurveillance Network initiative.

EDITORIAL END

APPROVAL GIVEN FOR THE RECOMMENCEMENT OF DIRECT HORSE MOVEMENTS FROM SOUTH AFRICA TO THE EUROPEAN UNION

The lifting of the 13-year ban on direct importation of horses from South Africa by the European Union (EU) marks a significant development for the global equestrian industry. As the UK also prepares to make a decision on this matter following a trade audit visit made in February this year, it is anticipated that the international community will align with the EU's audit conducted in 2022, and subsequent management plan, in order to ensure the safe movement of horses from South Africa directly into the EU.

The initial imposition of the EU export ban followed confirmation of African horse sickness (AHS) in the surveillance zone of the AHS Controlled Area in the Western Cape Province in South Africa that was required to remain free from the disease for the purposes of exporting horses internationally out of the disease-free area, near Cape Town (Figure 1).

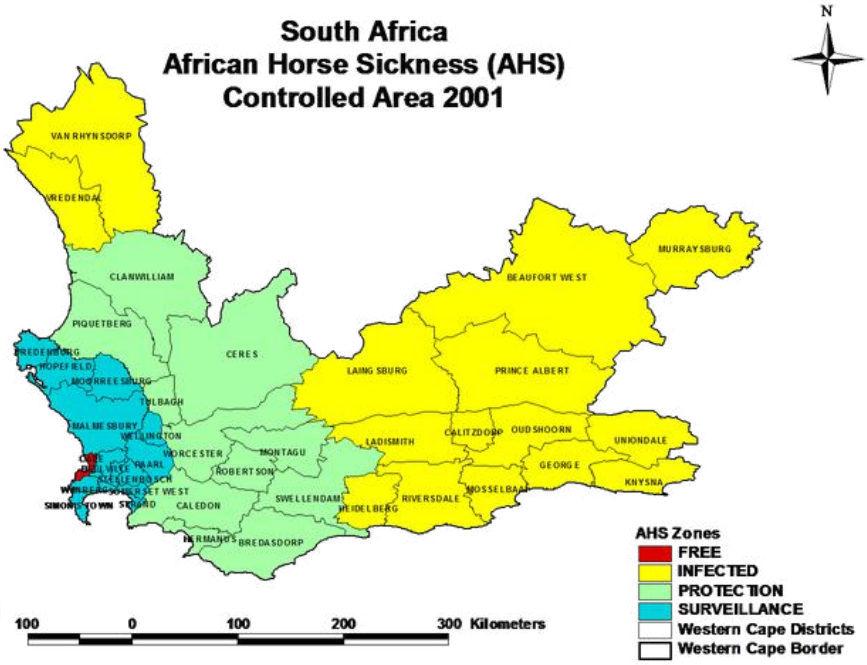


Figure 1: Map depicting the AHS Zones in the Western Cape Province of South Africa

AHS, which is endemic in most parts of South Africa, is usually fatal in naïve horses and poses a serious threat to equine health, prompting the stringent import restrictions on South African horses and equine products. While the ban presented economic and logistical difficulties for South Africa's equine industry, it also prompted the implementation of rigorous biosecurity measures within the country. These measures aimed to closely monitor, control and prevent the spread of AHS within South Africa and demonstrate and maintain disease freedom in parts of the Western Cape Province, enabling international horse movements from this region. However, amid this transition, it is crucial to remain vigilant regarding potential disease challenges.

Europe has had previous incursions of AHS, in Spain in 1966 and 1987 and Portugal in 1989. These outbreaks, coupled with high mortality rates and stringent control measures required to combat AHS, had significant impacts and Spain and Portugal were finally declared free of AHS in 1991. Since 2007, the unexpected spread of AHS serotypes 2 and/or 7 has been observed in West and East Africa, where historically only serotype 9 had been isolated. While these outbreaks have resulted in mild clinical outcomes thus far, the recent expansion of AHS raises concerns. In addition, AHS was confirmed for the first time in 30 years outside of Africa in 2020 in Thailand, associated with the importation of zebra from South Africa. There were 15 outbreaks reported in Thailand involving 600 horses with >550 fatalities, and there was also a single outbreak involving five horses in neighbouring Malaysia, although the circumstances of this outbreak, some distance from the nearest cases in Thailand, were not clear. Following the reporting of these occurrences, international trade in horses were immediately ceased from both countries and the UK's Department for Environment, Food and Rural Affairs (Defra) conducted Preliminary Outbreak Assessments (https://www.gov.uk/government/collections/animal-diseases-international-monitoring#outbreak-assessments-2020). Those assessments considered that risks to the UK from prior movements of horses through legal trade from these areas were considered very low to negligible.

When comparing AHS to the closely related bluetongue virus (BTV), both diseases are transmitted by the same *Culicoides* midges. While BTV exclusively targets ruminants, its changing global distribution acts as a warning for what might occur with AHS. After more than a decade without the disease, Bluetongue outbreaks were confirmed in the UK in autumn 2023, most likely due to transfer of BTV-3 in infected midges from the Netherlands.

In conclusion, although the resumption of direct horse movements from South Africa to the EU will be a significant milestone for the globalisation of the equestrian industry, it highlights the ongoing need for stringent biosecurity measures and disease surveillance. Past outbreaks of AHS in Europe and recent occurrences in previously unaffected regions underscore the importance of vigilance and serve as stark reminders of the potential global reach of infectious diseases. The parallel risks posed by the closely related BTV further emphasises the need for caution. Moving forward, collaboration and adherence to robust biosecurity protocols will be crucial in safeguarding equine health and welfare amidst evolving disease threats.

FURTHER INFORMATION

Preliminary Outbreak Assessments: https://www.gov.uk/government/publications/african-horse-sickness-in-thailand & https://www.gov.uk/government/publications/african-horse-sickness-in-malaysia

WOAH info and link to terrestrial code on AHS: https://www.woah.org/en/disease/african-horse-sickness/

Defra AHS control strategy: https://www.gov.uk/government/publications/african-horse-sickness-control-strategy

NEWS ARTICLES

NEW VARIANT OF H3N8 FLORIDA CLADE 1 EQUINE INFLUENZA DETECTED IN UK: A REMINDER FOR VIGILANCE IN THE EQUESTRIAN COMMUNITY

During this first quarter 2024, a variant of H3N8 Florida Clade 1 (FC1) equine influenza (EI) has been identified in a horse imported from Europe to the UK. Details about the case, which was delayed in being reported, are now available on the International Collating Centre web portal (https://equinesurveillance.org/jdata/icc/iccnotification/?refid=6251). This variant has been confirmed to have two previously unseen amino acid changes in antigenic sites, raising concerns about the potential future impact on the effectiveness of current vaccines, albeit there is no evidence to date that this variant is prevalent or causing problems in Europe or the UK.

The discovery was made through the UK's HBLB funded equine influenza surveillance programme, which supports the continuous characterisation of positive EI samples in the UK to monitor and evaluate vaccine efficacy. This work is conducted by the equine virology group at the University of Cambridge and they utilise Whole Genome Sequencing (WGS) to better understand the genetic makeup of current circulating strains (see Figure 1). Additionally, going forward antigenic analysis in the form of the haemagglutination inhibition assay is used to determine if the genetic changes observed contribute to reduced antibody binding and therefore the potential for a reduction in vaccine efficacy.

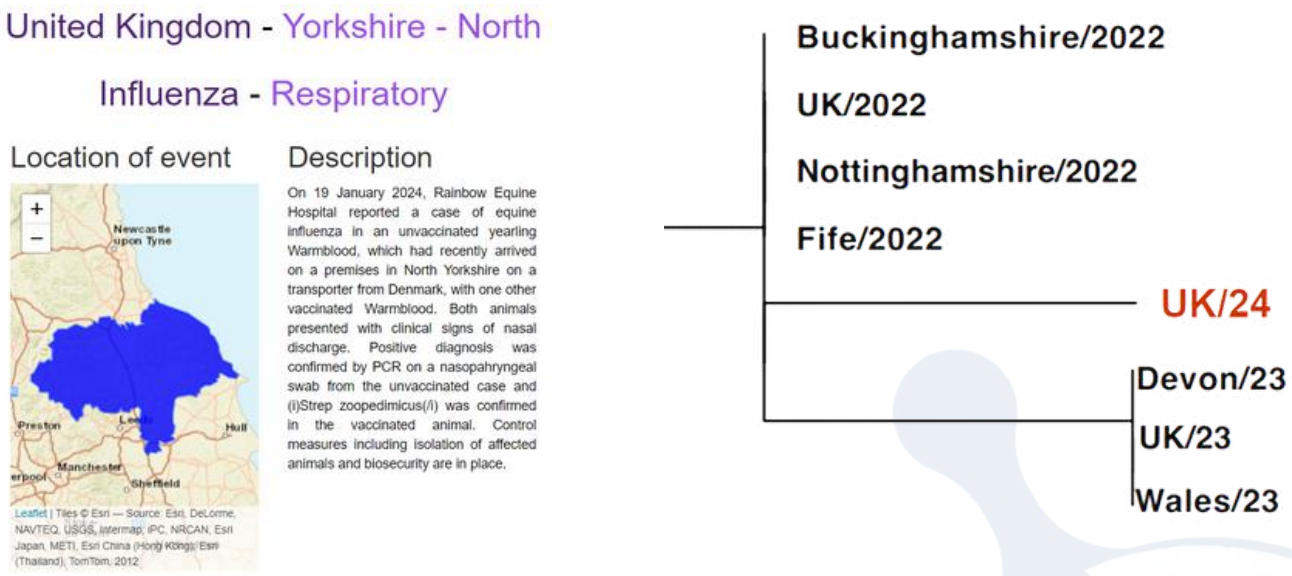


Figure 1: Details about the case, which was delayed in being reported, available on the International Collating Centre web portal (left). Phylogenetic tree of the HA1 region of the HA gene of the H3N8 equine influenza virus and the UK 2024 new variant (in red) (right).

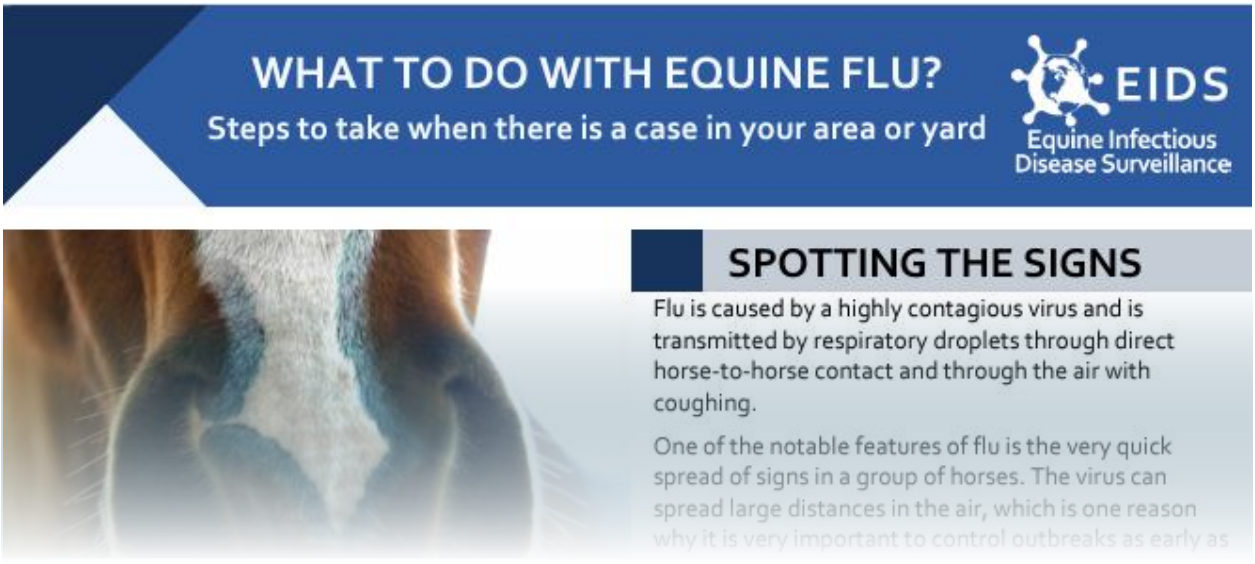
In response to this finding, the equestrian community is urged to remain vigilant, maintain biosecurity measures and contribute to surveillance through sampling suspect cases of respiratory disease, even among horses vaccinated against EI.

This is particularly important with equine movements and new arrivals increasing as we move through spring. Biosecurity measures include:

- Ensuring that all horses on premises are routinely vaccinated against equine influenza.
- New arrivals should be fully vaccinated prior to movement and undergo a minimum two-week quarantine period upon arrival.
- Any horses showing any clinical signs suspicious of influenza (especially pyrexia, coughing and nasal discharge) should be promptly isolated and investigated.

Veterinary surgeons play a crucial role in EI surveillance and can be assisted through their practices registering with and using the HBLB Equine Influenza Surveillance Scheme. By identifying and sampling suspect cases, they contribute valuable data for analysis and samples for investigation by the industry funded virology team at Cambridge. Registered vet practices are encouraged to take advantage of FREE PCR testing and expert advice available through the scheme. The swift diagnosis and implementation of appropriate control measures are paramount to containing the virus and protecting equine health and welfare.
For more information on the equine influenza surveillance scheme visit:
www.equinesurveillance.org

EIDS has produced an information sheet summarising key information about equine influenza which is available on our website:
https://equinesurveillance.org/landing/resources/What_to_do_with_equine_flu2024V1.pdf



FOCUS ARTICLE

THE EQUINE GRASS SICKNESS BIOBANK, DATABASE AND RESEARCH PROJECT: AN UPDATE AND CALL FOR SUPPORT

Dr Beth Wells
EGS Project Lead,Moredun Research Institute, Pentlands Science Park, Penicuik, Midlothian, EH26 0PZ

Introduction

Equine Grass Sickness (EGS) is a complex disease with an approximately 80% fatality rate and can occur in equids anywhere in temperate areas of the world. EGS is described as a polyneuropathy of grazing equids, which involves mainly the autonomic and enteric nervous systems, characterised by typical degenerative changes in the neurons, resulting in autonomic and enteric dysfunction. This pathology results in the range of clinical signs encountered in three classifications of disease – acute, sub-acute and chronic.

The earliest documented cases of EGS date back to 1909 in an army camp in Southeast Scotland, with additional reports emerging from England and Wales around the same time. It was initially misdiagnosed as 'obstinate cases of impaction' of the large intestine by veterinary surgeons and by 1928, EGS had been reported in every county in Northeast Scotland, with the Southeast region having the highest incidence. Since then, cases have also been documented in Northern Europe and suspected cases reported in the Falkland Islands, USA, and Australia. A clinically and pathologically identical disease has also been described in South America. The spatial distribution of EGS in the UK is well-documented, likely influenced by regional variations in the population at risk, reporting biases, and other static variables such as soil type, habitat and altitude.

In 2008, the Equine Grass Sickness Fund (EGSF), in collaboration with the then Animal Health Trust (AHT), established a nationwide EGS surveillance scheme. This initiative collected retrospective epidemiological data dating back to 2000, with ongoing prospective data collection. Case reports have served as crucial resources in categorising the epidemiology of EGS. Figure 1 illustrates a surveillance output that displays annual variations in reported case numbers across various regions of Great Britain, with data presented overall and annually from January 2015 through to July 2023. While some differences may be attributed to regional reporting practices, it is more likely that annual variations reflect geographical differences in risk factors. Fully understanding these factors is a key aspect of this current collaborative research initiative being outlined in this article.

Have you seen a case of Equine Grass Sickness and want to assist with research?
To contribute valuable case data for ongoing surveillance of EGS, fill out a case report at https://www.grasssickness.org.uk/biobank/ and to learn more about what samples to submit to the Equine Grass Sickness biobank, click on the relevant biobank tab on the webpage.

For further information, please contact Dr Beth Wells:
0131 445 6157 beth.wells@moredun.ac.uk

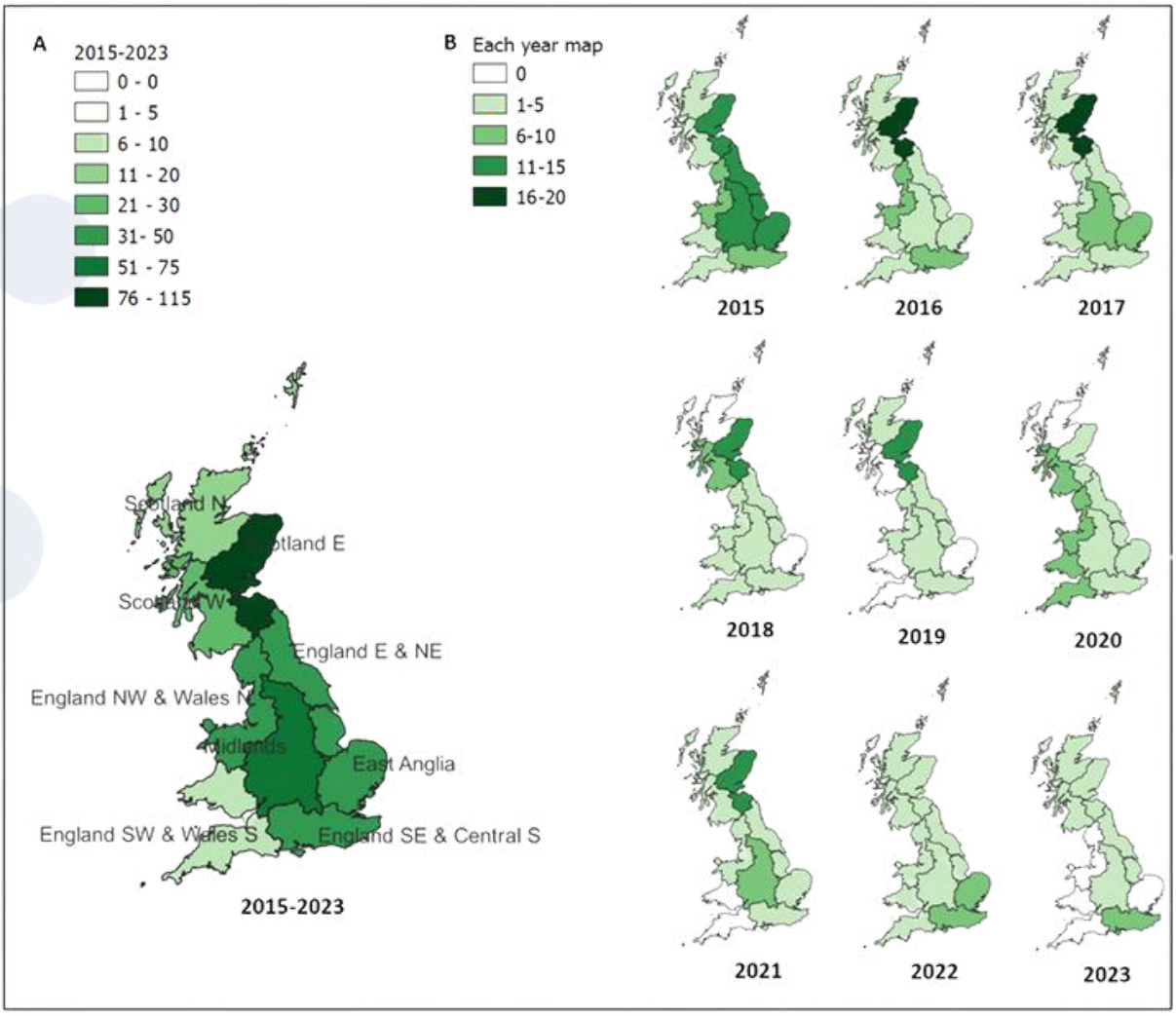


Figure 1: Choropleth maps showing the number of EGS reports across Great Britain (GB) (based on the nine GB areas represented by the GB Met Office climate districts: www.metoffice.gov.GB/research/climate/maps-and-data/about/districts-map) from January 2015 to July 2023 combined and each year separately (n= 375).

There is no convincing breed and sex predisposition for EGS but cases being younger in age is well documented and acute disease presentations continue to be the most frequently diagnosed presentation (Figure 2). Usually a single animal is affected in a group at any one time but premises with previous cases are likely to report subsequent cases. Case reporting also demonstrates the seasonal variation in disease (Figure 3) with cases reported in all months of the year but the majority of cases (58% for January 2015-July 2023) occurring in the three-month period of April to June and May accounting for the most combined cases per month (27% for January 2015-July 2023). Sometimes a smaller peak is also seen in late autumn. Such a temporal pattern might be attributed to seasonal variation in risk factors such as temperature, other weather factors and pasture growth. There has been a lower seasonal variation in recent years, probably due to the fact that fewer cases are being reported, suggesting underreporting is occurring.

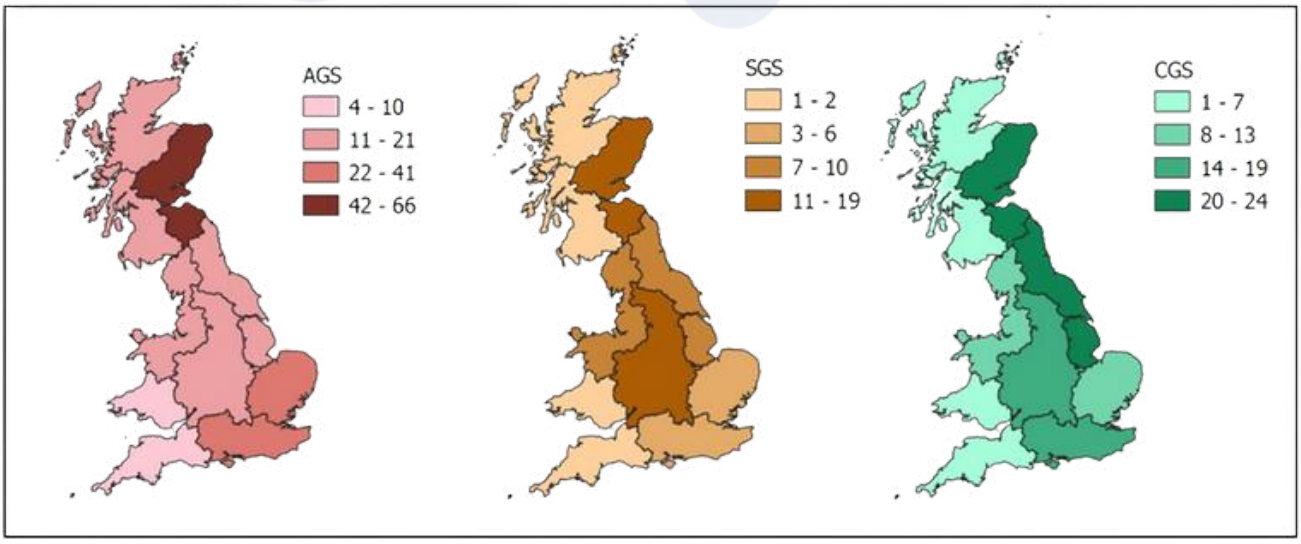


Figure 2: Choropleth maps showing the frequency of EGS type reported across regions of Great Britain (GB) (based on the nine GB areas represented by the GB Met Office climate districts: www.metoffice.gov.GB/research/climate/maps-and-data/about/districts-map) between January 2015 and July 2023. (AGS = Acute Grass Sickness n= 197, SGS = Subacute Grass Sickness n= 72, CGS = Chronic Grass Sickness, n= 112).

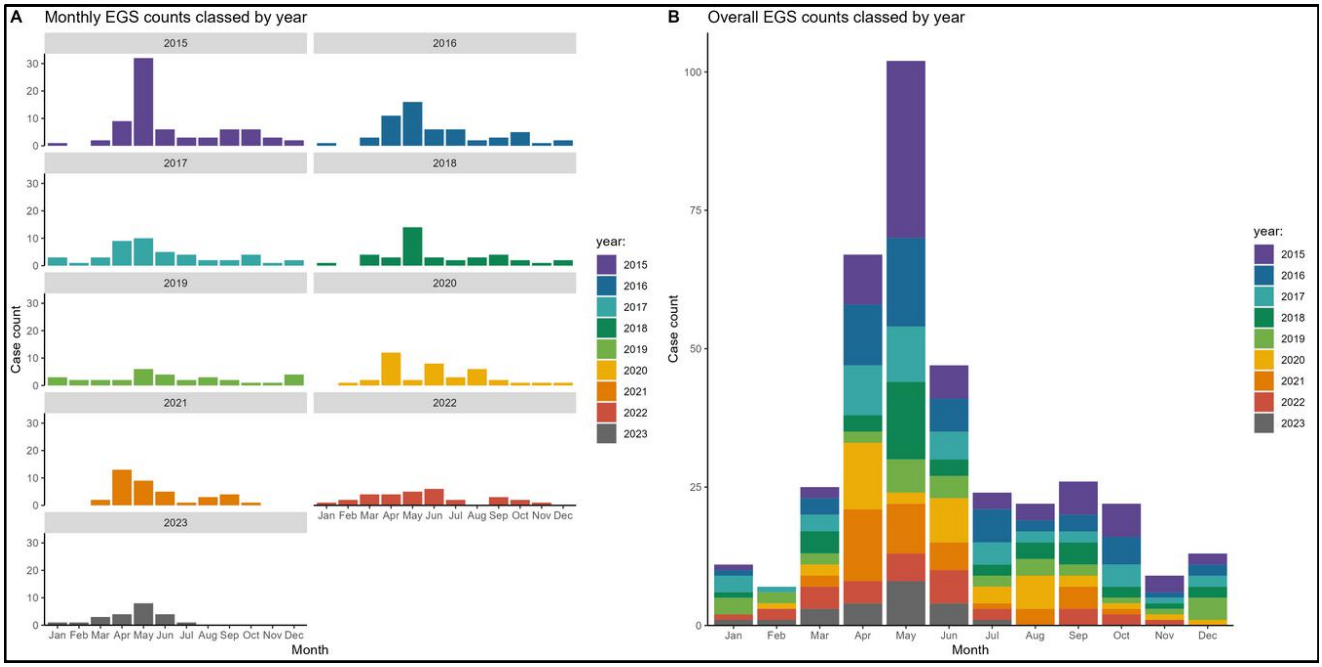


Figure 3: The numbers of EGS cases reported per month for each year (panel A) and combined (panel B) between January 2015 and July 2023 (n= 375).

There have been improvements in knowledge and advice around nursing care of EGS cases and encouragingly the surveillance data collated between January 2015 and July 2023 indicates that around two-thirds of chronic cases were recorded as surviving, although overall, the survival rate for EGS remains low at approximately 20% (Figure 4). Acute cases remain the most frequently reported case presentation and are usually euthanased on welfare grounds within a few days of presenting with clinical signs. Control and prevention options remain limited as despite being characterised over 100 years ago, the causal agent remains unknown.

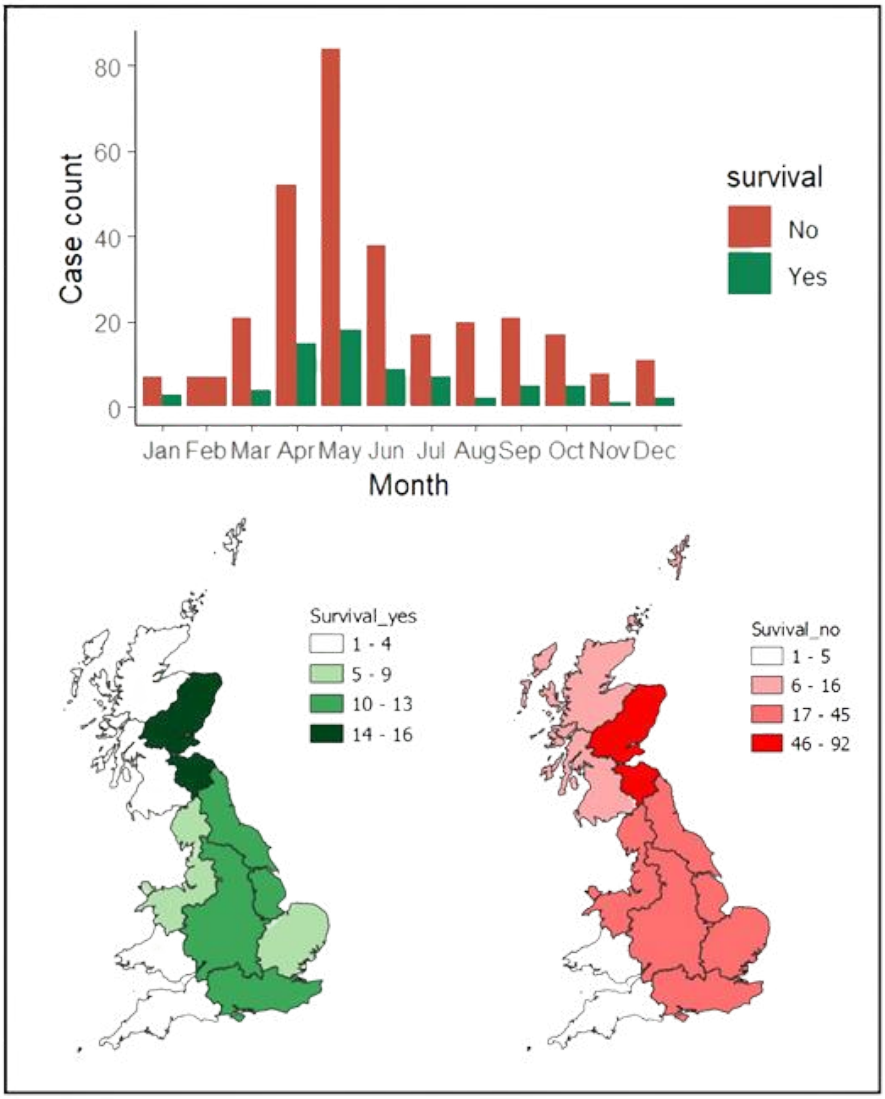


Figure 4: The distribution of numbers of each EGS case's survival reported per month for each year (top) and combined across regions of Great Britain (GB) (based on the nine GB areas represented by the GB Met Office climate districts: www.metoffice.gov.GB/research/climate/maps-and-data/about/districts-map) (bottom). Data for 74 surviving and 307 cases from January 2015 – July 2023.

A multitude of investigations and experiments have been conducted into the causes of the disease, and epidemiological data has provided guidance on the direction of this work, with a contagious epidemic being easily ruled out. Putative aetiological agents include plant toxicity, bacteria, insect vectors and fungal mycotoxins. Early post-mortem examinations suggested an acute toxaemia of bacterial origin with a large anaerobic bacillus being cultured. This led to the toxico-infection theory with *Clostridium botulinum* (type C neurotoxin), and vaccine field trials in the 1920s in Scotland showed a significant reduction in EGS mortality in vaccinated cases using antitoxin neutralized botulinum toxin vaccine. However, despite epidemiological support, the scientific community criticised the work. EGS cases have been shown to have significantly lower serum antibody titres to *C. botulinum* and its type C toxin than horses that either have been in contact with EGS-affected horses or have grazed frequently affected pasture.

A randomised, placebo-controlled, triple-blinded vaccine trial conducted between 2014 and 2017 on premises with a recent high frequency of EGS cases, demonstrated a clear anti-type C neurotoxin antibody response to vaccination in the treatment group. However, the trial was unable to demonstrate a statistically significant protective effect from vaccination, due in large part to the lower than predicted incidence of EGS on the recruited premises during the trial period. So despite more than 100 years of research and almost a quarter of a century of case surveillance, the causative agent remains elusive, in part due to the complexity and multi-factorial nature of the disease. Progress into identifying a causative agent through research endeavours has been hampered by a lack of biological samples from EGS cases and co-grazer controls.

The EGS Biobank and Database

In an effort to improve research into EGS, the EGS biobank project was initiated in 2021 by the Moredun Research Institute and the EGSF, and is being generously supported by the British Horse Society. The biobank project collects epidemiological data from EGS case reports (e.g. case and premises information), equine biological samples (cases and unaffected in contacts) and environmental samples. Samples are correctly processed and stored and are available to all researchers investigating EGS. The key to unlocking the cause of the disease will likely lie in these samples, so the biobank is critical to research progress.

In the development of this valuable resource, the group has established a network of horse owners and over 70 veterinary practices and equine hospitals who have kindly donated samples from EGS cases. The EGS Biobank project provides sample kits, which include all protocols and consent forms, to assist veterinary surgeons in obtaining samples. To facilitate sample collection, the project subsidises the costs for obtaining samples during post-mortem examinations conducted by a veterinary surgeon. This subsidy ensures that there is no cost to the owner or the vet, thus encouraging the sampling of affected cases.

Since its initiation in 2021, the project has made great progress with the latest facts and figures outlined in Figure 5, but still needs many more samples to produce meaningful and impactful research. Veterinary surgeons can contribute by taking samples from cases and samples include: blood, faeces, urine and saliva, and if the case is sadly fatal, post-mortem ganglia and ileum are very important samples for the biobank. A clear protocol for vets on tissue collection is available for download at Protocol-PM-sample-collection-final-161220.pdf (grasssickness.org.uk).

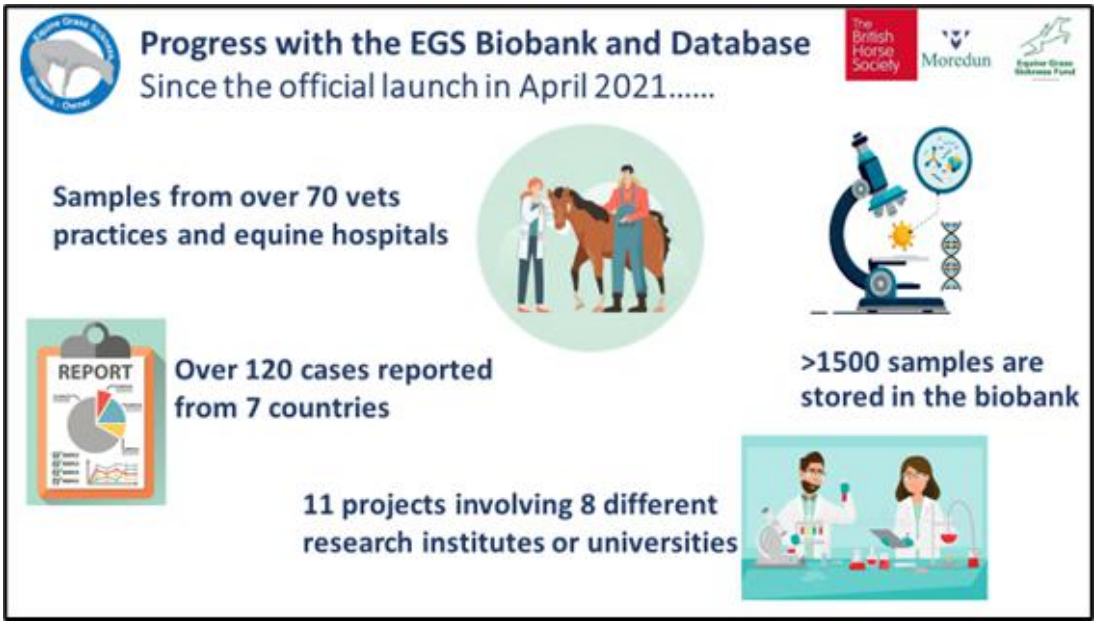


Figure 5: EGS Biobank progress in the three years since its initiation in April 2021

Current EGS case reporting and surveillance

Surveillance of EGS over the last 20 years through veterinary surgeons or owners submitting case reports have demonstrated their crucial importance for informing and maintaining awareness about the disease. Epidemiological data at both a case and premises level is essential in understanding the disease and this knowledge allows us to update and improve risk mitigation strategies in order to control, predict, or even prevent disease.

Such a surveillance endeavour allows us to track over time where the cases are occurring and if they are associated with certain risk factors, such as weather, nutrition, stress, veterinary interventions, etc. By building up a large database of case reports and biological samples, we can analyse all factors involved and build up a picture of potential causal agents. With this in mind and the fact that many cases are still not being reported, we have been putting time and effort into improving EGS case reporting and are very fortunate in partnering the Equine Infectious Disease Surveillance (EIDS) in this with their knowledge and expertise in equine disease surveillance and control.

Currently, the EGSF and EIDS are streamlining the online questionnaire to enable a shorter, part one survey option, taking less than 5 minutes, to assist those short on time. This section will capture specific information on the case occurrence such as the date and part of the UK. Part two, which can be filled out at a later, more convenient time, will encompass further specific information on the case, the environment and management practices on the premises. This change aims to improve reporting rates, while maintaining our knowledge of the disease.

Since April 2021, we have added more than 120 case reports to the existing data reporting system operated by the EGSF, and we now have an important multi-factorial analysis project underway in collaboration with the University of Liverpool Vet School. However, to obtain significant results we need many more case reports, so please keep reporting cases – your data are crucial to advancing knowledge.

To report a case (even if it is historical), visit https://www.grasssickness.org.uk/biobank/

Improving the reporting and surveillance of EGS

An essential part of surveillance is effectively communicating findings to inform and raise awareness about a condition. Data obtained from the EGS surveillance system for the last 20 years has been included in each quarter of the Equine Quarterly Disease Surveillance report, produced by EIDS and is available at www.equinesurveillance.org.

To enhance the communication of EGS surveillance data obtained from case reports, the EGSF has established a partnership with EIDS and Dr John Grewar from jDATA, South Africa, to optimise national and international monitoring of EGS cases. This collaboration aims to develop, for the first time, a real-time anonymous alert system for EGS. This system will rapidly report UK EGS case data at the county level while maintaining the anonymity of those sharing information, and in addition, data reported on EGS occurrence internationally will also be shared. EIDS's experience with similar surveillance systems for other equine diseases has demonstrated the importance of such systems in raising awareness regionally, nationally and internationally. Currently, international EGS case reports are being shared through EIDS's International Collating Centre (ICC) platform, which is a real-time disease reporting system that shares information on international equine disease occurrence by email to subscribers and via an interactive website (https://equinesurveillance.org/iccview/; Figure 6). To sign up to receive emailed ICC report notifications, email a request to equinesurveillance@vet.cam.ac.uk.

This real-time EGS alert system will enable owners, including those who have experienced the disease previously, to seek appropriate advice and take timely action to reduce risks for their animals. Once the platform is established, owners and vets will have the option to sign up for real-time email alerts of cases at the county level.

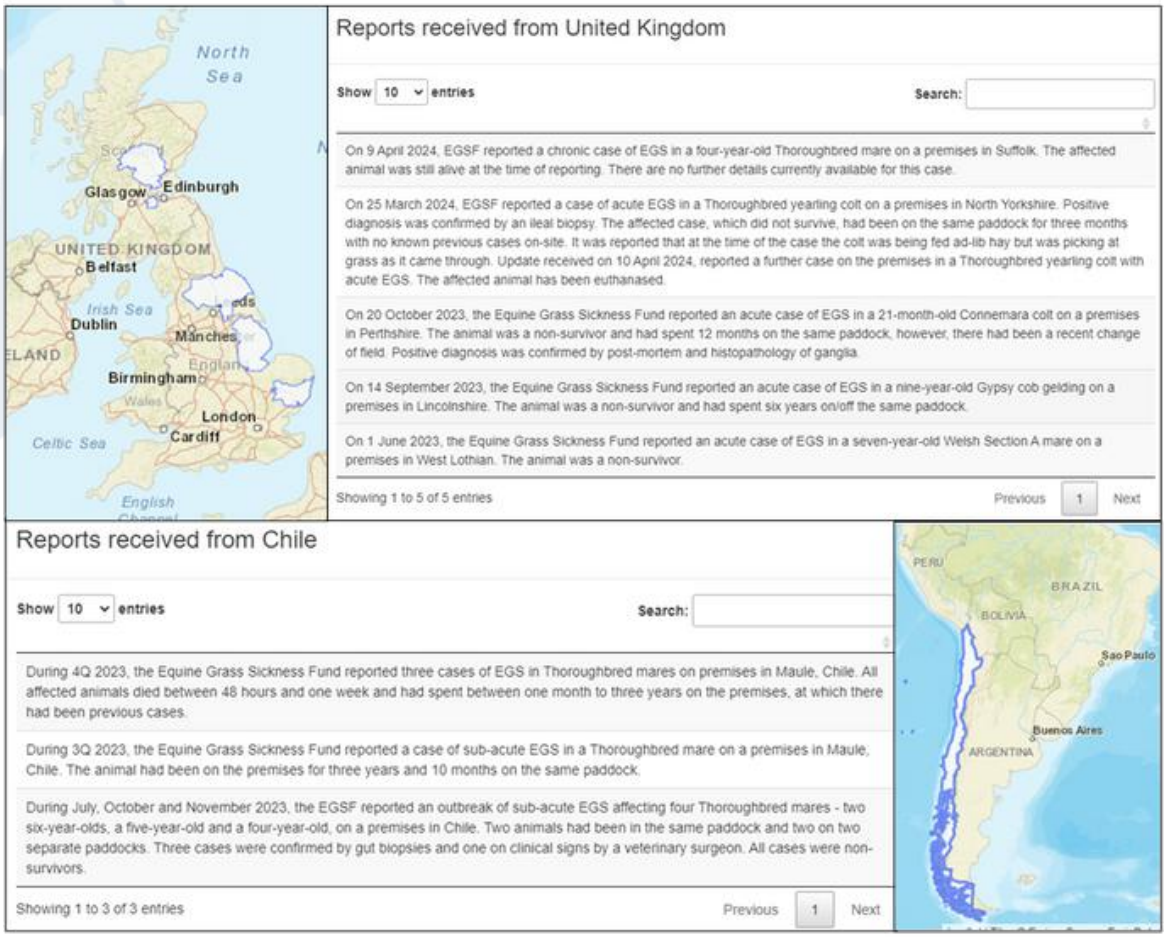


Figure 6: Reports of EGS in the UK and Chile shared by Equine Infectious Disease Surveillance (EIDS) through the International Collating Centre since June 2023

Furthermore, a webpage will be launched to provide summaries of reported case data, including the date, location (up to county level), age, breed, sex of the affected horse, type of EGS and survival status. This platform will be supported by data collected from both part one and part two of the case report survey, enabling a comprehensive, multi-factorial analysis to assist in determining risk mitigation strategies. Ultimately, the ambition is to incorporate a weather risk model at the county level based on climate research. This model will identify time periods and locations where the risk of EGS cases may be high, which is currently a focus area for the overall research initiative. This approach would enable proactive, preventative measures to avoid EGS cases during identified highest-risk time periods and locations.

How the EGS Biobank and Database is supporting research

In 2022, an EGS Research Crucible, involving researchers with expertise and access to state-of-the-art technologies in all the areas of science that are known to be involved in EGS, was held. A key requirement for attending was that participants had never been involved in EGS research before, so new ideas and approaches could be generated.

This has resulted in long-term collaborations, funding applications and pilot projects in areas of research where there were gaps in knowledge and where understanding was critical to unravelling the EGS puzzle. Four areas were highlighted:

- Microbiome of the horse and its environment
- Environmental factors, in particular weather
- In vitro systems
- Immunology

At the EGS Conference (https://www.youtube.com/watch?v=Czg3uurRDQM), held in 2023, these collaborations were strengthened as further projects were planned, and we have progressed to currently have 11 projects involving eight different research institutes and universities and many more people. This is an incredible achievement in three years and, along with an increase in awareness raising, at events, webinars and conferences, with an ever-increasing eye on fundraising, we have progressed a long way together.

In conclusion, there is much more to do, but EGSF would like to thank everyone who has contributed so far in helping to try and solve the puzzle of this devastating disease. The research projects we are now undertaking with our collaborators, using biobank samples and data, are aimed at furthering our understanding of the disease and finding the causal agents. Only then can we develop solutions.

Moredun

Equine Grass Sickness Fund

The British Horse Society

EIDS

The views expressed in this focus article are the author's own and should not be interpreted as official statements of EIDS, Defra, Devolved Administrations and BEVA

UK Infectious Disease Reports

This section summarises **laboratory confirmed infectious disease outbreaks reported in the United Kingdom** during the first 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 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.

EQUINE VIRAL ARTERITIS

On 1 May 2024 the Agriculture and Rural Economy Directorate of the Scottish Government stated: A case of equine viral arteritis (EVA) has been confirmed in Scotland in a nine-year-old Andalusian stallion imported from Spain in 2021. The private veterinary surgeon (PVS) who had sampled the horse prior to proposed breeding, reported suspicion of disease following a non-negative EVA antibody titre. The animal had not been bred from while in the UK and has no known history of EVA vaccination. At the APHA (Animal Plant Health Agency) investigation the horse had no clinical signs of EVA. Semen samples were collected and were positive for EVA on PCR testing, which enabled the Scottish Chief Veterinary Officer (CVO) to confirm disease on the 5 April 2024. Appropriate restrictions are in place on the animal to limit the risk of the disease spreading. EVA poses no threat to human health and international trade in horses and their germinal products remains unaffected.

WEST NILE VIRUS

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

NON-NOTIFIABLE DISEASES

EHV-1 RESPIRATORY INFECTION

JANUARY

In January 2024, Rossdales Laboratories reported a case of EHV-1 respiratory infection in a vaccinated four-year-old Thoroughbred mare on a premises in Hertfordshire. The affected case was tested prior to being moved and had no clinical signs. A positive diagnosis was confirmed by PCR on a nasopharyngeal swab taken on 10 January. Approximately 30 other animals, including new arrivals, were on site. The affected case was isolated.

EHV-1 REPRODUCTIVE INFECTION

JANUARY

In January 2024, Rossdales Laboratories reported a case of EHV-1 abortion in a vaccinated 20-year-old Hanoverian mare on a premises in Cheshire. The mare aborted at 10 months gestation. There was one direct in-contact, which was also pregnant. Positive diagnosis was confirmed on 29 January 2024, by PCR on fetal tissues.

MARCH

In March 2024, Rossdales Laboratories reported a case of EHV-1 neonatal foal death in a three-day-old colt with acute respiratory distress on a premises in West Sussex. Clinical signs were first noticed on 7 March 2024 and included: pyrexia, lethargy and tachypnoea. Positive diagnosis was confirmed by PCR on lung tissue. There were a further five animals that were in contact with the case, none of which were reported affected, but would have been tested.

EHV-4 REPRODUCTIVE INFECTION

JANUARY

In January 2024, Rainbow Equine Laboratory reported a case of EHV-4 abortion in an Arab mare with an unknown vaccination history, on a premises in West Yorkshire.
The animal aborted in the last month of gestation. Positive diagnosis was confirmed on 12 January 2024 by PCR on fetal material. There was one further in-contact on the premises.

EHV-4 RESPIRATORY INFECTION

JANUARY

In January 2023, Rossdales Laboratories reported two cases of EHV-4 respiratory infection.

One case was an unvaccinated three-year-old Warmblood X Thoroughbred gelding on a premises in North Yorkshire. Clinical signs included inappetence, lymphadenopathy, and mucopurulent nasal discharge. A positive diagnosis was confirmed by PCR on a nasopharyngeal swab. There were approximately 200 other animals on-site, of which 40 were direct in-contacts, and there had been recent movement on to the site.

The second case was an unvaccinated eight-month-old Connemara crossbreed colt, that had newly arrived on a premises in Hertfordshire. Clinical signs were first noted on 20 January 2024 and included inappetence and mucoid nasal discharge. Positive diagnosis was confirmed on 24 January 2024, by PCR on a nasopharyngeal swab. There had been recent movement on/off the premises and one other new arrival. There were a total of six other animals on-site, of which three were direct in-contacts, although they had been reported as effected.

MARCH

In March 2024, Rossdales Laboratories and Rainbow Equine Laboratories reported cases of EHV-4 respiratory infection.

In Suffolk, an unvaccinated 13-year-old New Forest crossbred gelding had clinical signs of mucoid nasal discharge and a positive diagnosis confirmed infection by PCR on a nasopharyngeal swab taken on 12 March 2024. There were a further nine in-contacts on-site, none of which were reported to be affected.

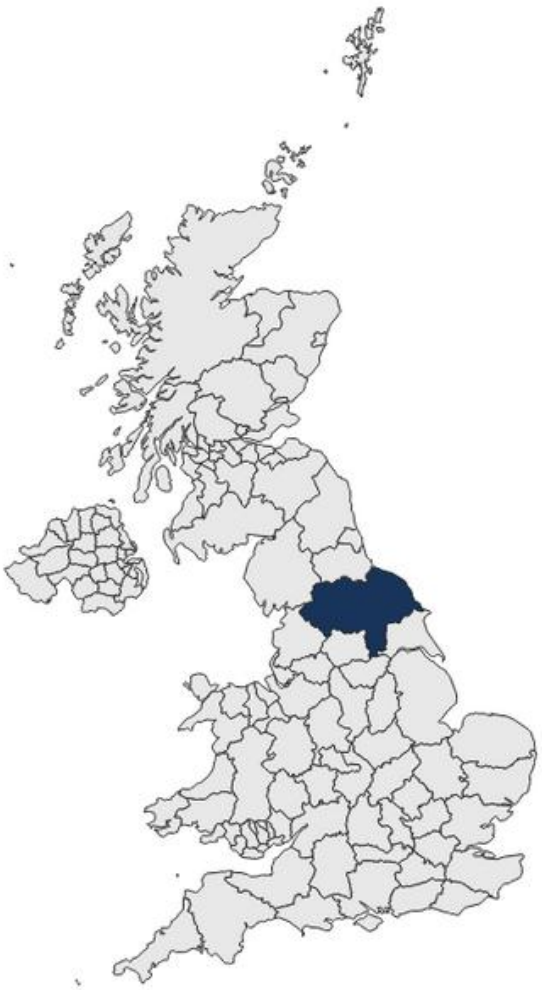
In Bedfordshire, a case of EHV-4 respiratory infection in an unvaccinated 10-year-old Irish Draught mare was reported. Clinical signs were first noticed on 13 March 2024, including inappetence, lethargy and mucoid nasal discharge. A positive diagnosis was confirmed on 15 March 2024, by PCR on a nasal swab and serology. There were four other in-contacts on-site, none of which were affected.

Equine Influenza

JANUARY

In January 2024, Rainbow Equine Hospital reported a case of equine influenza in an unvaccinated yearling Warmblood. The yearling had recently arrived on a premises in North Yorkshire (pictured in map) via a commercial transporter from Denmark alongside one other vaccinated Warmblood. Both animals presented with clinical signs of nasal discharge.

A positive diagnosis was confirmed by PCR on a nasopharyngeal swab from the unvaccinated case, and *Streptococcus zooepidemicus* was confirmed in the vaccinated animal. Control measures including isolation of affected animals and biosecurity were put in place.



EIDS equine Influenza services:

TELL-TAIL TEXT MESSAGE ALERT SCHEME

Boehringer Ingelheim

Tell-Tail™ DISEASE OUTBREAK ALERTS

Alert service for equine infectious diseases provided by Boehringer Ingelheim Animal Health. Designed to notify promptly of outbreaks of EI, EHV-1 pregnancy loss and neurological disease, and exotic notifiable diseases in the UK via text message. Available for UK-based veterinary surgeons and professional horse keepers, this service is offered at no cost. Sign up to receive alerts at www.telltail.co.uk

HBLB SURVEILLANCE SCHEME

The HBLB equine influenza testing scheme where 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

HORSERACE BETTING HBLB LEVY BOARD

Surveillance of Equine Strangles

Table 1: *S. equi* samples reported 1 Jan to 31 Mar 2024

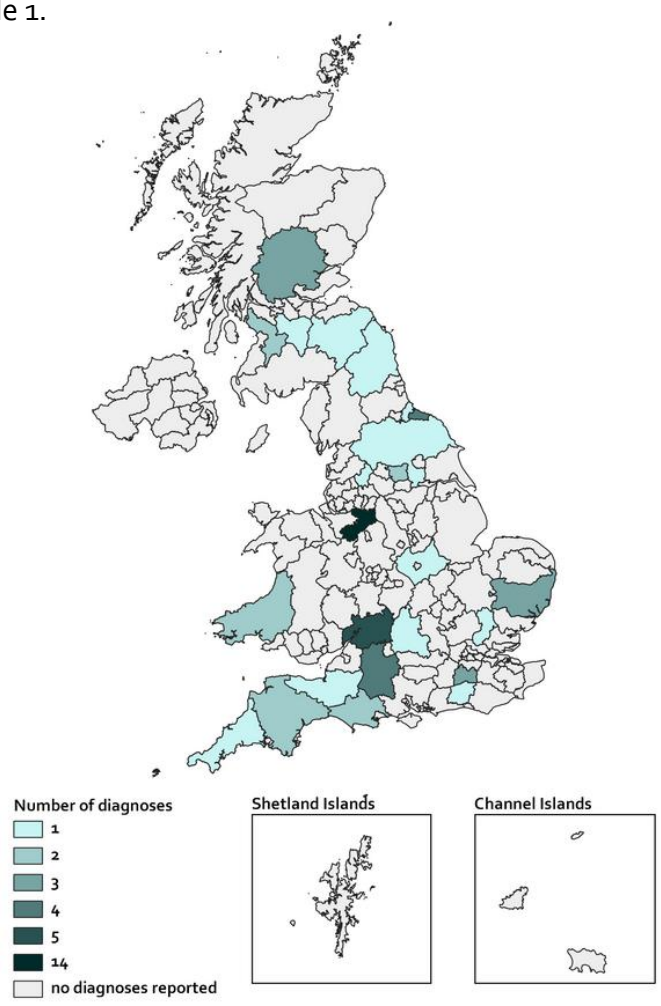
	n	%
Total horses sampled	58	100%
Sample type*	63	
Swab	24	38%
Nasopharyngeal	19	79%
Nasal	3	13%
Abscess material	2	8%
Guttural pouch lavage	33	52%
Other	6	10%
Diagnostic tests		
PCR only requested	44	76%
PCR and culture requested	13	22%
Culture only requested	1	2%
iiPCR	0	0%
Signalment		
Sex of horse indicated	38	66%
Female	16	42%
Male	22	58%
Breed of horse	27	47%
Native UK pony	12	44%
Native UK horse	2	7%
Sports horse	9	33%
Non-UK native horse/pony	2	7%
Donkey	2	7%
Age of horse	25	43%
Range	9 months - 21 years	
IQR	4 - 16 years	
Median	14	
Clinical signs reported* **	48	
Nasal discharge	15	31%
Pyrexia	9	19%
Abscess	6	13%
Coughing	4	8%
Glandular swelling	4	8%
Lethargy	3	6%
Other	3	6%
Guttural pouch empyema	2	4%
Chondroids	2	4%
Reason for sampling reported	41	71%
Total reasons*	43	
Post infection screening	15	35%
Clinically ill horse	14	33%
Post seropositive ELISA	7	17%
Strangles suspected	5	12%
Other	2	5%

*can include multiple entries per submission

***From 21 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 ten diagnostic laboratories based across the UK.

A total of 58 positive diagnoses of *S. equi* were reported by SES Laboratory during Q1 2024 from samples submitted by 32 veterinary practices in the UK. Information regarding reported samples is summarised in Table 1.



Frequency of reported laboratory diagnoses of *S. equi* across the UK from SES during 2024 Q1. 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 can be done by either the attending veterinary surgeon or the owner, at http://tinyurl.com/EGSquestionnaire.

One case of acute equine grass sickness was reported by the Equine Grass Sickness Fund in the first quarter of 2024.

The case occurred on the 25th March 2024 and the affected animal was a Thoroughbred yearling colt.

The horse was from a premises in Yorkshire (region highlighted on the map) and had been kept in the same field for three months. There were no previous cases known on the premises.

Ad lib hay was available and the horse was reported to be "picking at new grass coming through".

The horse did not survive and diagnosis was confirmed via ileal biopsy.

Four cases of EGS were diagnosed in the first quarter of 2024 by three contributing laboratories.

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 January to March 2024 are summarised in Tables 2 to 5. 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 2: Results of virological testing for gastrointestinal diseases between 1 Jan to 31 Mar 2024. CLs = contributing laboratories

Test	Detection	Samples tested (n)	Positive (n)	CLs (n)
Adenovirus HI	Antibody	54	0	1
Coronavirus PCR	Agent	85	12	1
Rotavirus antigen ELISA/Strip test/LFT	Agent	25	4	4
Rotavirus ELISA	Antibody	0	0	1
Rotavirus-A PCR	Agent	54	5	2
Rotavirus-B PCR	Agent	58	0	3
Rotavirus PCR	Agent	0	0	1

LFT Lateral flow test

REPRODUCTIVE DISEASE

Table 3: Results of virological testing for reproductive diseases between 1 Jan to 31 Mar 2024. CLs = contributing laboratories

Test	Detection	Samples tested (n)	Positive (n)	CLs (n)
EHV-3 PCR	Agent	2	0	1
EHV-3 VI	Agent	1	0	1
EHV-3 VN	Antibody	0	0	1
EVA ELISA*	Antibody	8877	62	7
EVA PCR (APHA)	Agent	1	0	1
EVA PCR	Agent	9	0	1
EVA VN (APHA)*	Antibody	550	11	1
EVA VN*	Antibody	208	140	3

EHV Equine herpes virus, VI Virus isolation, VN Virus neutralisation, EVA Equine viral arteritis, *Seropositives include vaccinated stallions

RESPIRATORY DISEASE

Table 4: Results of virological testing for respiratory diseases between 1 Jan to 31 Mar 2024. CLs = contributing laboratories

Test	Detection	Samples tested (n)	Positive (n)	CLs (n)
EHV-2 PCR	Agent	18	2	2
EHV-5 PCR	Agent	18	1	2
Influenza HI	Antibody	54	0	1
Influenza LAMP	Agent	8	0	2
Influenza PCR (APHA)	Agent	324	0	1
Influenza PCR	Agent	521	1	9
ERV-A/B CFT	Antibody	34	0	1
ERV PCR	Agent	0	0	1

EHV Equine herpes virus, HI Haemagglutination inhibition, LAMP loop mediated isothermal amplification, ERV Equine rhinitis virus, CFT Complement fixation test

MULTIPLE/MISCELLANEOUS/NEUROLOGICAL DISEASES

Table 5: Results of virological testing for multiple/miscellaneous/neurological Diseases between 1 Jan to 31 Mar 2024. CLs = contributing laboratories

Test	Detection	Samples tested (n)	Positive (n)	CLs (n)
EHV-1 LAMP	Agent	9	0	2
EHV-1 PCR	Agent	1012	1	9
EHV-1 VI	Agent	1	0	1
EHV-4 LAMP	Agent	9	0	2
EHV-4 PCR	Agent	1012	14	9
EHV-4 VI	Agent	1	0	1
EHV-1/-4 CFT (APHA)	Antibody	0	0	1
EHV-1/-4 CFT	Antibody	291	4	1
EHV-1/-4 IFAT - Ag	Agent	3	3	1
EHV-1 IFAT - Ag	Agent	12	0	1
EHV-8 PCR	Agent	1	0	1
EIA Coggins (APHA)	Antibody	5161	0	1
EIA Coggins	Antibody	53	0	3
EIA ELISA	Antibody	5450	1*	7
Hepacivirus & parvovirus PCR	Agent	0	0	1
Hepacivirus PCR	Agent	21	0	1
Papilloma virus PCR	Agent	0	0	1
Parvovirus PCR	Agent	21	0	1
WNV IgM ELISA (APHA)	Antibody	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, *awaiting confirmation that the positive EIA ELISA result has been negated with a negative Coggins test, WNV West Nile Virus

BACTERIOLOGY

A summary of the diagnostic bacteriology testing undertaken by different contributing laboratories is presented in Tables 6 to 9. 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. All 15 BEVA approved laboratories in the UK contributed data.

REPRODUCTIVE DISEASE

Table 6: Results of bacteriological testing for reproductive diseases between 1 Jan to 31 Mar 2024. CLs = contributing laboratories

Test	Detection	Samples tested (n)	Positive (n)	CLs (n)
CEM *Taylorella equigenitalis/asinigenitalis* culture^ (BEVA)	Agent	8801	0	16
CEM *Taylorella equigenitalis* PCR (BEVA)	Agent	2326	0	8
CEM *Taylorella equigenitalis* culture (APHA)	Agent	871	0	1
CEM *Taylorella equigenitalis* PCR (APHA)	Agent	109	0	1
CEM *Taylorella asinigenitalis* culture	Agent	342	0	1
CEM *Taylorella asinigenitalis* PCR (APHA)	Agent	109	0	1
CEM *Taylorella asinigenitalis* culture (APHA)	Agent	871	0	1
Klebsiella pneumoniae capsule types 1 PCR	Agent	24	0	1
Klebsiella pneumoniae capsule types 2 PCR	Agent	24	0	1
Klebsiella pneumoniae capsule types 5 PCR	Agent	24	1	1
Klebsiella pneumoniae PCR (BEVA)	Agent	2326	29	8
Klebsiella pneumoniae culture (APHA)	Agent	114	0	1
Klebsiella pneumoniae culture (BEVA)	Agent	8901	23	16
Pseudomonas aeruginosa PCR (BEVA)	Agent	2326	3	8
Pseudomonas aeruginosa culture (APHA)	Agent	114	0	1
Pseudomonas aeruginosa culture (BEVA)	Agent	8902	19	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 7: Results of bacteriological testing for respiratory diseases between 1 Jan to 31 Mar 2024. CLs = contributing laboratories

Test	Detection	Samples tested (n)	Positive (n)	CLs (n)
Streptococcus equi ELISA Antigen A/C (ISL)†	Antibody	3582	425	5
Streptococcus equi ELISA M-protein (IDVET)	Antibody	542	132	1
Streptococcus equi PCR	Agent	2001	98	8
Streptococcus equi LAMP	Agent	16	0	2
Streptococcus equi culture	Agent	611	18	13
Rhodococcus equi ELISA#	Antibody	9	3	1
Rhodococcus equi PCR	Agent	15	0	2
Rhodococcus equi culture	Agent	508	3	6
Streptococcus zooepidemicus PCR	Agent	344	120	4
Streptococcus zooepidemicus culture	Agent	1217	59	5

†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

MISCELLANEOUS DISEASE

Table 8: Results of miscellaneous bacteriological testing for respiratory and gastrointestinal diseases between 1 Jan to 31 Mar 2024. CLs = contributing laboratories

Test	Detection	Samples tested (n)	Positive (n)	CLs (n)
*MRSA** culture	Agent	696	3	11
Borrelia burgdorferi ELISA	Antibody	41	9	3
Borrelia burgdorferi PCR	Agent	0	0	1
Borrelia burgdorferi LFT	Antibody	1	0	1
Burkholderia mallei (Glanders) CFT (APHA)	Antibody	165	0	1
Leptospira MAT	Antibody	3	0	1
Leptospira PCR	Agent	12	1	1
Anaplasma ELISA	Antibody	41	12	4
Anaplasma PCR	Agent	1	0	2

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

GASTROINTESTINAL DISEASE

Table 9: Results of bacteriological testing for gastrointestinal diseases between 1 Jan to 31 Mar 2024. CLs = contributing laboratories

Test	Detection	Samples tested (n)	Positive (n)	CLs (n)
Campylobacter culture	Agent	34	1	6
Clostridium perfringens ELISA	Toxin	231	6	3
Clostridium perfringens LFT	Toxin	76	9	3
Clostridium perfringens PCR	Agent	31	7	2
Clostridium perfringens culture	Agent	0	0	1
Clostridium difficile ELISA	Toxin	213	22	3
Clostridium difficile LFT	Toxin	102	1	4
Clostridium difficile PCR	Agent	32	2	1
Clostridium difficile culture	Agent	0	0	1
Lawsonia intracellularis IPMA	Antibody	34	26	1
*Lawsonia intracellularis*** PCR	Agent	73	4	4
Salmonella typhimurium PCR	Agent	46	1	2
Salmonella typhimurum (APHA)	Agent	7	7	1
Salmonella typhimurium culture	Agent	79	3	9
Salmonella Other *spp*‡ PCR	Agent	455	7	9
Salmonella Other *spp*‡ (APHA)	Agent	4	4	1
Salmonella Other *spp* culture	Agent	169	4	5
Enterobacter culture	Agent	2393	120	9
E. coli culture	Agent	2350	235	8

LFT Lateral flow test, **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

Eleven samples were submitted this quarter to the Animal and Plant Health Agency (APHA), and all were positive for *Salmonella*. From the incidents involving isolates typed by the APHA, the serovars/phagetypes reported were *S. Typhimurium* (7 isolates; 3 x RDNC, 2 x DT193, 1 x DT99 and 1 x DT36) and single incidents of *S. Agama*, *S. Bovismorbificans*, *S. Oslo* and *S. Stanleyville*.

S. Typhimurium DT99 and RDNC is usually associated with wild birds, whereas *S. Typhimurium* DT193 and *S. Bovismorbificans* are often attributed to pigs. *S. Agama* may be associated with badgersand *S. Oslo* appears to be circulating in equines. 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 2022 *Salmonella* in animals and feed surveillance report https://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 10 and 11.

ECTOPARASITES

Table 10: Results of ectoparasitology testing between 1 Jan to 31 Mar 2024.
CLs = contributing laboratories

Test	Detection	Samples tested (n)	Positive (n)	CLs (n)
Mange *Sarcoptes scabiei*	Agent	316	0	11
Mange *Chorioptes spp*	Agent	316	2	11
Mange *Trombicula spp*	Agent	316	0	11
Mange *Demodex equi*	Agent	316	0	11
Mange other	Agent	8	0	2
Lice *Damalinia equi*	Agent	307	25	8
Lice *Haematopinus asini*	Agent	261	1	7
Ringworm PCR	Agent	136	15	4
Ringworm culture	Agent	72	4	10
Ringworm microscopy	Agent	332	43	12
Dermatophilosis culture	Agent	41	2	6
Dermatophilosis microscopy	Agent	83	22	5
Candida culture	Agent	64	1	5
Candida microscopy	Agent	2	0	2

ENDOPARASITES

Table 11: Results of endoparasitology testing between 1 Jan to 31 Mar 2024.
CLs = contributing laboratories

Test	Detection	Samples tested (n)	Positive (n)	CLs (n)
Ascarids faecal exam	Agent	22883	181	14
Strongyles (large/small) faecal exam	Agent	23607	6344	15
Strongyloides faecal exam	Agent	23023	200	12
Tapeworm ELISA saliva	Antibody	7587	2643	1
Tapeworm ELISA serum	Antibody	1607	678	1
Tapeworm faecal exam	Agent	21569	81	9
*Oxyuris equi f*aecal exam	Agent	21338	5	7
Oxyuris equi tape strip	Agent	322	22	9
Dictyocaulus arnfieldi baermanns	Agent	55	0	6
Fasciola hepatica serology	Antibody	3	0	1
Fasciola hepatica flotation	Agent	72	2	5
Fasciola hepatica sedimentation	Agent	24	2	4
Cryptosporida mZn	Agent	0	0	2
Cryptosporidia PCR	Agent	5	0	3
Cryptosporidia snap test	Agent	62	2	5
Cryptosporidia faecal exam	Agent	5	0	2
Giardia snap test	Agent	54	5	3
Coccidia faecal exam	Agent	1231	0	5

TOXICOSIS

A summary of diagnostic toxicosis testing undertaken by contributing laboratories is presented in Table 12. Results for toxicosis are based on histopathology or clinical signs.

Table 12: Results of toxicosis testing between 1 Jan to 31 Mar 2024.
CLs = contributing laboratories

Test	Samples tested (n)	Positive (n)	CLs (n)
Grass Sickness	13	4*	3
Atypical myopathy/Seasonal Pasture Associated Myopathy	0	0	2
Hepatic Toxicosis - Ragwort	58	2	3
Hepatic Lipidosis	3	0	1
Hepatic Encephalopathy	1	0	1
Tetanus	0	0	1
Botulism	0	0	1

*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 13.

Table 13: Results of miscellaneous testing between 1 Jan to 31 Mar 2024.
CLs = contributing laboratories

Test	Detection	Samples tested (n)	Positive (n)	CLs (n)
Babesia caballi CFT (APHA)	Antibody	30	0	1
Babesia caballi cELISA (APHA)	Antibody	329	4	1
Babesia caballi IFAT (APHA)	Antibody	315	0	1
Babesia caballi cELISA	Antibody	27	1	1
Theileria equi CFT (APHA)	Antibody	34	0	1
Theileria equi cELISA (APHA)	Antibody	329	3	1
Theileria equi IFAT (APHA)	Antibody	315	2	1
Theileria equi cELISA	Antibody	27	2	1
Dourine CFT* (APHA)	Antibody	167	0	1
Dourine IFAT (APHA)	Antibody	1	0	1

*CFT suspect/positive samples are then tested by IFAT, CFT Complement fixation test, IFAT Immunofluorescent antibody test

LABORATORY REPORT END

UK Post-Mortem Examination Reports

Details about post-mortem examinations were reported by four UK Veterinary Schools and two other contributing laboratories. Data from each laboratory is organised by the laboratories' regional locations. There may be more than one laboratory reporting information for each region.

EAST & SOUTH EAST OF ENGLAND

ABORTION

A total of 26 cases were reported:

Diagnosis	No. of cases	Comments
Umbilical cord torsions	5 (One certain and four probable)	Two cases were also reported to have an excessive umbilical cord length and one case had been scavenged
Chronic placentopathy	1	Non-inflammatory cause, with possible placental malperfusion
Ascending (cervical pole) placentitis	2	Beta-haemolytic *Streptococci* spp. were cultured for one and the other cultured *Staphylococcus aureus*
Placentitis	7	Two had subsequent postnatal sepsis (*S. zooepidemicus* was cultured). One was presumed to be bacterial but the culture yielded mixed bacterial isolates. Two were leptospirosis PCR negative, with one of these presumed to be bacterial. One case had chronic placentitis and *E. coli* was cultured. One case was inconclusive but a possible fungal placentitis may have been present as there was extensive fungal colonisation but there was minimal inflammation
Ischaemic necrosis of the cervical pole	5	One case had concurrent congenital malformations (brachygnathia, ventricular septal defect, torticollis and scoliosis). One case was reported to also have mild placentitis
EHV-1	1	Confirmed by positive PCR
No diagnosis reached	5	One case had been scavenged. One had a concurrent finding of a ventricular septal defect. One case had an excessive umbilical cord length. One case had mineralisation of the chorioallantois and possible umbilical vascular compromise. For the final case, no abnormalities were detected during post-mortem examination

NEONATAL DEATH

A total of 17 cases were reported:

- Twelve cases of dystocia were reported. Eight cases had varying severities of carpal contracture and five of these also had scoliosis. Three had rib fractures. Two had renal cysts. One had concurrent moderate neutrophilic funisitis and three had mild placentitis. One case had pulmonary artery rupture and haemopericardium.
- One case of intrapartum still birth had no diagnosis reached.
- One case had periparturient bladder rupture and fibrinous peritonitis.
- One case had an omphalocoele (abdominal wall congenital defect) with torsion and infarction of herniated small intestine.
- One case had postnatal bacterial bronchopneumonia.
- One case of peripartum death with acute aspiration of a blood clot and possible premature placental separation.

HEPATIC

Two cases were reported:

- One case was reported to have a liver abscess and the underlaying cause could not be identified.
- One case was reported to have chronic hepatic fibrosis, with clinical signs of diarrhoea and hepatic encephalopathy.

NEOPLASIA

Two cases were reported:

- One case was reported to have innumerable black nodules throughout numerous organs and tissues, most notably the spleen and the liver, which were also markedly enlarged. Histopathology confirmed a diagnosis of malignant melanoma.
- One case was reported to have a multiorgan neoplastic process including a pathological cervical vertebral fracture and masses in the liver, lungs, adrenal glands and one kidney. Hemangiosarcoma was suspected but histopathology results are not available at the time of publication of this report. The case also had chronic perihepatitis and hepatic fibrosis from a suspected historic parasitic infection.

RESPIRATORY

One case was reported:

- One case of aspiration pneumonia secondary to liquid paraffin oil administration was reported.

NEUROLOGICAL

Three cases were reported:

- One case of botulism was confirmed based on clinical signs, lack of other pathological findings and being PCR positive for toxin B strain of *Clostridium botulinum* on intestinal content samples.
- One case of equine protozoal encephalomyelitis (EPM). The case had been imported from USA in December 2023.
- One case had a basilar skull fracture at the basisphenoid-basioccipital junction.

OTHER

Four cases were reported:

- One case with an enlarged pituitary was examined and confirmed to have a pituitary adenoma. The case was aged and also had clinical signs of pituitary pars intermedia dysfunction such as a long haircoat. There was also an incidental finding of a bronchoalveolar carcinoma.
- One case that had an antemortem history of acute anaemia, hypoproteinaemia and thrombocytopaenia was examined. The case had hepatic petechiation macroscopically. Bone marrow histopathology suggested ineffective megakaryopoiesis but interpretation was limited due to autolysis.
- One case had septicaemia with associated nephritis, hepatitis, adrenalitis and pneumonia was reported. *Actinobacillus* was confirmed by culture.
- One case of haemoabdomen was reported and found to have a gastro-splenic ligament haematoma following surgical correction for a nephrosplenic entrapment.

SUDDEN DEATH

Three cases were reported:

- One case of sudden death was examined and no definitive diagnosis was reached. Incidental findings included a diffuse interstitial mineralisation and multifocal interstitial fibrosis of the lungs with an uncertain pathogenesis and a focal subdural haemorrhage as a consequence of trauma following stumbling and falling that was reported at the time of death. In cases of sudden death without gross or microscopic lesions, possible mechanisms of death include a cardiac arrythmia, an acute metabolic disturbance or a seizure.
- One case of exercise associated sudden death was reported and presumed to be a result of cardiac abnormalities.
- One case of traumatic vertebral fracture (C_5) was reported. The case also was found to have incidental findings of active verminous arteritis (*S. vulgaris*) and a mild to moderate cyathostome burden.

WELFARE

One case was reported:

- One case was reported to be emaciated and found to have typhlocolitis and cyathostominosis. The case also had periodontitis and septic sinusitis.

GASTROINTESTINAL

A total of 16 cases were reported:

Location	Diagnosis	No. of cases	Comments inc. additional PME findings
Oesophagus	Oesophageal obstruction and secondary aspiration pneumonia	1	None
	Focally extensive oesophagitis with fibrosis	1	Gross examination identified a marked chronic thickening of the distal oesophagus and cardia of the stomach with fistulation and encapsulation of free ingesta, by significant amount of fibrous tissue. This has then led to a fibrinous pleuritis and peritonitis
Small intestine	Enteritis and a secondary large colon impaction	1	Microscopy of small intestinal tissue revealed a mixture of intralesional rod-shape gram negative and gram-positive bacteria
	Displacement	1	Focal intestinal compression with diffuse, severe, transmural necrohaemorrhagic and oedematous enteritis, highly suggestive of an intestinal physical obstruction and venous infarction leading to hypovolemic shock ante-mortem. The definitive diagnosis of the specific type of intestinal displacement was not possible but the appearance of the intestinal compression and in-situ location favoured an intestinal torsion or entrapment within a mesenteric rent
	Jejunal necrosis	1	Case had surgery to correct an epiploic foramen entrapment and subsequently deteriorated and found to have marked necrosis of the jejunum along with marked and moderate serofibrinous peritonitis
	Mesenteric rent	1	Secondary intestinal incarceration, volvulus, and transmural ischemic necrosis of the intestinal wall
	Perforation	1	Small intestinal perforation and peritonitis, possibly Lawsonia-associated (PCR positive)
	Enterocolitis	1	Marked enterocolitis due to salmonellosis
	Necrosis and infarctions	1	Multifocal small intestinal necrosis/infarction with adhesions - no specific infectious cause identified

Location	Diagnosis	No. of cases	Comments inc. additional PME findings
Large intestine	Cyathostominosis	3	Ulcerative typhlocolitis. The case also had chronic fibrosis of the liver with megalocytosis suggesting chronic exposure to pyrrolizidine alkaloids such as Ragwort
			Eosinophilic and lymphoplasmacytic colitis with oedema and intramucosal encysted small strongyle larvae. The case was a welfare submission and was emaciated and had recently suffered blunt force trauma resulting in two rib fractures
			Severe typhlocolitis with necrotising hepatitis and thrombosis
	Right dorsal colitis	1	Following a non-steroidal anti-inflammatory overdose
	Right dorsal colon perforation	1	Idiopathic and peritonitis also identified
Misc.	Equine Grass Sickness	1	Acute/subacute equine grass sickness was reported, confirmed by clinical, gross, and microscopic findings including coeliac-mesenteric ganglion histopathology
	Peritonitis	1	Multiple chronic small and large intestinal adhesions, with perforation and peritonitis

WEST AND SOUTH WEST OF ENGLAND

NEONATAL DEATH

One case was reported:

- The case had a prolapse of intestines from the rectum.

NORTH WEST OF ENGLAND

GASTROINTESTINAL

One case was reported:

- One case of septicaemia with fibrinous peritonitis and fibrinonecrotic colitis was confirmed. A heavy growth of *Echerichia mamotae* was confirmed by culture.

ABORTION

One case was reported:

- One case of abortion, confirmed to be secondary to placentitis, was reported. A heavy growth of *Streptococcus zooepidemicus* was confirmed by culture.

WELFARE

Three cases were reported:

- Two cases with poor body condition, ectoparasites and endoparasites and poor hoof care were examined.
- One mare, found dead in a field, was examined and found to have a ruptured diaphragm and was suspect to have recently foaled. Autolytic changes were advanced but the diaphragmatic rupture was associated with haemorrhage and oedema. The case had perineal tearing and a post-partum uterus.

OTHER

One case was reported:

- One case with suspected anaphylaxis following treatment for a deep limb wound was examined. It had periocular and laryngeal oedema, severe pulmonary oedema and diffuse hyperaemia. A drug reaction was suspected to be the cause of the anaphylaxis.

NORTHERN IRELAND

ABORTION

Three cases were reported:

- Two cases had umbilical cord torsions.
- No diagnosis was reached for one case with no abnormalities detected.

SCOTLAND

NEONATAL DEATH

One case was reported:

- One case of neonatal death was reported at five days of age and the case had pulmonary atelectasis of prematurity, suppurative bronchopneumonia and the mare had experienced dystocia.

CARDIOVASCULAR

One case was reported:

- One case of valvular vegetative endocarditis of left atrioventricular (mitral) valve with intralesional bacteria. In addition, the case had osteomyelitis of first thoracic vertebra (T1) and a focal fibrin thrombus in leptomeninges with intralesional bacteria. Ante-mortem bacterial culture of urine yielded *Erysipelothrix rhusiopathiae*.

GASTROINTESTINAL

Three cases were reported:

- One case had a gastric impaction and rupture with intra-peritoneal gastric content, a severe fibrinosuppurative peritonitis, impaction of left ventral colon and moderate ulceration of squamous portion of stomach adjacent to margo plicatus.
- One case had a small intestinal volvulus with strangulation and ischaemic necrosis of a 2.5-metre segment of jejunum and ileum. There was also a heavy ascarid infestation in the small intestine.
- One case had moderate to severe segmental ulcerative necrotising and suppurative to pyogranulomatous lymphoplasmacytic enteritis, typhlitis and colitis, with multifocal haemorrhagic plaques and marked gastric reflux.

HEPATIC

One case was reported:

- One case of haemoabdomen due to a ruptured hepatocellular adenoma. The case also had a paravertebral histiocytic sarcoma.

RESPIRATORY

One case was reported:

- One case of aspiration pleuropneumonia secondary to an oesophageal obstruction (choke) with severe necrotising haemorrhagic bronchopneumonia, pleural abscessation and fibrinosuppurative to haemorrhagic pleural effusions. In addition, the case had thrombophlebitis of left jugular vein and was pregnant.

International Collating Centre

ICC 2024 Q1 SHORT REPORT

The International Collating Centre (ICC) 1Q 2024 report has been circulated to subscribers. A short summary is presented below with the full version available online (https://equinesurveillance.org/iccview/resources/202401summ.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 Q1

257 reports issued
averaging 4 reports per working day

RESPIRATORY CONDITIONS (145 reports)

EHV-1
(n= 21)

FR DE NL

SE UK USA

EHV-4
(n= 31)

FR NL CH

UK USA

STRANGLES
(n= 87)

CA FR DE USA

NL SE CH

EHV *UNSPECIFIED*
(n= 1)

USA

EQUINE INFLUENZA
(n= 2)

CA UK

RHODOCOCCUS EQUI
(n= 3)

FR NL

REPRODUCTIVE CONDITIONS (33 reports)

EHV-1
(n= 28)

FR DE NL

JP SE UK

EHV-4
(n= 2)

UK JP

S. ZOOEPIDEMICUS
(n= 2)

BE FR

SALMONELLOSIS
(n= 1)

JP

GASTROINTESTINAL CONDITIONS (22 reports)

CORONAVIRUS
(n= 11)

NL CH USA

SALMONELLOSIS
(n= 8)

CA NL CH

ROTAVIRUS
(n= 1)

FR

RHODOCOCCUS EQUI
(n= 2)

FR

NEUROLOGICAL CONDITIONS (38 reports)

EHV-1
(n= 32)

BE FR CA

NL SE USA

RABIES
(n= 2)

USA

EEE
(n= 1)

USA

EEV
(n= 1)

ZA

WNV
(n= 1)

USA

HALICEPHALOBUS
(n= 1)

CA

MISCELLANEOUS CONDITIONS (18 reports)

EIA
(n= 8)

BE CA DE

HU USA

CORONAVIRUS
(n= 1)

NL

EGS
(n= 1)

UK

VESICULAR STOMATITIS
(n= 1)

USA

GLANDERS
(n= 1)

IQ

AHS
(n= 1)

ZA

PIROPLASMOSIS
(n= 5)

IE NL ZA

International Collating Centre

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

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- Animal and Plant Health Agency
- 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
- Idexx Laboratories
- Liphook Equine Hospital
- MBM Veterinary Group
- 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 Liverpool
- 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
Website: www.equinesurveillance.org

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