

AHT / BEVA / DEFRA Equine Quarterly Disease Surveillance Report



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Highlights in this issue:

- News Article – Actions and guidelines on the expected temporary non-availability of Equip Artervac EVA vaccine
- Update on EIA in Europe
- Focus Article – Recent experience of control and disease clearance after neurological EHV-1 in the United Kingdom

Important 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 Great Britain.

Table of contents

INTRODUCTION	3
CURRENT NATIONAL AND INTERNATIONAL DISEASE OUTBREAKS DURING OCTOBER 2017	3-5
- NATIONAL DISEASE OCCURRENCE	3
- INTERNATIONAL DISEASE OCCURRENCE	3-5
NEWS ARTICLE	
- ACTIONS AND GUIDELINES ON THE EXPECTED TEMPORARY NON-AVAILABILITY OF EQUIP ARTERVAC EVA VACCINE	6
VIROLOGY DISEASE REPORT: THIRD QUARTER 2017	7-12
- NATIONAL VIRAL DISEASE OCCURRENCE	8
- INTERNATIONAL VIRAL DISEASE OCCURRENCE	9-12
FOCUS ARTICLE: UK EXPERIENCE OF CONTROL AND DISEASE CLEARANCE AFTER NEUROLOGICAL EHV-1	13-15
BACTERIOLOGY DISEASE REPORT: THIRD QUARTER 2017	16-17
- INTERNATIONAL BACTERIAL DISEASE OCCURRENCE	17
TOXIC AND PARASITIC DISEASE REPORT: THIRD QUARTER 2017	18-19
- GRASS SICKNESS SURVEILLANCE DATA	19
REPORT ON POST MORTEM EXAMINATIONS: THIRD QUARTER 2017	20-21
EAST ANGLIA	20
HOME COUNTIES	20-21
SCOTLAND	21
SOUTHERN ENGLAND	21
NORTHERN IRELAND	21
ACKNOWLEDGEMENTS	22

Introduction

Welcome to the third quarterly equine disease surveillance report for 2017 produced by Department for Food, Environment and Rural Affairs (Defra), British Equine Veterinary Association (BEVA), Animal & Plant Health Agency (APHA) and the Animal Health Trust (AHT).

The national disease data is collated through multiple diagnostic laboratories and veterinary practices throughout the United Kingdom, providing a more focused insight to the prevalence 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.

Current national and international disease outbreaks since 1st October 2017

National Disease Occurrence

EQUINE HERPES VIRUS–4 (EHV-4) RESPIRATORY DISEASE

The Animal Health Trust (AHT) confirmed two separate cases of EHV-4 respiratory disease, of which one occurred on in Wales and the other in England. The positive diagnoses were confirmed by qPCR on nasopharyngeal swabs.

EQUINE INFLUENZA (EI)

The AHT confirmed a single case of EI in a horse of unknown vaccination status in south east England. The positive diagnosis was confirmed by qPCR on a nasopharyngeal swab.

International Disease Occurrence

CONTAGIOUS EQUINE METRITIS (CEM)

France

On 20 November 2017, Réseau d'Epidémiologie-Surveillance en Pathologie Equine (RESPE) reported a confirmed case of contagious equine metritis (CEM) on a premises in Saone-et-Loire, France. The subclinical infection was detected based on bacteriology on a pre-export genital swab taken from a yearling Thoroughbred filly and was confirmed by the national reference laboratory on 27 October 2017. The filly had never been bred and the cause of the infection remains unknown to date. A second sample was taken before treatment of the infected animal was started this returned a negative result. Treatment of the affected filly has been completed whilst she was isolated and in accordance with the rules of the Studbook.

EASTERN EQUINE ENCEPHALITIS (EEE)

Canada

The Ontario Ministry of Agriculture, Food and Rural Affairs has confirmed a case of EEE in an unvaccinated 19-year-old mixed breed mare, 11 months pregnant, in the district of Muskoka. The mare presented with muscle tremors, weakness of the hind quarters leading to recumbency. She had to be euthanased.

USA

Cases of EEE have been confirmed in the seven states of Florida, Michigan, New Jersey, New York, North Carolina,

South Carolina and Wisconsin during October 2017, with the majority of cases being in non-vaccinated horses that required euthanasia.

EQUINE HERPES VIRUS-1 (EHV-1) NEUROLOGICAL DISEASE

France

On 23 October 2017, RESPE reported a single case of EHV-1 neurological disease on premises in Calvados, France. A non-vaccinated six-year-old male French Saddlebred sports horse presented with signs of fever, lethargy and ataxia on 19 October 2017. The positive diagnosis was confirmed by PCR on a nasopharyngeal swab by LABEO-Frank Duncombe, Normandy.

USA

The Kentucky Department of Agriculture confirmed a single case of EHV-1 neurological disease in a Thoroughbred mare at a training facility in Oldham County, Kentucky. The horse presented with acute neurological signs and was euthanased. Strict quarantine restrictions have been imposed on the affected premises.

The New Jersey Department of Agriculture confirmed the disease in a 25-year-old Quarter Horse in Warren County, which was euthanased on 2 November. There are other horses on the premises that were exposed to the index case as well as other horses at a New Jersey horse show that were also potentially exposed. The affected premises is under quarantine restrictions and every effort is being made to minimise the risk of spread of infection. Trace backs were being conducted with respect to all potentially exposed horses.

EHV-1 neurological disease was also reported in November involving a 12-year-old mare from Coos Bay, Oregon. The affected animal was in a stable condition and in isolation in the large animal clinic at Oregon State University.

EQUINE HERPES VIRUS-4 (EHV-4) RESPIRATORY DISEASE

France

During October and November 2017, RESPE reported six separate individual cases of EHV-4 respiratory disease on premises in Calvados (2 premises), Charente, Ille-et-Vilaine, Orne and Pyrenees-Atlantiques,, France. The positive diagnoses were all confirmed by PCR on nasopharyngeal swabs by LABEO-Frank Duncombe, Normandy.

EQUINE INFECTIOUS ANAEMIA (EIA)

Canada

The Canadian Food Inspection Agency reported two cases of EIA, on two separate premises in Alberta. One case had been sampled to comply with export conditions and was clinically normal, whereas the other exhibited clinical signs consistent with EIA, dying shortly after being sampled. Quarantine restrictions have been imposed on both premises and any on-premises contacts are being followed up.

USA

EIA was confirmed in horses in the three states of Kansas, Montana and Tennessee during October 2017. Quarantine has been imposed on the premises and additional testing of other horses on the facilities is underway. In Kansas two horses that had previously tested seronegative for EIA were confirmed positive and were euthanased, having been maintained on the premises since 11 August when the facility was first placed under official quarantine.

EQUINE PIROPLASMOSIS (*Babesia caballi* and *Theileria equi*)

Croatia

On 21 November 2017, the World Organisation for Animal Health (OIE) reported a case of equine piroplasmosis on premises south west of Zagreb in Croatia. A single fatal clinical case was reported among 38 animals on a premises in the municipality of Krasic and the positive diagnosis was made based on post mortem examination and positive real time PCR for both (*B. caballi* and *T. equi*) on 14 November 2017 by the Croatian Veterinary Institute. This is the first reported clinical occurrence of equine piroplasmosis in Croatia since 2001.

PIGEON FEVER (*Corynebacterium pseudotuberculosis*)

USA

The Washington State Department of Agriculture has issued a report of *Corynebacterium pseudotuberculosis* infection (Pigeon Fever) in three horses near the towns of Duvall and Carnation in King County. The affected animals include a 15-year-old Paint gelding, a 14-year-old Haflinger-cross gelding and a 25-year-old Tennessee Walking Horse mare. Biosecurity and treatment measures are currently under veterinary supervision. A voluntary hold order is in place.

POTOMAC HORSE FEVER (Equine Neorickettsiosis)

USA

Two cases of Potomac Horse Fever were diagnosed in horses in Lewis County, Washington State. Clinical signs were reported on 18 October. One of the affected animals had to be euthanased; the other is still receiving treatment.

WEST NILE VIRUS (WNV)

Canada

Since 19 October, three cases of WNE have been diagnosed in Ontario, Canada. The trio included a filly, a gelding and a mare located in Oxford, Frontenac and the Regional Municipality of Halton. Ages ranged from two to 11 years. Clinical signs varied from weakness of the hind quarters, muscle fasciculations, hyperesthesia and ataxia. All three animals are recovering under veterinary supervision. One horse had been vaccinated annually since it was two years old, one had not been vaccinated for three years, and the final horse was unvaccinated. These latest cases bring the annual number of cases of WNE in Ontario in 2017 to 21.

Portugal

On 9 October 2017, the World Organisation for Animal Health (OIE) reported a confirmed single clinical case of WNV infection in a horse in the Alcacer do Sal area of Alentejo region of south west Portugal. The positive diagnosis was made using serum IgM-capture ELISA by the National Institute for Agrarian and Veterinary Research. WNV had last been confirmed in Portugal in November 2016 and control measures including ongoing surveillance, vector control and adoption of voluntary vaccination have been implemented in the affected area.

USA

During October and November 2017 WNV was confirmed in horses in 14 states, including Delaware, Georgia, Idaho, Kentucky, Michigan, Minnesota, New Jersey, New York, Ohio, Oklahoma, South Carolina, Tennessee, Utah and Wisconsin, with many affected animals either having not been vaccinated or their vaccination had lapsed.

FOCUS ARTICLE

In this report we are pleased to include a focus article from the AHT's Camilla Strang and Richard Newton on using laboratory testing in control and disease clearance after neurological EHV-1 was confirmed on premises in the UK.

We reiterate that the views expressed in this focus article are the author's own and should not be interpreted as official statements of APHA, BEVA or the AHT.

Access to all of the equine disease surveillance reports can be made on a dedicated page on the recently updated AHT website at: http://www.aht.org.uk/cms-display/DEFRA_AHT_BEVA_equine_reports.html or via the BEVA website: <https://www.beva.org.uk/Home/News-Views/Latest-News>

We would remind readers and their colleagues that a form is available on the AHT website for registration to receive reports free of charge, via e-mail, on a quarterly basis. The link for this registration form is available via: http://www.aht.org.uk/cms-display/equine_disease_registration.html

News Article – Actions and guidelines on the expected temporary non-availability of Equip Artervac EVA vaccine

Veterinary vaccine manufacturer Zoetis has warned of supply problems with its equine viral arteritis (EVA) vaccine, Equip Artervac, which will lead to an as yet undetermined interval in supply after their currently available batch expires on 26th November 2017. This will result in vaccinated stallions and teasers effectively 'lapsing' at six months after their last vaccination if Artervac is not available for the next recommended six-monthly booster dose. In August 2017, the Thoroughbred Breeders' Association advised their members to booster vaccinate or complete a primary vaccine course before 26th November 2017, any stallions/teasers that will be covering/teasing in 2018.

Attending veterinary surgeons will need evidence to satisfy them that lapsed vaccinated stallions and teasers were seronegative before first vaccination (recorded in the horse passport) and that post-vaccination seropositivity, when lapsed, is associated with vaccination and not due to possible challenge by EAV infection. Suspicion of challenge by EAV infection would require notification to Defra/APHA under the terms of the Equine Viral Arteritis Order 1995, with the stallion/teaser being officially investigated to determine whether they are shedding EAV in their semen.

It is recommended that in addition to routine annual Code of Practice blood sampling, **serial blood samples (clotted blood) are collected from vaccinated stallions during the period when Equip Artervac vaccine is not available** to provide boosters and that the separated sera from these serial blood samples are tested alongside each other once it becomes clear that Equip Artervac will be available again. Results which show evidence of stable/declining virus neutralising antibody levels (VN antibody titres) against the virus during the period without vaccination should be considered consistent with absence of exposure to EAV infection during that period.

For stallions and teasers last vaccinated in November 2017, the routine January 2018 blood sample should represent the approximate peak post-vaccine VN antibody response from which subsequent antibody levels would follow and be able to be assessed as stable/declining. It is suggested that further samples are taken at approximately 6 month intervals thereafter (so in July 2018 and then January 2019 and in that pattern until Equip Artervac is again available). When Equip Artervac is available again, a final blood sample should be taken at the same time that the stallion resumes vaccination.

In order to assist with careful collation of serum samples, the Animal Health Trust (AHT) has agreed that it will receive, process and store serial samples from stallions as part of this scheme. **All samples need to be clearly labelled with the name of the stallion, the stud farm and/or owner, the date that the sample was collected and the name of the veterinary surgeon and practice that collected it. Samples should be submitted to the AHT using a dedicated submission form** specifically designed for this purpose and which can be printed as required (download from http://www.aht.org.uk/skins/Default/pdfs/Artervac_Form_v2.pdf). Dates of vaccination must be recorded in horse passports.

Stallions 'shuttling' to the 2017/18 and 2018/19 southern hemisphere seasons will have further issues regarding 'lapsed' vaccinations and it is recommended that involved stallion owners and managers discuss with their veterinary surgeons the specific implications on the basis of individual stallions' circumstances. These issues may be more difficult to predict and resolve as government to government discussions may be required with individual countries involved and we cannot currently confirm if or when this might happen.

Table 1: Program for monitoring Equip Artervac vaccinated stallions and teasers whose EVA vaccination status will inevitably 'lapse' as six-monthly boosters will not be available during 2018

Timeline	Action
Before November 26 th 2017	Booster vaccinate or complete primary course with Equip Artervac
January 2018	Clotted blood sample sent to AHT with AHT form for Codes of Practice requirements and storage
July 2018	Clotted blood sample sent to AHT with AHT form for storage
January 2019	Clotted blood sample sent to AHT with AHT form for Codes of Practice requirements and storage
July 2019 (if supplies of Equip Artervac are still not available)	Clotted blood sample sent to AHT with AHT form and storage
When Equip Artervac becomes available again	Re-vaccinate and (at the same time) send clotted blood sample to AHT with AHT form for testing alongside previously stored samples

VIROLOGY

disease report for the third quarter 2017

The results of virological testing for July to September 2017 are summarised in Table 1 and include data relating to Equine Viral Arteritis (EVA), Equine Infectious Anaemia (EIA) and West Nile Virus (WNV) from the Animal & Plant Health Agency (APHA), Weybridge. The sample population for the APHA is different from that for the other contributing laboratories, as the APHA's tests are principally in relation to international trade (EVA, EIA and WNV). APHA now also provides testing for WNV as part of clinical work up of neurological cases, to exclude infection on specific request and provided the local regional APHA office has been informed. No equine viral notifiable diseases have been confirmed in the UK during this third quarter of 2017.

Table 1: Diagnostic virology sample throughput and positive results for the third quarter of 2017

	Number of Samples Tested	Number Positive	Number of Contributing Laboratories
Serological Tests			
EVA ELISA	732	41	5
EVA VN	158	46 [#]	4
APHA EVA VN	661	6 [#]	1
EHV-1/-4 CF test	252	10 [*]	4
EHV-3 VN test	3	1	1
ERV-A/-B CF test	52	1 [*]	1
Influenza HI test	127	0	6
EIA (Coggins)	181	0	5
EIA ELISA	374	0	6
APHA EIA (Coggins)	1686	0	1
APHA WNV (cELISA)	1	0	1
Virus Detection			
Coronavirus PCR	13	0	7
EHV-1/-4 PCR	614	59	6
EHV-2/-5 PCR	48	15	1
Influenza NP ELISA	0	0	4
Influenza Directigen	0	0	4
Influenza PCR	196	1	6
APHA Influenza PCR	259	0	1
Influenza VI in eggs	0	0	0
EHV VI	18	9	1
EVA VI/PCR	0	0	0
APHA EVA VI/PCR	7	0	1
Rotavirus	37	1	7

ELISA = enzyme-linked immunosorbent assay, VN = virus neutralisation, CF = complement fixation, HI = haemagglutination inhibition, Coggins = agar gel immune diffusion test, PCR = polymerase chain reaction, NP = nucleoprotein, VI = virus isolation, EVA = equine viral arteritis, EHV = equine herpes virus, ERV = equine rhinitis virus, EIA = equine infectious anaemia, WNV = West Nile Virus, # = Seropositives include vaccinated stallions, * = Diagnosed positive on basis of seroconversion between paired sera

Time period: 1st July to 30th September 2017

EQUINE HERPES VIRUS-4 (EHV-4) RESPIRATORY DISEASE

On 3 July, the Animal Health Trust (AHT) confirmed a single case of EHV-4 respiratory disease among a group of 15 animals on a premises in Ayrshire, Scotland. The affected animal was a non-vaccinated five-year-old Cob gelding that presented with pyrexia, profuse nasal discharge and lymphadenopathy on 30 June 2017.

On 18 July 2017, the AHT confirmed a case of EHV-4 respiratory disease on different premises in Ayrshire, Scotland. The affected animal was a non-vaccinated 10-year-old Irish Sport Horse that presented with profuse serous nasal discharge and lymphadenopathy on 14 July 2017, having been dull and lethargic one week prior to onset of signs. This horse was in contact with six other animals that had shown signs of conjunctivitis.

On 25 July 2017, the AHT confirmed a case of EHV-4 respiratory disease on premises in West Yorkshire, England. The affected animal was a non-vaccinated yearling filly that presented with mucopurulent nasal discharge, inappetence and lymphadenopathy on 21 July 2017. This horse was in contact with three other animals of which two had presented with profuse watery nasal discharge.

On 20 September 2017, the Animal Health Trust (AHT) confirmed five cases of EHV-4 respiratory disease on a stud premises in Hertfordshire, England. Four of these cases had co-infection with *Streptococcus zooepidemicus* and the affected animals were among a group of six that were not vaccinated and ranged in age between eight-months and two-years-old. Presenting clinical signs included coughing, nasal discharge, lymphadenopathy and pyrexia.

For all of the above cases, the positive diagnoses were confirmed by qPCR on nasopharyngeal swabs.

EQUINE INFLUENZA (EI)

On 18 September 2017, the AHT confirmed a case of EI with *Streptococcus zooepidemicus* co-infection on a premises in Northumberland, England. The affected animal was a six-year-old non-vaccinated Irish Draft that had recently been imported and presented with nasal discharge and pyrexia before recovering. There were 20 other vaccinated animals on the premises, none of which showed clinical signs of respiratory disease. The positive viral and bacterial diagnoses were confirmed by qPCR on a nasopharyngeal swab.

HBLB Surveillance Scheme

This surveillance scheme has been set up to monitor genetic and antigenic changes in equine influenza viruses circulating in the UK. It is sponsored by the HBLB enabling free advice and diagnostic testing on equine influenza to be provided.

Online resources: if you would like more information regarding outbreaks of equine influenza virus or would like to sign up for our surveillance scheme, please contact: equiflunet@aht.org.uk or follow the link to www.equiflunet.org.uk for more information on equine influenza.

Influenza Tell-Tail Alert

In the case of an outbreak, notification will be reported by the text alert service (Tell-Tail) for UK equine practitioners sponsored by Merial Animal Health. This free of charge service alerts practitioners to outbreaks of equine influenza in the UK via text message.

EHV-1 Tell-Tail Alert

Tell-Tail alerts have expanded to include notifications of EHV-1 Neurological Disease and EHV-1 Abortion. Equine veterinary practitioners can sign up for this scheme by registering at the following website <http://www.merial.co.uk>. This service has also been offered to the members of the National Trainers Federation (NTF)

Time period: 1st July to 30th September 2017

AFRICAN HORSE SICKNESS (AHS)

Swaziland

On 21 July 2017, the World Organisation for Animal Health (OIE) reported a case of AHS on a premises in Hhohho region, Swaziland. This index case presented with clinical signs on 7 July 2017 and was among a group of 24 susceptible animals. The case was a two-year-old gelding that had recently arrived from a premises in the eastern part of Swaziland. The population consisted of Warmblood competition horses and a few Thoroughbreds that were managed as free range during the day and stabled between 3pm and 9.30am. The affected stable had an AHS vaccination and insect vector control programme. Control measures implemented included movement restrictions within the country, quarantine, vector control and surveillance on the premises that this animal originated from. The positive diagnosis was confirmed by PCR by Onderstepoort Veterinary Institute, South Africa (OIE Reference Laboratory) on 14 July 2017. The OIE declared the incident resolved as of 31 August 2017.

EASTERN EQUINE ENCEPHALITIS (EEE)

USA

Between 1 July and 30 September 2017, EEE was confirmed in 39 horses located in six states, many of them in Wisconsin.

EQUINE HERPES VIRUS-1 (EHV-1) NEUROLOGICAL DISEASE

USA

In August 2017 the Virginia Department of Agriculture quarantined a premises in Culpeper, Virginia, after a horse was confirmed with EHV-1 neurological disease. The affected horse was moved from the index premises to a local veterinary hospital after the development of neurological signs on 11 August 2017. The horse was placed in isolation on arrival and received supportive care. On 14 August, a second horse on the index premises developed pyrexia and neurological signs and after EHV-1 infection was confirmed was subsequently euthanased. On 16 August 2017 a third case was confirmed in an animal that developed pyrexia and tested positive for the neuropathogenic strain of EHV-1. The premises remained under quarantine until 6 September 2017.

In early September the Virginia Department of Agriculture confirmed a diagnosis of EHV-1 neurological disease on a second premises in Virginia, that was not linked to the previous outbreak. Four animals developed neurological signs with two testing positive for EHV-1 and subsequently being euthanased. The premises were placed under quarantine with animals being monitored twice daily for the development of pyrexia.

Germany

EHV-1 neurological disease was confirmed in four horses on one premises during the third quarter of 2017, with the positive diagnoses confirmed by PCR nasopharyngeal swabs.

EQUINE HERPES VIRUS-1 (EHV-1) RESPIRATORY DISEASE

Belgium

On 27 July 2017, Equi Focus Point, Belgium (EFPB) reported a case of EHV-1 respiratory disease with EHV-2 co-infection in Ghent, Belgium. The affected animal was noted with loss of condition and dyspnoea on 13 July 2017 with an incomplete vaccination record. The positive diagnosis was made on 14 July 2017 by PCR on a nasopharyngeal swab.

On 22 September 2017, EFPB reported a further case of EHV-1 respiratory disease in the Ghent region, Belgium. The affected animal was not vaccinated and presented with lymphadenopathy, nasal discharge and coughing on 20 September 2017. The positive diagnosis was confirmed on 21 September 2017 by PCR on a nasopharyngeal swab.

EQUINE INFECTIOUS ANAEMIA (EIA)

Canada

Between 1 July and 30 September 2017, there were a total of 14 EIA positive horses identified in the provinces of Alberta (two horses) and Manitoba (12 horses). The positive animals were located on seven separate premises, Alberta (two premises) and Manitoba (five premises). One of the Alberta cases was epidemiologically linked to a previously identified clinical case and the other was identified during export testing. Twelve of the 14 positive Manitoba animals were identified during pre-entry testing for events. The remaining two were found as a result of 45-day follow-up testing on one of the affected premises. No clinical signs were noted at the time of sampling for any of the positive cases.

Germany

During July 2017 three new outbreaks of EIA were officially confirmed on three premises; one in Kreis Pinneberg, Schleswig-Holstein and two in Willich, Kreis Viersen, North Rhine-Westphalia. Animals on the affected premises in Schleswig-Holstein had been officially screened due to their in-contact status of earlier outbreaks in June in Hamburg. Official investigations on a further 19 premises in the Federal State of Schleswig-Holstein in response to the outbreaks in Hamburg revealed no positive test results for EIA.

On 10 August 2017, a further outbreak of EIA was confirmed in Engen-Anselfingen, Landkreis Konstanz, Germany, in two leisure horses on a single premises after suspicious clinical signs had been observed in one of the horses. The source of the outbreak was not known, although epidemiological links to the other recent outbreaks in Germany and neighbouring EU countries were being investigated.

On 23 August 2017, the OIE reported two further outbreaks of EIA on separate premises in the Baden Wurttemberg region, Germany. On one premises containing 12 susceptible animals, two cases were confirmed. On the second premises containing 17 susceptible animals, a single EIA case was confirmed. The positive diagnoses were confirmed on the 10 and 17 August 2017 using the Coggins (AGID) test at the Freidrich-Loeffler Institute, the National Institute for Animal Health, Germany.

For all outbreaks, regional veterinary authorities have established a restricted area around all affected premises. Officially confirmed seropositive animals have been euthanased. All horses and other equines within the restricted areas within a radius of approximately one kilometre around all affected premises, are being investigated clinically and serologically for EIA, under the Animal Disease Regulations in Germany. The veterinary authority have advised that a lifting of the restrictions will only be possible after three months, preceded by re-examination and negative serological results of all horses within the restricted areas.

Macedonia

On 18 July 2017, the OIE reported four clinical cases of EIA on a premises in the Kumanovov region, Macedonia. These were the first cases of EIA in Macedonia since 2004 with 10 susceptible animals on the premises with the confirmed cases. The source of the infection in these cases was not known, but control measures including euthanasia, movement restrictions, tracing, quarantine and surveillance were implemented. The positive diagnoses were confirmed by Coggins (AGID) tests on 17 July 2017 by the Faculty of Veterinary Medicine, Macedonia.

Netherlands

On 4 July 2017, the OIE reported a case of EIA in Utrecht, Netherlands. There were 63 susceptible animals on the affected premises. The source of the outbreak was not known, but control measures including movement restrictions, quarantine and surveillance were implemented throughout the country. The positive diagnosis was confirmed by a Coggins (AGID) test on 3 July 2017 by Wageningen Bioveterinary Research Laboratories, Lelystad.

Spain

On 18 July 2017, the OIE reported two subclinical cases of EIA had been identified on a premises near Candeleda, in the province of Avila in the autonomous community of Castile and Leon of Spain; the first cases of EIA in Spain since 1983. There were 32 susceptible animals on the premises with the confirmed cases. The source of the infection in

these cases was not known, but control measures including tracing, quarantine and selective killing and disposal of positive animals have been implemented. The positive diagnoses were confirmed by positive antibody ELISA and Coggins (AGID) tests on 18 July 2017 by the Central Veterinary Laboratory, Algete, Madrid.

Switzerland

On 11 July 2017, the OIE reported a case of EIA in Mülligen, Switzerland. The affected animal was a clinically healthy 13-year-old gelding, detected as seropositive on surveillance and subsequently euthanased. This animal was imported to Switzerland in 2014, with a passport issued in Belgium. There were 64 susceptible animals on this premises containing the confirmed case, all of which tested negative on initial sampling, with official results pending. The source of the outbreak was not known, but control measures including movement restrictions throughout the country and quarantine and surveillance within the containment zone were implemented. The positive diagnosis was confirmed by a Coggins (AGID) test on 7 July 2017 by the Institute for Virology and Immunology, Bern.

USA

On 29 August 2017, the Kansas Department of Agriculture Division of Animal Health (KDA-DAH) confirmed two EIA positive cases, one located in Finney County and the other in Kearny County. Both premises were placed under quarantine with all other animals on the sites tested. Five additional positive EIA horses were identified on the Finney County premises with all the positive horses euthanased and the remaining animals at the facility due to be retested after 60 days.

On 25 August 2017, a 14-year-old female mule in Johnston County, North Carolina was confirmed with EIA. The infection was discovered through routine blood test by the North Carolina Veterinary Diagnostic Laboratory in Raleigh and confirmed by the USA Department of Agriculture. This was the first new case of EIA documented in North Carolina since 2005. The affected animal was euthanased and the premises placed under quarantine. The remaining animals at the facility were negative on initial screening for EIA and monitored and re-tested in 60 days by the North Carolina Department of Agriculture and Consumer Services. Neighboring facilities are also being monitored for the infection.

EQUINE INFLUENZA (EI)

Israel

On 17 July 2017, the World Organisation for Animal Health (OIE) first reported EI across Israel. By 10 August 2017 a total of eight outbreaks with 77 cases had been confirmed amongst a susceptible population of 185 animals on multiple premises. A febrile disease was reported in mid-June, leading to further investigations, including the collection of nasal swabs and blood from affected animals. The source of the outbreak was not known, but control measures including movement restrictions throughout the country, vaccination, quarantine and surveillance within affected areas have been implemented. The initial positive diagnosis of the H3N8 strain was confirmed by PCR on 26 June 2017 by the Kimron Veterinary Institute, Israel. A further positive diagnosis was confirmed by PCR on 7 July 2017 by the Irish Equine Centre, Ireland (an OIE reference laboratory). EI has not occurred in Israel since November 2013.

Japan

In September 2017 details emerged that in late March 2017, the Animal Quarantine Service of Japan diagnosed 114 stock horses imported from Canada as positive for EI. The results were confirmed by rapid antigen detection tests and PCR. Florida sublineage Clade 1 viruses of the H3N8 subtype were isolated from some of the affected animals. All of the imported horses had received two vaccinations with a five-week interval between doses and the second vaccination administered 10 days prior to departure. The vaccines used included the old American lineage strain, A/equine/Kentucky/1/1997. One hundred and four out of the 114 horses showed EI associated clinical signs, namely pyrexia and/or nasal discharge. Five horses died in the quarantine period though the remaining infected animals recovered shortly. The 109 horses including the horses that had shown clinical signs retested negative by PCR 14 days after the first positive diagnosis and were subsequently released from quarantine.

HENDRA VIRUS

Australia

Between 9 July and 6 August 2017 New South Wales (NSW) Department of Primary Industries (DPI) reported three cases of Hendra virus on three separate premises; two near Lismore and one near Murwillumbah, all in northern NSW, Australia. None of the affected animals were vaccinated against Hendra virus and all three initially presented as lethargic and not eating properly before deteriorating over the coming days and requiring euthanasia. All positive diagnoses were confirmed by the DPI Elizabeth Macarthur Agricultural Institute, NSW, based on samples collected pre-mortem by attending veterinary surgeons. Further information on Hendra virus can be found at <http://www.aht.org.uk/skins/Default/pdfs/defraapr-june2014focus.pdf>.

RABIES

USA
The Minnesota Board of Animal Health reported a case of rabies in a horse in Benton County that started showing clinical signs on 18 July 2017 that included recumbency, facial spasms, low-grade fever and ataxia. The owner elected to euthanase the horse after it failed to respond to treatment.

In August 2017 the North Carolina Department of Agriculture and Consumer Services confirmed that a horse in Polk County had contracted rabies. The affected animal was an unvaccinated 25-year-old Haflinger that showed rapid onset of clinical signs and died shortly after being isolated.

WEST NILE VIRUS (WNV)

Canada
On 21 August 2017, the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) was notified of two positive test results for WNV; one from a 10-year-old gelding in Simcoe County and the other from a 25-year-old mare in Bruce County. The Simcoe County gelding was euthanased after developing severe neurological signs and seizures. The mare developed severe neurological deficits in all four limbs as well as facial hyperaesthesia and is recovering under veterinary supervision.

On 22 August 2017 a three-year-old Quarter horse gelding was diagnosed with WNV on a premises in Jaffray County, British Columbia. The horse presented with twitching ears and muzzle, head tilt, proprioceptive deficits, hypermetric gait, hyperesthesia, and unable to turn in a tight circle.

On 27 August 2017, another case of WNV was reported in Bruce Country, Ontario. The affected animal was an unvaccinated four-year-old Quarter Horse mare that developed mild neurological signs and received veterinary treatment.

Between 28 and 30 August 2017 OMAFRA confirmed four cases of WNE on premises within the Algoma District and Simcoe, Niagara and Frontenac Counties. Three cases exhibited severe neurological signs and were euthanased. One had mild neurological signs and were recovering under veterinary supervision. Two of the severe cases were unvaccinated and the remaining cases had not received a WNV vaccination this year.

Greece
On 1 August 2017, the OIE reported seven outbreaks of sub-clinical WNV infection on premises in the Argolida region, Greece. The positive diagnoses were confirmed by IgM capture ELISA on 27 July 2017 by the Department of Molecular Diagnostics at the Directorate of Athens Veterinary Centre.

USA
A total of 135 cases were diagnosed in 15 states in the third quarter 2017, with two thirds of the cases recorded in September 2017. The majority of cases had either not been vaccinated or had an unknown vaccination history.

Further details on all the above and subsequent outbreaks can be found at <http://www.aht.org.uk/cms-display/international-breeders-meeting.html>.

FOCUS ARTICLE

Recent experience of control and disease clearance after neurological EHV-1 in the United Kingdom

Camilla Strang and Richard Newton, Epidemiology and Disease Surveillance, Animal Health Trust

Virus classification: Genus: Varicellovirus Family: Herpesviridae Group: I, double-stranded DNA

Transmission: EHV-1 is contagious and is spread by direct horse-to-horse contact, indirectly by contaminated hands, equipment and tack, and probably through aerosolisation of the virus within enclosed environments.

Clinical signs: Fever, nasal discharge and coughing in the respiratory form of the disease. Abortion, stillbirth and early neonatal death in pregnant mares. Weakness, inco-ordination, ataxia, paralysis and difficulty urinating and defaecating may be seen in the neurological form.

Laboratory diagnosis: RT-PCR assay on nasal swabs, fetal, placental and/or CNS tissues; immunohistochemistry on fetal, placental and/or CNS tissues; paired serology using CF test and elevated CF antibodies in neurological cases in absence of recent EHV vaccination

Geographic distribution: Endemic and worldwide with the exception of Iceland

Control: Movement restrictions, biosecurity and hygiene measures and laboratory clearance as outlined in HBLB Code of Practice (<http://codes.hblb.org.uk/index.php/page/32>)

Notifiable: Not in the United Kingdom

Zoonotic Risk: None recognised

Disease confirmation, notification and investigation

On 31 May 2017 the Animal Health Trust (AHT) was informed of a case of EHV-1 neurological disease on a Thoroughbred racing yard in northern England by the yard's attending veterinary surgeon. The affected animal, a non-vaccinated four-year-old gelding had presented with hindlimb oedema, pyrexia and loss of vision and had been euthanased on 29 May and was sent for post mortem examination. The positive diagnosis was confirmed by Rossdales Laboratories in Newmarket based on a pre-mortem nasopharyngeal swab, and upper respiratory muscosa, lymph node, brain and spinal tissues sampled post-mortem being positive for EHV-1 by qPCR.

The British Horseracing Authority (BHA) were notified and voluntary movement restrictions were immediately initiated to avoid potential viral transmission to other groups of horses. Further advice on outbreak management was provided by the AHT Epidemiology and Disease Surveillance Group. This included the conduct of further diagnostic testing of the remaining horses on the yard in order to initially gauge the existing infectious and exposure status of the population and subsequently to provide firm laboratory based evidence with which to declare disease clearance and safely resume racing activities.

The affected premises contained 122 animals, including the index case and none were vaccinated against EHV-1 and EHV-4. Recommendations made for initial laboratory testing were to blood sample all animals on the premises and measure antibody levels against EHV-1 and EHV-4 using the complement fixation (CF) test. This would gauge the extent of immune response against prior EHV infection among the population as raised CF antibodies, which although cross reacting between EHV-1 and -4 are relatively short lived and would only be attributable to infection and not vaccination in this non-vaccinated population. In addition, nasopharyngeal (NP) swabs for qPCR testing to detect EHV-1, would be collected from horses that had either been in contact with the index case or were found to be or had been displaying any clinical signs of respiratory and/or neurological disease.

Initial findings and infectious risk categorisation

On 2 June 2017, laboratory results indicated serological evidence of widespread EHV exposure amongst the six barns on the yard, with elevated CF test titres ($\geq 1:80$) seen in 64 of the 121 (54%) horses. Forty one (34%) animals had titres of 1:320 to 1:>640, consistent with response to recent infection but the extent of this exposure did vary between different barns based on these initial CF titre levels as illustrated in Table 1. On 13 June, NP swabs were positive for EHV-1 by qPCR for two horses kept in separate barns. Further serological monitoring, now based on CF testing of paired sera, indicated a mixture of stable elevated titres, seroconversions based on fourfold or greater rises in antibody between samples and stable low titres ($\leq 1:40$). The combination of the two diagnostic tests of paired CF serology and qPCR virus detection, indicated there was still some ongoing EHV-1 activity among horses on the premises, despite the absence of clinical signs.

Animals were subsequently categorised by their infectious risk into two groups. Group one horses had low stable titres and were considered as 'risky' negatives/susceptibles on the basis that they may be recently exposed or susceptible to EHV-1 and therefore could act as sources of virus once infected. Group two animals were those with either stable elevated titres or had seroconverted and were considered as exposed and stable and no longer an infectious threat once swabbing had shown that they were not infectious. With this infectious risk categorisation, recommendations were made to take NP swabs for qPCR and bloods for CF test serology from only a minority of group one horses in the four barns where the majority of horses were categorised as group two. In the other two barns where the majority were categorised as group one horses, all animals would continue to be sampled and tested in the same way to monitor for active infection and provide evidence for viral 'burn out'.

Table 1: Summary of initial CF test serology results in 4 of 6 barns on the yard showed variation in evidence of previous EHV-1 exposure (yellow: horses with titre 1:80 or 1:160; orange: horses with titre 1:320-1:>640)

Index barn			Barn 2			Barn 3			Barn 4		
Horse ID	EHV-1 CF	EHV-4 CF	Horse ID	EHV-1 CF	EHV-4 CF	Horse ID	EHV-1 CF	EHV-4 CF	Horse ID	EHV-1 CF	EHV-4 CF
1	20	20	16	10	20	37	10	10	59	80	160
2	20	20	17	640	640	38	80	80	60	5	40
3	10	10	18	10	10	39	40	10	61	10	40
4	10	10	19	320	640	40	20	40	62	10	40
5	>640	640	20	40	160	41	160	160	63	40	20
6	640	640	21	640	320	42	160	80	64	20	80
7	640	320	22	640	320	43	20	20	65	20	40
8	40	20	23	320	160	44	160	160	66	10	10
9	640	320	24	640	320	45	20	20	67	10	20
10	>640	>640	25	>640	640	46	40	20	68	20	40
11	640	80	26	640	320	47	40	40	69	10	40
12	>640	640	27	40	40	48	160	160	70	20	40
13	40	20	28	640	320	49	80	80	71	10	40
14	640	320	29	640	640	50	160	160	72	40	80
15	20	20	30	320	320	51	40	40	73	10	20
			31	640	640	52	80	80	74	0	20
			32	640	160	53	80	80	75	40	40
			33	320	80	54	10	20	76	20	40
			34	160	160	55	160	160	77	20	40
			35	160	160	56	10	20	78	10	20
			36	640	640	57	40	40	79	10	10
						58	10	20	80	320	160
									81	40	40
									82	40	80
									83	20	40
									84	20	20
									85	5	40
									86	20	20

Further serology results obtained on 18 June indicated only three seroconversions, two within the index barn and one within another barn with titres in all other animals being considered stable. One animal, also housed in the index barn was qPCR positive. The three observed seroconversions were expected and consistent with virological monitoring as they occurred in the three horses with positive qPCR results on either 13 or 18 June.

Steps towards resuming racing and final disease clearance

The set of results obtained on 18 June, in conjunction with the continued absence of clinical signs, were interpreted as suggestive of EHV-1 infection 'burn out'. Therefore recommended actions discussed with the BHA were to allow animals from the four barns with no recent evidence of EHV-1 activity to be allowed to resume racing on provision of a negative NP swab for EHV-1 by qPCR taken within 48 hours of racing. Further sampling in the two barns (index and another) with evidence of ongoing EHV-1 activity would continue to complete disease clearance of the premises.

Repeat sampling on 25 June indicated no further evidence of viral activity within the index and other yards. However, a NP swab, taken from an animal due to race, was borderline positive on EHV-1 qPCR, although serology results in this animal indicated previous exposure. As a precautionary measure, this animal was not considered safe to travel, due to the risk of inducing stress and therefore viral shedding. The animal was placed into isolation and returned a negative NP swab qPCR result on 28 June. It remains unknown whether this result was due to viral recrudescence or a separate infection, however if the animal had resumed intense race preparation, it was considered that there may have been an increased risk of recrudescence. All animals continued to be clinically monitored for a further two weeks, and would only leave the premises to race on the basis of negative NP swabs for EHV-1 by qPCR. This action was taken to provide greater assurance to all parties involved and the racing industry that animals on these premises were clear of the EHV-1 that caused neurological disease in the index case.

Conclusions

In conclusion, close cooperation between the BHA, AHT, the attending veterinary surgeon and the racehorse trainer allowed this outbreak to be managed in a proactive and scientifically evidenced manner, with no indication of further spread outside of the affected premises. The combination of repeated CF test serology and sensitive qPCR viral detection provided the means of initially assessing the extent of pre-existing viral activity within this non-vaccinated racehorse population, monitoring ongoing viral activity during the investigation and ultimately demonstrating disease clearance, thereby providing evidence with which to safely resume racing activity with minimal infectious risk being posed to the UK racing network.

BACTERIOLOGY

disease report for the third quarter of 2017

A summary of the diagnostic bacteriology testing undertaken by different contributing laboratories is presented in Table 2. For Contagious Equine Metritis (CEM), all of the 23 HBLB approved laboratories in the UK contributed data. No equine bacterial notifiable diseases have been confirmed in the UK during this third quarter of 2017.

Table 2: Diagnostic bacteriology sample throughput and positive results for the third quarter 2017

	Number of Samples Tested	Number Positive	Number of Contributing Laboratories
CEM (HBLB) PCR	400	0	11
CEMO (HBLB) culture	574	0	23
CEMO (APHA) PCR	9	0	1
CEMO (APHA) culture	1528	0	1
<i>Klebsiella pneumoniae</i> PCR ¹	200	1 #	10
<i>Klebsiella pneumoniae</i> culture ¹	852	2 #	21
<i>Pseudomonas aeruginosa</i> PCR ¹	200	1	10
<i>Pseudomonas aeruginosa</i> culture ¹	891	10	20
Strangles* culture	763	34	11
Strangles* PCR	1519	59	8
Strangles ELISA ²	5268	628	7
Salmonellosis	192	2	14
APHA Salmonellosis ³	4	4	1
MRSA**	372	4	12
<i>Clostridium perfringens</i>	152	4	7
<i>Clostridium difficile</i> (toxin by ELISA or immunochromatography)	166	6	9
Borrelia (by ELISA)	13	3	5
<i>Rhodococcus equi</i> (culture/ELISA/PCR or immunochromatography)	46	1	5
APHA <i>Burkholderia mallei</i> (Glanders)	1019	0	1
<i>Lawsonia intracellularis</i> *** (culture/PCR)	165	64	8

CEM = contagious equine metritis (*Taylorella equigenitalis*), HBLB = HBLB approved laboratories, # = capsule type 1,2,5, Strangles* = *Streptococcus equi*, **MRSA = methicillin resistant *Staphylococcus aureus*, *Lawsonia intracellularis**** = *Lawsonia intracellularis* identified using PCR applied to faeces or serum or Immunoperoxidase monolayer (IPMA) and/or ELISA assay, PCR/culture¹ = reproductive tract samples only, Strangles ELISA² = seropositivity may be attributed to disease exposure, vaccination, infection and carrier states, Salmonellosis³ = 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

Four samples were submitted this quarter to the Animal and Plant Health Agency (APHA) and all of these were positive for *Salmonella*. From the incidents involving isolates typed by the APHA, the serovars/phagetypes reported were *S. Typhimurium* (two samples; both DT40), *S. Agama* (one sample) and *S. Newport* (one sample – fully sensitive). *Salmonella* Typhimurium DT40 is likely to originate from wild birds and *S. Newport* and *S. Agama* are often associated with badgers. For more information from APHA about *Salmonella* in Great Britain, please see the 2015 *Salmonella* in livestock surveillance report <https://www.gov.uk/government/publications/salmonella-in-livestock-production-in-great-britain-2015>.

Time period: 1st July to 30th September 2017

CONTAGIOUS EQUINE METRITIS (CEM)

Germany

CEM was confirmed in 10 Icelandic horses (seven stallions, one gelding and two mares) on five separate premises during the third quarter 2017. Positive diagnoses were confirmed by PCR on genital swabs.

EHRlichiosis

Switzerland

One case of ehrlichiosis was confirmed on 28 July with the diagnoses confirmed by blood smear.

PROLIFERATIVE ENTEROPATHY (Equine Lawsoniosis)

USA

Infection with *Lawsonia intracellularis* was diagnosed based on agent detection in three foals in Kentucky.

POTOMAC HORSE FEVER (Equine Neorickettsiosis)

USA

The University of Kentucky Veterinary Diagnostic Laboratory confirmed 27 cases of Potomac Horse Fever due to infection with *Neorickettsia risticii* in the third quarter 2017.

RHODOCOCCUS EQUI

USA

Rhodococcus equi infection is endemic in the USA, with 27 cases diagnosed during the third quarter 2017.

SALMONELLOSIS

USA

A total of 10 cases of salmonellosis were confirmed in the third quarter 2017, five with serogroup B *Salmonellae* and five with serogroup C3 *Salmonellae*.

TOXIC AND PARASITIC

disease report for the third quarter of 2017

A summary of diagnostic toxicosis and parasitology testing undertaken by contributing laboratories is presented in Tables 3 and 4, respectively. Results for toxicosis are based on histopathologically confirmed evidence of disease only (where applicable).

Table 3: Diagnostic toxicosis sample throughput results for the third quarter 2017

	Number of Samples Tested	Number Positive	Number of Contributing Labs
Grass Sickness	11	7	4
Hepatic toxicoses	23	5	4
Atypical myopathy/Seasonal Pasture Associated Myopathy	0	0	4

Table 4: Diagnostic parasitology sample throughput and positive results for the third quarter 2017

	Number of Samples Tested	Number Positive	Number of Contributing Labs
Endoparasites			
Ascarids	5581	185	20
Cyathostomes	2098	289	14
Dictyocaulus	77	0	2
Strongyles	5596	2041	22
Tapeworms (ELISA based testing) ¹	241	54	11
Tapeworms (Faecal exam)	2735	18	11
Strongyloides	5437	377	17
<i>Oxyuris equi</i>	2708	10	12
Fasciola	590	12	10
Coccidia	603	9	9
Cryptosporidia	46	2	8
<i>Theileria equi</i> (cELISA)	54	2	4
<i>Babesia caballi</i> (cELISA)	54	2	4
APHA <i>Theileria equi</i> (CFT)*	166	5	1
APHA <i>Theileria equi</i> (IFAT)**	208	5	1
APHA <i>Theileria equi</i> (cELISA)***	242	0	1
APHA <i>Babesia caballi</i> (CFT)*	166	2	1
APHA <i>Babesia caballi</i> (IFAT)**	208	1	1
APHA <i>Babesia caballi</i> (cELISA)***	242	0	1
Ectoparasites			
Mites	74	0	11
Lice	41	0	8
Ringworm	118	19	14
Dermatophilus	98	11	10
Candida	118	1	7

* = Complement Fixation Test - CFT suspect/positive samples are tested by IFAT test, ** = Indirect Fluorescent Antibody Test, *** = competitive Enzyme-linked immunosorbent assay - positive cELISA results are not undergoing confirmatory testing, ¹ = all labs refer this test to a non-contributing laboratory

Grass sickness surveillance data

(<http://www.equinegrasssickness.co.uk/>)

The nationwide Equine Grass Sickness surveillance scheme was established in spring 2008 to facilitate the investigation of changes in geographical distribution and incidence of the disease in Great Britain. Data gathered by this scheme is collated in a strictly confidential database.

A total of 10 cases of equine grass sickness (EGS) were reported during the third quarter of 2017 (July – September), of which 40% occurred during July (n=4), 50% in August (n=5) and 10% in September (n=1). Cases were reported in England (80%, n=8) and Scotland (20%, n=2). Out of the 10 cases reported 60% (n=6) of premises reported a prior history of EGS.

The cases comprised of 30% geldings/stallions (n=3) and 70% mares/fillies (n=7), with a median age of 8.5 years (range 2 – 21 years). Affected breeds were Warmbloods (n=2), Cob/Cob cross (n=3) and Cross Breeds (n=4). One horse's breed was not reported.

Out of the 10 cases 30% were diagnosed with acute EGS (n=3), 50% were diagnosed with sub-acute EGS (n=5) and 20% were diagnosed with chronic EGS (n=2), both surviving to date. Diagnostic information was provided for all reported cases, of which the majority (90%, n=9) were diagnosed based on veterinary assessment of clinical signs alone. Two cases underwent a laparotomy; only one case was reported to be confirmed via histopathological examinations of an ileal biopsy sample.

POST MORTEM EXAMINATIONS

report for the third quarter of 2017

The caseload of post-mortem examinations reported below have been obtained from two UK Veterinary Schools and five of the other contributing laboratories to this report.

East Anglia

A total of 19 cases were examined including 7 aborted fetuses and fetal membranes.

Of the aborted fetuses examined, umbilical cord torsion was identified in three cases. In one case there was urachal dilation and placental mineralisation that could be attributable to a hypoxic/ischaemic event secondary to cord torsion, although torsion was not able to be confirmed in this case due to the extent of missing tissue. In another case there was severe autolysis that precluded a definitive diagnosis being made, although infection due to EHV-1 was excluded. In one fetus an abnormal yolk sac remnant was evident with adhesions and entrapment of both the umbilical cord and a hindlimb. The cause of abortion was uncertain in the remaining fetus in which mineralisation of the chorionic villi was evident and may have contributed ischaemic injury through compromised umbilical perfusion.

Two cases of gastrointestinal disease were examined, identifying small intestinal lymphoma and equine grass sickness.

Two cases of hepatic disease were identified, one was in a case of sudden and unexpected death in which multifocal neutrophilic hepatitis was evident representing a suspected acute/peracute septic process and in the other case severe acute to subacute hepatocellular necrosis was identified..

Four musculoskeletal disease cases were investigated, which included severe comminuted fracture of a forelimb proximal phalanx, severe acute fracture of a distal radius, an oblique fracture of the shaft of an ilium with secondary haematoma and infection and one case of laminitis.

One welfare case was examined that pre-mortem had demonstrated clear evidence of severe pain due to bilateral forelimb lameness and in which chronic pathological change, particularly within the navicular bones, was then identified.

Among other cases, severe necrotising fasciitis and myositis of a hindlimb with an associated septic peritonitis was seen in one case from which *S. zooepidemicus* was isolated, a 63XO gonadal dysgenesis was confirmed in one case and yew tree cardiotoxicity was suspected in one case of sudden death.

Home Counties

A total of 19 cases were examined.

Nine cases of gastrointestinal disease were examined, including two cases of fibrinous peritonitis after gastric rupture, two cases of histologically confirmed equine grass sickness, a single case of strangulating lipoma affecting the ileum and diffuse eosinophilic enteritis leading to focal rupture of the ileum. Other cases included one animal with a large caecal burden of *Anoplocephala perfoliata* (tapeworm), another with a colon torsion and associated fibrinous peritonitis and another with acute liver necrosis following presumed exposure to an unidentified toxin.

One multisystemic case was examined in which granulomatous pneumonia, hepatitis, splenitis and lymphadenitis were identified histologically. Although mycobacterial infection was suspected, Ziehl-Neelsen staining of affected tissues was negative.

One musculoskeletal case was examined identifying a patellar fracture.

Three cases of neoplasia were examined. In one case an epidural space mass and intervertebral foramen between the third and fourth lumbar vertebrae (L3-L4) was confirmed histologically as a peripheral nerve sheath tumour. In another case multicentric lymphoma was diagnosed involving an epidural mass, draining lymph node, the iliopsoas

muscle and the thoracic aorta. In the final case splenic nodules due to suspected lymphoma were identified.

Two cases of neurological disease were examined, including a case of idiopathic epilepsy in which no gross or histopathological findings were evident and a case with an epidural mass at the level of the sixth and seventh cervical vertebrae (C6-C7) with fat saponification noted histologically.

A single case of respiratory disease was examined, identifying histopathologically confirmed fibrino-suppurative pleuropneumonia but from which only scant *E. coli* was cultured from the lungs and scant growths of *S. zooepidemicus* and bacteroides spp. were recovered from the pleura.

Two emaciated welfare cases were examined in which severe muscle atrophy and serous fat atrophy were evident.

Scotland

Five cases were examined.

A single hepatic case with a grossly mottled liver was examined, which was attributed as a case of Tyzzer's disease.

One case of peritonitis was diagnosed secondary to a chronic spermatic cord infection (scirrhous cord).

One presumed cardiovascular case was examined, which had collapsed at exercise with assumed acute cardiac arrhythmia leading to death. Head trauma was evident grossly caused by the animal falling on its head, leading to bruising over the skull but with no evidence of skull fracture.

Two cases of musculoskeletal disease were examined. Deep digital flexor tendinitis and navicular bursitis was diagnosed in one case that had fibrinopurulent exudates evident histopathologically in the tendon sheaths above and below the metatarsophalangeal joint, as well as in the navicular bursa. Suspensory ligament desmitis was diagnosed in the other case in which there was multifocal suspensory ligament degeneration, haemorrhage, fibrovascular hyperplasia and mild skeletal muscle degeneration and regeneration evident.

Southern England

Twelve cases were examined.

One gastrointestinal case was identified with a diffuse indentation of the margo plicatus of the stomach identified, which was attributed to chronic healed ulceration.

Four musculoskeletal cases were identified. In one case chronic, moderately severe osteoarthritis was found in both shoulder and elbow joints and in another case both shoulder joints showed thinning of the cartilage across the entire surface area of the articulations. Two cases with chronic hoof pathology were investigated; in one there was chronic active laminitis with evidence of rotation and lysis of the third phalanges (P3) bilaterally and in the other case there was clear evidence of P3 rotation.

Two oropharyngeal neoplasia cases were investigated in which one oropharyngeal mass was identified as a papilloma affecting the soft palate and a gingival mass was confirmed as a fibromatous epulis. Two other oropharyngeal pathology cases were investigated including a partially ulcerated, necrotic hard palate mass involving oral mucosa and tongue and a condition analogous to 'black hairy tongue' in humans was seen in one case.

One welfare case was investigated which identified depleted fat stores and serous atrophy of the epicardial fat.

Other findings included two dental cases that identified shear mouth with multiple dental diastemata and two dermatology cases were also investigated, one involving the skin over the mammary gland with focally extensive area of thickened skin with multiple crusts, the other case had chronic active, diffuse, moderate eosinophilic and lymphoplasmacytic dermatitis.

Northern Ireland

Two cases were examined.

Two aborted fetuses were examined in which no abnormalities were noted and no diagnosis was made.

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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 the Horserace Betting Levy Board with the exception of the AHVLA, which acts as the reference laboratory.

Agri-Food and Biosciences Institute of Northern Ireland
Animal Health Trust Diagnostic Laboratory Services
Animal and Plant Health Agency
Axiom Veterinary Laboratories Ltd.
Biobest Laboratories Ltd.
B & W. Equine Group Ltd.
CAPL LTD Laboratories
Capital Diagnostics, Scottish Agricultural College
Carmichael Torrance Diagnostic Services
Chine House Veterinary Hospital
Dechra Laboratories
The Donkey Sanctuary
Donnington Grove Veterinary Group
Endell Veterinary Group Equine Hospital
Hampden Veterinary Hospital
IDEXX Laboratories
JSC Equine Laboratory
Lab Services Ltd.
Liphook Equine Hospital
Minster Equine Veterinary Clinic
NationWide Laboratories
Newmarket Equine Hospital
Oakham Veterinary Hospital
Rainbow Equine Hospital
Rossdales Laboratories
Royal Veterinary College
Sussex Equine Hospital
Three Counties Equine Hospital
Torrance Diamond Diagnostic Services (TDDS)
University of Edinburgh
Valley Equine Hospital

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We would welcome feedback including contributions on focus articles and/or case reports to the following address:

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