



**DEFRA / AHT / BEVA
EQUINE QUARTERLY DISEASE
SURVEILLANCE REPORT
Volume 3, No. 2: April - June 2007**



Highlights in this issue:

- **Global equine influenza**
- **Survival rates in horses with septic synovitis and tenosynovitis**

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.



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Introduction

Welcome to the second quarterly equine disease surveillance report for 2007 produced by DEFRA, BEVA and the Animal Health Trust. Regular readers will be aware that this report collates equine disease data arising from multiple diagnostic laboratories and veterinary practices throughout the United Kingdom giving a unique insight into equine disease occurrence on a national scale.

The second quarter of 2007 saw several potentially significant infectious disease outbreaks occurring in Europe. There was confirmation of influenza virus infection in France, Ireland, Sweden and the UK and equine infectious anaemia (EIA) was diagnosed in France, Germany and Italy. At the end of June, equine viral arteritis (EVA) associated with clinical signs of disease was diagnosed in non-Thoroughbred horses on a number of epidemiologically linked breeding premises in Normandy, northern France. Contagious equine metritis (CEM) was confirmed in France, Switzerland and the United Kingdom. Defra confirmed a single case of CEM in Newmarket in May 2007. The affected stallion had been imported from Belgium on route to Australia, and tested positive while in a pre-export quarantine premises. Swabbing followed the Horserace Betting Levy Board's (HBLB) Codes of Practice and the swab was submitted to the Veterinary Laboratories Agency (VLA) on 10th May 2007. VLA confirmed the organism to be *Taylorella equigenitalis*, the causative organism of CEM. Movement restrictions were imposed on the premises under the Infectious Diseases of Horses Order (IDHO) 1987 and investigations continued with tracing of any significant contacts. No further cases were identified.

These outbreaks act as a timely reminder of the importance of ongoing vigilance towards infectious disease control among the equine industry in the United Kingdom. They confirm the wisdom of implementing voluntary preventive measures such as the Horserace Betting Levy Board's (HBLB) Codes of Practice backed by statutory powers of control such as the Infectious Diseases of Horses Order 1987 and the EVA Order 1995. Near the end of June 2007, the HBLB Codes of Practice sub-committee met to review changes to the Codes for the 2008 breeding season. It was during these discussions that it was agreed that the Codes should in future include a specific Code for EIA, which had occurred with significant impact in Ireland during 2006 and was still evident in some EU countries in 2007. The revised Codes including the new EIA Code are due for publication by the HBLB later in the year and will be available via the HBLB's website ([Click here](#)).

Readers will also be aware of the Foot and Mouth disease (FMD) outbreak in Surrey, England associated with a presumptive transfer of virus from local biologically secure research or vaccine production facilities. Although FMD does not affect horses directly, this outbreak has had an impact on equine activities throughout the UK. This is because it led to the suspension of the free movement permitted under the Tripartite Agreement, which ordinarily permits horses to move between the UK, Ireland and France without intra-Trade certificates. The British Horseracing Authority (BHA) and other equine governing authorities such as the British Equestrian Federation (BEF) have been prompt in their provision of advice to deal with the changes in requirements for international horse movements.

An Emergency Services Protocol (ESP) to help horses caught up in accidents was launched on 15th May 2007 by HRH Princess Royal at Buckingham Palace. The Protocol, created by British Horse Society (BHS) and the British Equine Veterinary Association (BEVA) sets out a national standard with procedural guidelines for police and fire services



conducting large animal rescues. Its creation was triggered by the rising number of horses dying in accidents on the roads and elsewhere. The aim of the new protocol is to minimise delays in injured animals receiving veterinary care, to maximise the chances of a positive outcome for the animal and to ensure the safety of all those involved. Further details of the ESP are available via BEVA's website ([Click here](#)).

The second quarter saw the implementation of the Animal Welfare Act in England and Wales (Animal Welfare Act 2006). Prior to the implementation of this Act, a person responsible for an animal had a duty to ensure that animals in their care did not suffer unnecessarily. The Animal Welfare Act expands the duty of care of a responsible individual and more explicitly outlines their duties. A 'responsible' person is defined as anyone who is an owner of an animal or is in charge of an animal (i.e. livery yard owner) or the parent/guardian of a person under 16 who is responsible for an animal. The Act defines that such a person has a duty to ensure that any animal in their care has a suitable environment and a suitable diet, that the animal has the ability to exhibit normal behavioural patterns, that the animal has protection from pain, suffering, injury and disease and that any need to be housed with or apart from other animals is met. If the Animal Welfare Act is broken, an improvement notice can be issued to set out why the responsible person is thought to be failing to look after their animal and what steps they should take to improve the situation, along with a time limit with which to comply with the improvement notice. The Act also allows criminal prosecutions to occur in cases where more serious offences have occurred (i.e. causing unnecessary suffering to an animal, administering poison to an animal etc). While the majority of horse owners are responsible and provide good care for their animals, the Animal Welfare Act should simplify and consolidate the Law, allowing better protection of horses which are not being cared for appropriately. Secondary legislation and Codes of Practice will be introduced to provide guidance for specific situations, including livery yards and riding schools. Guidelines also exist regarding the transport of horses.

As readers will be aware, in the last few weeks there have been outbreaks of equine influenza in Japan and Australia. A summary of the current global equine influenza situation, prepared by Julie Ross of the Animal Health Trust, can be found in the first focus article of this issue. The second focus article has been produced by authors at the Royal Veterinary College and Bell Equine Clinic and reports results of a study comparing survival rates of horses with a positive bacterial culture versus those with a negative bacterial culture in septic synovitis and tenosynovitis.

We reiterate that the views expressed in these focus articles are the authors' own and should not be interpreted as official statements of DEFRA, BEVA or the AHT.

Access to all of the equine disease surveillance reports can be made on a dedicated page on the Animal Health Trust website at http://www.aht.org.uk/equine_disease.html or via the BEVA and Defra websites:

<http://www.beva.org.uk/>

<http://www.defra.gov.uk/animalh/diseases/vetsurveillance/species/horses/index.htm>

We would remind readers and their colleagues that there is available on the AHT website a form for registration to receive free of charge reports regularly via e-mail as they are produced. The link for this registration form is available via http://www.aht.org.uk/equine_disease_registration.html.



Virology Disease Report for the Second Quarter of 2007

The results of virological testing for April-June 2007, are summarized in Table 1, and include data relating to equine viral arteritis virus (EVA) from the Veterinary Laboratories Agency (VLA), Weybridge. The sample population for the VLA is different from that for the other contributing laboratories, as the VLA's tests are principally in relation to international trade. Of the 8 EVA VN positives detected by the VLA, 1 was among export samples, 1 was from an import sample and the remainder were private requests. The 10 semen samples received for virus isolation were negative for EVA virus isolation after 3 passages in RK13 cell culture, and negative for EVA by the one-tube real time (RT)-PCR.

Table 1: Diagnostic virology sample throughput and positive results for the second quarter 2007

	Number of Samples Tested	Number Positive	Number of Contributing Laboratories
<u>Serological Tests</u>			
EVA ELISA	3320	68 [#]	1
EVA VN	1448	104 [#]	3
VLA EVA VN	339	8 [#]	1
EHV-1/-4 CF test	4462	125 [*]	3
EHV-3 VN test	11	8 [*]	1
ERV-1/-2 CF test	3852	4 [*]	1
Influenza HI test	4158	7 [*]	2
EIA (Coggins)	1493	0	2
<u>Virus Detection</u>			
EHV-1/-4 PCR	60	8	2
EHV-2/-5 PCR	0	0	0
Influenza NP ELISA	124	16	2
Influenza VI in eggs	8	6	1
EHV VI	357	28	2
EVA VI/ PCR	2	0	1
VLA EVA VI/ PCR	10	0	1
Rotavirus	355	259	9

VN = virus neutralisation, ELISA = enzyme-linked immunosorbent assay, CF = complement fixation,

HI = haemagglutination inhibition, PCR = polymerase chain reaction, NP = nucleoprotein, VI = virus isolation

EVA = equine viral arteritis, EHV = equine herpes virus, ERV = equine rhinovirus,

EIA = equine infectious anaemia, # = Seropositives include vaccinated stallions

* = Diagnosed positive on basis of seroconversion between paired sera

Virological Diagnoses for the Second Quarter of 2007

EHV Abortion

Five cases of abortion associated with EHV infection were identified in this quarter. The vaccination status of the mares involved was unknown. The diagnoses of EHV infection were made on the basis of PCR and immunohistochemistry. In one case, pooled fetal and placental tissue was positive for EHV-4 on PCR, although immunohistochemistry was



negative when applied only to the foetus but positive at multiple sites throughout the placenta with staining seen in the chorionic blood vessels and trophoblast epithelium.

EHV-1 Respiratory Disease

Diagnoses were made by the Animal Health Trust based on positive virus isolations from nasopharyngeal swabs submitted from two young racehorses with signs of respiratory disease.

EHV-1 Neurological Disease

Two cases of neurologic disease associated with EHV-1 infection were identified in this quarter.

EHV-3 Coital Exanthema

Eight cases of EHV-3 infection were identified in this quarter. In three cases, lesions were noted on the penis and prepuce of the affected stallions, with further testing being carried out to confirm that the stallions were seropositive for antibodies to EHV-3. In one case, the stallion was identified as being affected after 2 mares developed clinical signs of coital exanthema after covering by the stallion.

Equine Influenza

A total of 7 separate foci of equine influenza virus infection were identified during the quarter, predominantly among non-vaccinated, non-Thoroughbred horses which demonstrated typical clinical signs of pyrexia, nasal discharge and dry cough. These gave rise to 7 confirmed diagnoses on the basis of seroconversion and 16 cases where diagnosis was based on a positive result from a nucleoprotein ELISA performed on extracts from nasopharyngeal swab samples. Virus isolation in embryonated hen's eggs was performed on 9 of these samples and in 7 cases influenza virus was isolated for further characterisation.

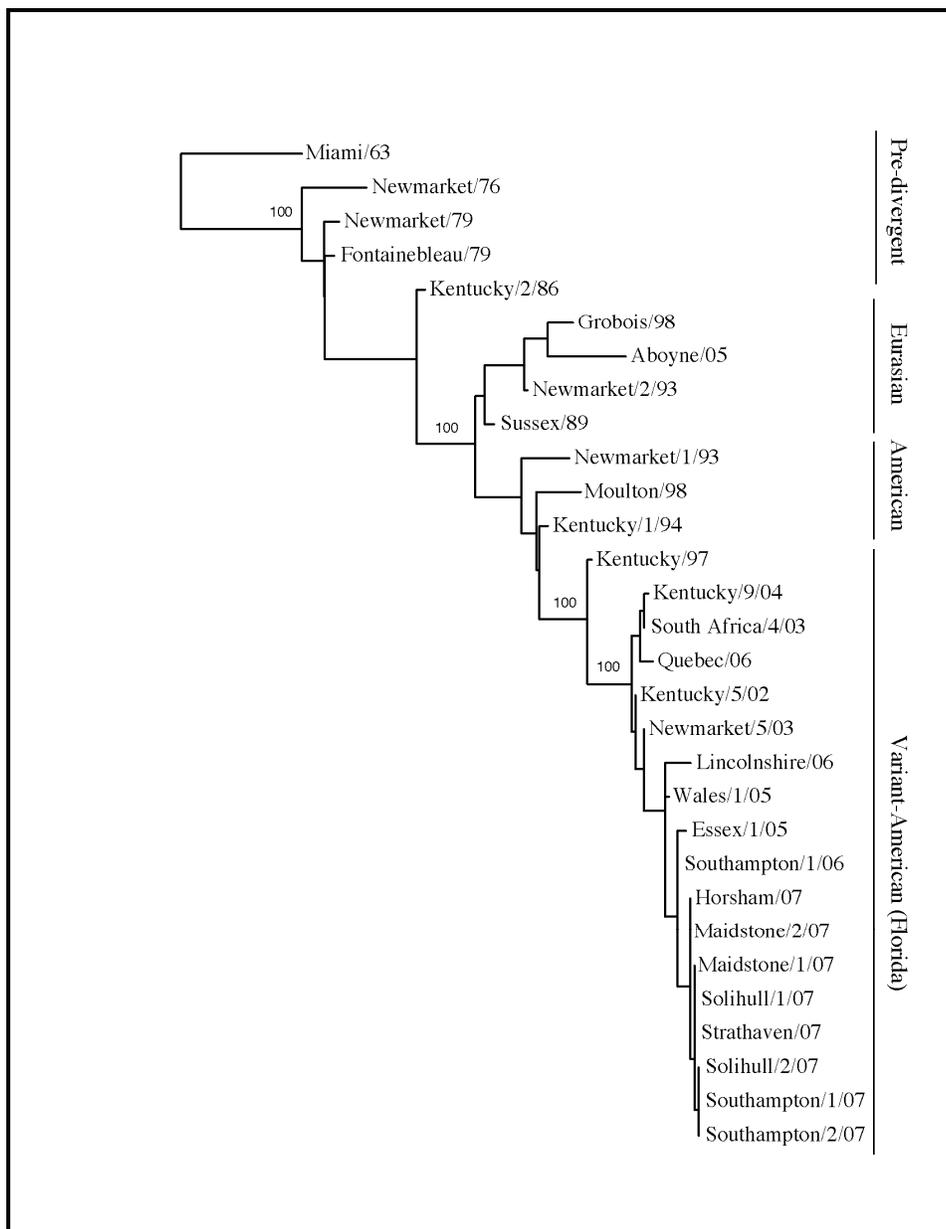
The first four of the seven cases where influenza virus was isolated had direct links through recent animal movements to a horse sale that was held in County Kilkenny in the Republic of Ireland in May. The first outbreak identified was seen in the Birmingham area at the end of May 2007 with further outbreaks confirmed in Hampshire and Kent on the south coast of England. The seventh case was identified in Scotland at the end of June and although it could not be directly traced back to the Irish horse sales, the affected animals who exhibited seroconversion and clinical signs of influenza, had recently attended a large equine event where mixing with horses from throughout the country would have occurred.

Laboratory investigation of the 7 viral isolates obtained by egg culture revealed that they were all of the variant American type, which was typical of what has been seen in Europe since the large outbreak in England in 2003. The first two viruses isolated in this cluster of cases (Solihull/1/07 and Maidstone/1/07) and the last one isolated from Scotland (Strathaven/07), were all identical in their haemagglutinin (HA1) segment sequence. This indicates that the Scottish case was likely to be associated with the same virus strain identified in other cases within this outbreak. A further 3 viruses (Solihull/2/07, Southampton/1/07 and Southampton/2/07) from the middle of the outbreak were identical to one another in their HA1 sequence, but differed to the isolates mentioned above by a single nucleotide change. The remaining isolate (Maidstone/2/07) was found to be identical in its HA1 segment sequence to an isolate from February of this year (Horsham/07).



Virus isolation in eggs and subsequent sequencing of the virus has, therefore, been very useful in this outbreak to allow a clear picture to be formed of how geographically separated cases are actually likely to be associated with each other through a common infectious source such as an event where horses mix and then disperse. The phylogenetic tree presented in Figure 1 illustrates the divergent nature of the equine influenza H3N8 virus and the antigenic drift that has occurred since the virus was first isolated in 1963 (top left hand corner of the tree). The viruses involved in the 2007 outbreak described above are represented in the bottom right hand side of the tree (Maidstone/2/07, Maidstone/1/07, Solihull/1/07, Strathaven/07, Solihull/2/07, Southampton/1/07 and Southampton/2/07).

Figure 1: Phylogenetic tree of H3N8 equine influenza viruses including 8 isolates from the United Kingdom during 2007 which are closely related to viruses first seen in this country in 2003 (Newmarket/5/03)





GLOBAL EQUINE INFLUENZA
Julie Ross MA, VetMB, MRCVS, Dip.ACVIM

In August of this year there have been cases of equine influenza in Japan and Australia, and possibly in Kazakhstan. While this publication focuses on equine disease data from the UK, the events of recent weeks in Japan and Australia have highlighted the importance of disease monitoring and surveillance at a global level.

Japan

In Japan, the first outbreak of equine influenza for 36 years began in mid-August when a nasal swab taken from a febrile race-horse reacted positively with an influenza A detection kit. A real-time PCR was performed on the sample for confirmation and a positive result was obtained for the HA gene of Equine Influenza 2 virus (H3N8). The first case was identified in Miho training centre. From 14th-22nd August, 447 febrile horses were identified across 6 training centres/race courses. All facilities had animals which were identified as being affected by influenza based on RT-PCR. A total of 246 horses were tested by RT-PCR and 172 were positive. Positive reactors have also been identified outwith racing facilities, such as in the breeding area of Hidaka. Japanese racehorses are vaccinated against flu twice a year and were most recently vaccinated in May, 2007. Movement controls are in place in Japan with quarantine of affected animals and premises. Work is ongoing to isolate and sequence the virus.

Australia

Equine influenza was first detected at Eastern Creek Quarantine Station (ECQS), Sydney, New South Wales (NSW), Australia, on 17 August 2007. Sick horses were seen on 22 August 2007 at Centennial Parklands Equestrian Centre (CPEC) in Sydney. Affected horses have been identified in New South Wales and Queensland.

There are currently 944 infected premises (IPs) in NSW. 124 infected properties have also been identified in Queensland. No movement of horses is permitted within, into or out of restricted areas around infected premises. The public is being asked to report all horses with a fever and respiratory signs to the local disease control centre (LDCC) for follow up. Further tracing of horse movements onto and off IPs is being urgently undertaken. All tracing cases are being investigated and inspected according to a formal protocol. Cases have been identified at Randwick racecourse and also in the breeding area of the Hunter Valley. This information is current as of September 17th, however given the rapid developments in Australia; the numbers of horses involved is likely to have increased by the time of publication.

An agreed national ban on horse movements was in place until 1 pm Friday 31 August. The movement restriction is still in place in New South Wales, Queensland and Australian Capital Territory, however, in Queensland, some horse events are being allowed to take place under strict conditions. Other states and territories are allowing movement of horses within states; the Northern Territory and Victoria are also allowing movement of horses into the territory from non-infected states. Horse events are allowed to take place in Western Australia and the Northern territory although appropriate biosecurity precautions are recommended and in South Australia a permit must be obtained before an event can take place.



The strain of equine influenza circulating in Australia is currently unknown; however work is actively ongoing to try to determine the strain of virus and the likely source. Australia is one of the few countries in the world where equine influenza is not endemic. The majority of the horse population is unvaccinated and naïve to the virus. The rapid spread of virus through the Australian horse population is not unexpected given the naïve status of the population; however the effect on the equine industry is obviously devastating. The AHT has offered its full support to the Australian government and we have made all of our facilities and techniques available to them.

For more information about the outbreak in Australia, including maps of the restricted areas, please refer to the following websites:

<http://www.dpi.nsw.gov.au/agriculture/livestock/horse/influenza>

<http://www.outbreak.gov.au>

Kazakhstan

An outbreak of suspected equine influenza virus was reported in Kazakhstan on August 26th. Horses are showing signs of pyrexia, sneezing and coughing and samples have been taken from 300 horses for further investigation. Local vets suspect the horses are suffering from equine influenza however a definitive diagnosis has not yet been reached. A ban of horse movement has been imposed on all affected villages to try to control the spread of the disease.

The last outbreak of equine influenza in Kazakhstan was registered in 1992.

These current outbreak situations highlight the need for disease surveillance on a global level. In addition, the benefits of close collaboration between international laboratories are highlighted.



Bacteriology Disease Report for the Second Quarter 2007

A summary of the diagnostic bacteriology testing undertaken by different contributing laboratories is presented in Table 2. For contagious equine metritis (CEM) 10 of 28 HBLB approved laboratories contributed data.

VLA CEMO Data for the period April, May, June 2007

We are again pleased to include data relating to CEM testing from the Veterinary Laboratories Agency (VLA), in this quarterly report. The sample population for the VLA is different from that for the other contributing laboratories as the VLA tests are principally in relation to international trade.

Table 2: Diagnostic bacteriology sample throughput and positive results for second quarter 2007

	Number of Samples Tested	Number Positive	Number of Contributing Laboratories
CEMO (HBLB)	8045	1	9
CEMO (VLA)	328	1	1
Strangles*	3852	181	13
Strangles PCR	2498	101	1
Salmonellosis	288	8	10
MRSA	2039	7	5
<i>Clostridium perfringens</i>	9	5	1
<i>Clostridium difficile</i> (toxin by ELISA)	80	7	6
Cryptosporidium	2	0	1

CEMO = contagious equine metritis organism (*Taylorella equigenitalis*); HBLB = HBLB accredited laboratories; VLA = VLA reference laboratory; **Streptococcus equi*; MRSA = meticillin resistant *Staphylococcus aureus*.

Contagious equine metritis (CEM)

DEFRA confirmed a single case of CEM in Newmarket in May 2007. Details of this case are outlined in the introduction.

Salmonellosis

Of the 8 samples that tested positive for *Salmonella* spp., 3 were confirmed by the VLA and tested positive. All three were *Salmonella typhimurium* isolates.



Does positive bacterial culture adversely affect survival rates in horses treated for septic arthritis and tenosynovitis?

Alan Taylor, Justin Perkins, Luisa Smith, Tim Mair

A septic joint, bursa or tendon and its sheath (synovitis) is a common and serious problem in the horse and has the potential to be life threatening or career ending. Septic synovitis is defined as a synovial disorder as a result of sequestration of pathogenic bacteria or their toxins into a joint, bursa or a tendon and its sheath. This sequestration leads to cellular and biochemical changes within the synovium leading to an increase white cell count (usually $> 30 \times 10^9$ cells/l), neutrophilia ($> 90\%$) and a rise in total protein (usually above 40g/l). The changes within the synovium are rapid progressive and degenerative and can lead to loss of cartilage, ischaemia and fibrin deposition leading to pannus formation and adhesions. These changes can be catastrophic and so any potentially septic joint must be treated as an emergency and investigated without delay.

A retrospective study was performed to look at cases diagnosed with septic synovitis and to determine whether a positive bacterial culture result affected the prognosis compared to cases in which a negative bacterial culture result was obtained. This study was performed by looking at records of cases from the Royal Veterinary College between 1999 and 2006 and Bell Equine Veterinary Clinic between 1993 and 2003. A septic diagnosis was based on increased white cell count ($>30 \times 10^9$ cells/l) and at least two of the following: acute lameness; heat and/or effusion of a synovial structure; bacteria identified on gram stain; total protein $> 30\text{g/l}$, and $>90\%$ neutrophils. Additional information obtained from the records included results of bacterial culture and the outcome of the horse.

Two hundred and six horses were included in the study of which 66 (32%) had a positive bacterial culture and 140 (68%) a negative bacterial culture. Two horses from both the culture positive and culture negative groups were subjected to euthanasia for reasons other than synovial sepsis and so there were 64 and 138 horses in each group respectively.

In the culture positive group 22.7% (15 animals) were subjected to euthanasia as a result of un-resolving sepsis despite surgical intervention and targeted antimicrobial therapy, whilst in the culture negative group 1.4% (2 animals) were subjected to euthanasia as a result of un-resolving sepsis. Fisher Exact Test for survival versus euthanasia between groups: $p < 0.001$ 95% CI 0.005 0.222. Survival to discharge is shown in Fig 1.

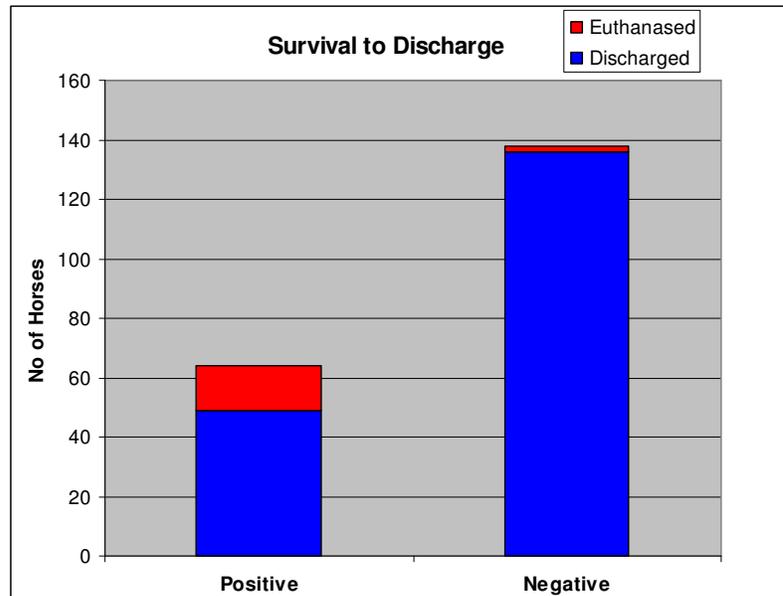


Fig 1: Survival to Discharge

The conclusion of this investigation was that horses with a positive bacterial culture from their synovial fluid were less likely to be discharged from hospital as a direct result of their synovial sepsis, in comparison to horses in which the synovial fluid did not yield a bacterial culture. This is clinically important as a positive bacterial culture offers a poorer prognosis for short-term survival to discharge from hospital, despite culture and sensitivity results being available and targeted antimicrobial treatment. This combined with other clinical data can be used to give a more informed prognosis to clients.



Toxic and Parasitic Disease Report for the Second Quarter of 2007

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

Table 3: Diagnostic toxicosis sample throughput and positive results for second quarter 2007

	Number of Samples Tested	Number Positive	Number of Contributing Laboratories
Grass sickness	49	27	4
Hepatic toxicoses	17	3	2

The increase in number of grass sickness cases between the first quarter of this year (9 samples tested, 5 positive) and the second quarter is not unexpected and highlights the seasonal occurrence of this condition.

Table 4: Diagnostic parasitology sample throughput and positive results for the second quarter 2007

	Number of Samples Tested	Number Positive	Number of Contributing Laboratories
<u>Endoparasites</u>			
Ascarids	731	9	4
Cyathostomes	746	194	5
Dictyocaulus	90	0	3
Strongyles	406	52	6
Tapeworms	376	9	3
Strongyloides	19	4	1
Trichostrongylus	131	27	3
<u>Ectoparasites</u>			
Mites	228	3	5
Ringworm	200	47	6
Dermatophilus	21	1	1

One case of *Theileria equi* (piroplasmiasis) was diagnosed on the basis of serology by the VLA. The animal involved had been imported from Portugal three years previously and had shown vague signs of intermittent illness for some time.

Three cases were also tested for *Borrelia burgdorferi* (Lyme disease) in this quarter. Two cases were negative and one was borderline positive.



Report on Post Mortem Examinations for Second Quarter 2007

East Anglia

50 cases were examined in total, including twenty five neonates.

Of the twenty five neonates examined due to abortion or still birth, five were associated with equine herpes virus. In 8 cases, there were changes on *post mortem* examination consistent with hypoxic damage, including three which were thought to be associated with premature placental separation. Three neonates born dead following dystocia were also examined. In one neonate, findings included vascular obstruction of the umbilical cord.

Six older foals were also examined during this period. *Rhodococcus equi* pneumonia was identified in 4 of these animals. One foal was presented 24 hours post colic surgery. *Post mortem* examination revealed evidence of aspiration of stomach contents and subsequent severe, localised inhalation pneumonia. One foal was presented at 4 months old having died acutely following plasma transfusion. No lesions were identified.

Three mares which had died suddenly post foaling were presented. Rupture of the middle uterine artery was identified in all of these mares and retroperitoneal haemorrhage was identified in one.

Five horses were presented due to neurologic disease. Causes of neurologic disease identified on *post mortem* examination included extradural haemorrhage with associated acute spinal cord compression and suspected spinal shock (1 case), epidural haemorrhage at C1 associated with a poorly differentiated haemorrhagic tumour present in the root of the mesentery and anterior mesenteric artery (metastases also present in the regional lymph nodes and the lung) (1), and an epidural synovial cyst causing spinal cord compression at C6-7 (1).

Neoplasia was identified on examination of 3 horses (including the case described above) and cardiac disease was also identified on examination of three horses. Findings in the cardiac cases included a spindle cell tumour in the right interventricular septum associated with marked dilation of the right side of the heart (1), ventricular septal defect (1) and mitral valve endocarditis (1).

Four horses presented with a history of gastrointestinal disease. Findings included necrotizing colitis (1), gastric rupture (1), intra-abdominal haemorrhage of unknown cause (1), and diaphragmatic rupture with severe parasitism (1).

One case each of nutritional myopathy and tracheal perforation were identified.

Home Counties

Twenty-two cases were examined this quarter, including one foal.

Thirteen horses with a history of colic were examined. Small intestinal disease was identified in five horses. Findings included strangulating lipoma (2), small intestinal volvulus (1), strangulating inguinal hernia (1) and epiploic foramen entrapment (1). Large colon lesions were identified in 5 horses and included displacement of the large colon (2), nephrosplenic entrapment with large colon impaction (1), large colon volvulus (1), and rupture of the large colon with subsequent septic peritonitis (1). Two cases had evidence of colitis upon examination and one had evidence of intra-abdominal haemorrhage.



Two horses presented with a history of sudden death; one had a history of yew poisoning and the second had suffered an aortic root rupture. Three animals were presented due to signs of neurologic disease. Findings included granulomatous encephalitis, (possibly secondary to aberrant parasite migration) (1), cholestoma with secondary hydrocephalus (1) and cerebellar abiotrophy (1). Neoplasia was identified in 3 cases, including retropharyngeal lymph node lymphosarcoma (1), parotid salivary gland melanoma with extension into surrounding bone and pulmonary metastases (1) and squamous cell carcinoma with subsequent infection of the penis. Cellulitis caused by foreign body penetration was identified in one horse.

South-West

10 cases were examined

Gastrointestinal disease was identified in 3 animals. Findings included diaphragmatic rupture (2) and *Clostridium difficile* associated typhlocolitis (1). Two horses with a history of respiratory disease were examined. *Post mortem* examination revealed pneumonia (1), and bronchiolitis and bronchopneumonia (1). Rupture of the prepubic tendon was identified in one mare. Neoplasia was identified in 2 horses (neuroendocrine carcinoma in the nasal cavity (1), carcinoid tumour involving the liver and colon (1)). One case each of cardiac failure and sudden death (pulmonary oedema identified on *post mortem*) were examined.

Scotland

24 cases were examined, including 1 neonate.

12 horses with grass sickness were examined in this period including 8 with acute disease and 3 with sub-acute disease. Six horses presented with evidence of gastro-intestinal disease other than grass sickness. Findings included typhlitis/colitis (2), small intestinal rupture (2), small intestinal entrapment (1) and gastric rupture (1).

One neonate was examined during this quarter. The filly had contracted tendons in the forelimbs. *Post mortem* examination revealed contraction of the superficial and deep digital flexor tendons in both front limbs. Two further cases were examined due to musculoskeletal disease. Findings included septic arthritis (1) and laminitis (1). Three additional horses were presented and *post mortem* evaluation revealed recurrent airway obstruction (1), leiomyoma in the ventral pelvic canal (1) and bilateral nephropathy with necrotizing cystitis (1).

Northern Ireland

13 cases were examined, of which 5 were fetuses/neonates.

Five fetuses/neonates were examined in this quarter, including 2 still-born foals. Findings in other neonates included suspected neonatal isoerythrolysis (1), septic arthritis involving carpal and tarsal joints (*Actinobacillus equili*) (1) and abortion of unidentified cause (1). Two foals presented with evidence of *Rhodococcus equi*. In one foal, *R. equi* was cultured from the viscera and joints as well as the lungs. The foal also had evidence of acute respiratory distress syndrome.

Six adult horses were examined. *Post mortem* findings included diaphragmatic rupture with subsequent small intestinal herniation and strangulation (1), gastric ulceration and perforation and severe cyathostome infestation in the cecum and large colon.



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Equine Veterinary Hospital, Arundel
Greenwood, Ellis and Partners
JSC Equine Laboratory
Liphook Equine Hospital
NationWide Laboratories
Royal Veterinary College
SAC Veterinary Services
Three Counties Equine Hospital, Kearns and Rea
University of Bristol
University of Edinburgh
Veterinary Laboratories Agency

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 VLA, which acts as the reference laboratory.

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

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