



DEFRA / AHT / BEVA EQUINE QUARTERLY DISEASE SURVEILLANCE REPORT Volume 4, No.2: April – June 2008



Highlights in this issue:

- Australian EIV Outbreak Report
- Grass Sickness Research Results

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 2008 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.

Equine influenza continues to be of importance not only within the United Kingdom but also globally. In this issue we report on several small outbreaks mainly in unvaccinated horses in central Scotland, about which in mid-June a warning from the Animal Health Trust was publically given (Horse and Hound 20-06-08) in the run up to the busy showing season. It advised to be vigilant for clinical signs of influenza, maintain good bio-security and vaccinate all vulnerable animals. There are two equine disease surveillance schemes in operation; the Animal Health Trust welcomes samples for analysis on either scheme. Respcheck, sponsored by Intervet, which covers influenza, herpes virus, *Streptococcus equi*, *Streptococcus zooepidemicus* and *Pasturella spp* and also an Equine Influenza surveillance programme sponsored by Scherring Plough.

In the aftermath of the Australian influenza outbreak that started in August 2007, the official report into the outbreak by Justice Callinan, was released in June 2008 ([Click here](#)). **Annie Cooke** BVetMed MRCVS, of the Animal Health Trust gives an overview of the findings and recommendations of the report in a focus article. Australia has now been declared free of Equine Influenza Virus and has reverted to its disease free status.

The second quarter of the year is considered the highest risk for grass sickness and 21 deaths from the disease were reported this quarter. In this issue **Claire Wylie** BVM&S, MRCVS, MSc, grass sickness surveillance research assistant, at the Animal Health Trust writes of her research findings in a focus article.

We re-iterate 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.

Equine welfare is of great importance in the United Kingdom and has never been more so with an estimated 1.35 million horses in Britain (National Equestrian Survey 2006). On 1st May 2008 The International League for Protection of Horses (ILPH) re-launched itself as World Horse Welfare (WHW) ([Click here](#)). "It had long been felt by many that the name "international League for the Protection of horses" or ILPH no longer sufficiently reflects the breadth and depth of the charity's activities and its desire to focus its efforts in the root causes, as well as the effects, of horse cruelty. In addition, it was felt that the word "league" was outdated, that the name was cumbersome and that it needs to be clearer and sharper to engage with new and wider audiences". However the charity's vision of "A world where the horse is used but never abused" remains at the heart of its philosophy. It is hoped the new launch will bring the charity into the public's imagination and help them to raise more funds to help horse welfare world wide.

In June 2008 in London, with HRH the Princess Royal present, a new National Equine Welfare Protocol ([Click here](#)) was released. "The prevention of equine suffering and neglect and when necessary their rapid remediation are the



paramount considerations” of the protocol. The protocol brings together 60 independent welfare organizations that form the National Equine Welfare Council. In addition, the National Equine Welfare Protocol (NEWP) is supported by the association of Chief Police Officers of England, Wales and Northern Ireland and Defra. The aim of the protocol is to bring together the organizations working towards improving equine welfare in an effort to consolidate their expertise with the ultimate goal of improving equine welfare and responding effectively to equine welfare incidents when they occur. The Animal Welfare act 2006 and The Animal Health and Welfare (Scotland) Act 2006 are central to this initiative. NEWP provides a framework to allow equine welfare organizations to work together to achieve the goal of preventing unnecessary equine suffering. Welfare/neglect cases that undergo *post mortem* examinations are reported in this publication, however this obviously only represents a small number of all the welfare cases that occur. In this edition five welfare cases are reported.

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 a form is available on the AHT website for registering 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/equine_disease_registration.html.



Virology Disease Report for the Second Quarter of 2008

The results of virological testing for April – June 2008 are summarised in Table 1 and include data relating to equine viral arteritis virus 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 22 EVA VN positives detected by the VLA, 5 were among export samples, 4 were private requests, 4 were overseas samples, 5 were from AI samples and 4 were for diagnosis. The 19 semen samples received for virus isolation were all negative for EVA virus isolation after 3 passages in RK13 cell culture and negative for EVA by the one-tube RT-PCR

Table 1: Diagnostic virology sample throughput and positive results for the second quarter 2008

	Number of Samples Tested	Number Positive	Number of Contributing Laboratories
<u>Serological Tests</u>			
EVA ELISA	2883	114 [#]	3
EVA VN	1503	105 [#]	3
VLA EVA VN	693	22 [#]	1
EHV-1/-4 CF test	495	3 [*]	1
EHV-3 VN test	19	1	1
ERV-1/-2 CF test	239	0	1
Influenza HI test	295	2 [*]	1
EIA (Coggins)	536	0	2
EIA (ELISA)	475	0	1
VLA EIA (Coggins)	610	0	1
<u>Virus Detection</u>			
EHV-1/-4 PCR	58	6	1
EHV-2/-5 PCR	1	1	1
Influenza NP ELISA**	217	14	1
Influenza ELISA (Directigen)##	22	0	1
Influenza VI in eggs	16	12	1
EHV VI	244	5	1
EVA VI/ PCR	0	0	0
VLA EVA VI/ PCR	19	0	1
Rotavirus	180	114	5

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

**Regular readers may note a large increase in the number of NP ELISA tests performed in this year to date.

This increase is largely due to new requirements for international equine movement. All horses travelling to Australia must now have 2 NP ELISA tests performed prior to travel. The figures above include tests performed for international trade purposes.

pre-export testing only.



Virological Diagnoses for the Second Quarter of 2008

EHV-1 Abortion

Four cases of abortion due to EHV-1 infection were diagnosed by PCR on fetal tissues and placentae. Two of the mares were Thoroughbreds and two were of unknown type. All the animals affected were from different premises. Details of the vaccination status of the cases are also unknown.

EHV-4 Abortion

One Thoroughbred mare aborted due to EHV-4 infection which was diagnosed by PCR on fetal tissues and placenta.

EHV-1 Neurological Disease

One case of EHV-1 neurological disease in a horse in Scotland with ataxia was diagnosed by sero-conversion on paired sera. One other animal from the yard was also mildly affected and 20 animals were in contact. Further samples were not available.

EHV-4 Respiratory Disease

Two horses with respiratory signs had EHV-4 isolated from nasopharyngeal swabs. A further two horses were diagnosed with EHV-4 respiratory disease by sero-conversion on paired sera.

EHV-3 Coital Exanthema

One case of EHV-3 coital exanthema was identified in this quarter, breeding ceased until the stallion had recovered.

Equine Influenza

Fourteen horses were found to have influenza virus infection by NP ELISA testing on nasopharyngeal swabs. All of these horses, bar one were either not vaccinated or had not completed a primary vaccine course. In one of the cases two of the in contact animals were shown to have sero-converted to equine influenza virus. This was confirmed on testing by haemagglutination inhibition. Six of the animals were on one yard in Scotland. The rest were individual cases mainly from Scotland or the north of England with the exception of one case in Gloucestershire and one in Leicestershire. All the viruses that were isolated in eggs were of the Florida lineage Clade 2 type that have been seen circulating in this country since 2003.



FOCUS ARTICLE

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

Annie Cooke, BVetMed MRCVS of the Animal Health Trust.

Edited by Julie Ross, MA, VetMB, MRCVS, Dip.ACVIM of DEFRA.

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

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

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

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

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

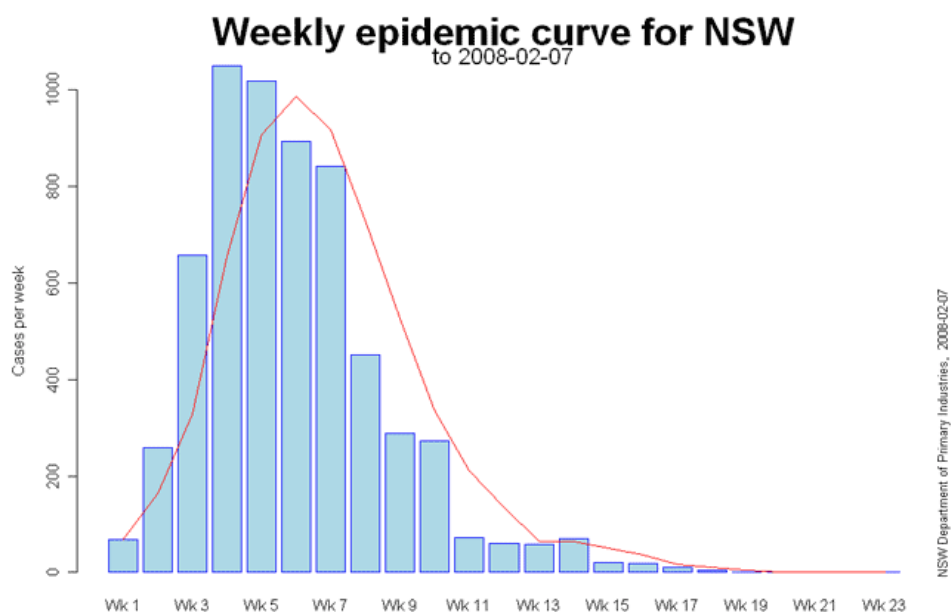


Air travel of horses to and from Australia is evermore frequent.



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

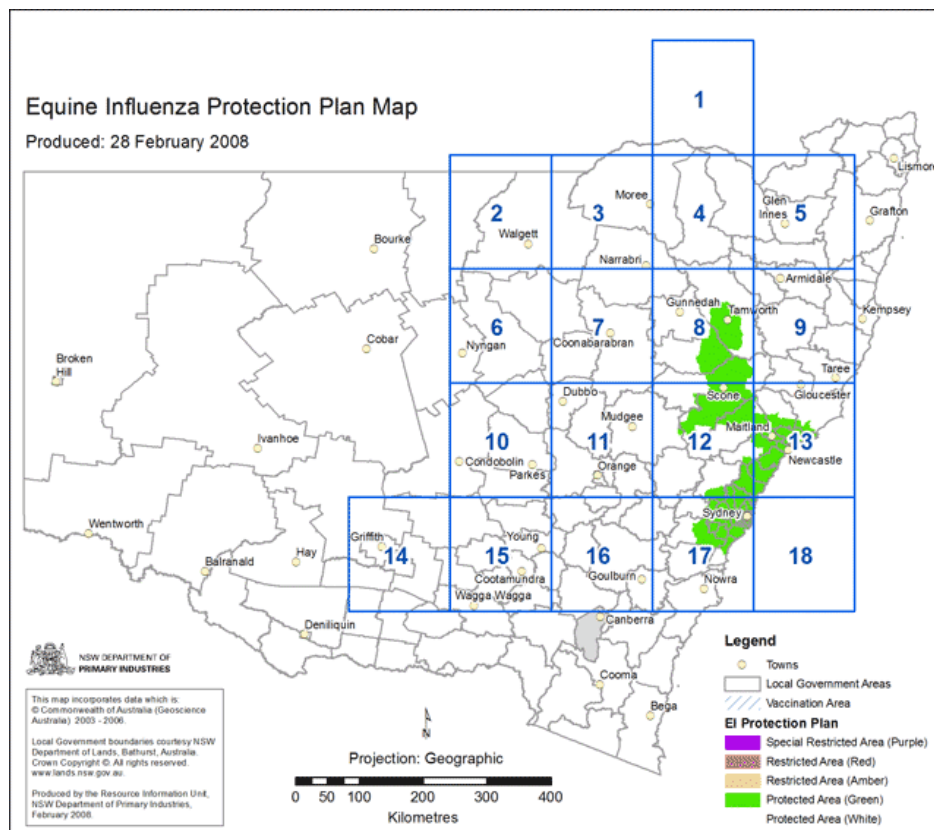
A rapidly spreading outbreak of equine influenza in New South Wales and Queensland followed. By 10th October about 4.500 premises were affected. The horse/horses that were first infected in the general Australian equine population has/have never been identified, but it is assumed it/they attended the Maitland one day event and transmitted infection to several susceptible horses which on their return home spread the infection to other immunologically naïve horses.





In order to try and contain the outbreak and minimize spread and numbers of affected animals, restriction zones were set up around the affected areas with strict movement controls. Vaccination was also used in the areas around the outbreaks to form a “buffer zone” again to help limit spread of the virus beyond the restricted areas. Merial’s Proteq Flu® vaccine was selected for use as it has “DIVA” capability i.e. it is possible to distinguish with laboratory tests between vaccine derived immunity and infection derived immunity. This is very important for tracing the spread of the virus among a vaccinated population.

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



The inquiry found four possible theories for how the virus escaped into the general Australian horse population were

- 1) Airborne spread from Sydney airport
- 2) Contaminated people, equipment or vehicles associated with the transport to ECQS.
- 3) Airborne spread from ECQS
- 4) Contaminated people or equipment or other from ECQS.



It was thought unlikely that cross-infection by dogs or birds or by some other vector such as straw carried by a bird was unlikely.

Airborne spread was thought to be an unlikely source of virus dissemination due to factors such as the prevailing weather conditions, low horse population density in the areas surrounding the airport and ECQS and due to the timing of clinical signs in relation to the actual spread of the virus

The time scale of the outbreak (in relation to the disease incubation period) did not fit with contamination associated with the transfer to ECQS.

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

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

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



Bacteriology Disease Report for the Second Quarter 2008

A summary of the diagnostic bacteriology testing undertaken by different contributing laboratories is presented in Table 2. For contagious equine metritis (CEM) 9 of 28 HBLB approved laboratories contributed data.

VLA CEMO Data for the period April – June 2008

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. The positive horse reported on in the last quarter has been treated and subsequently tested negative.

Table 2: Diagnostic bacteriology sample throughput and positive results for second quarter of 2008

	Number of Samples Tested	Number Positive	Number of Contributing Laboratories
CEMO (HBLB)	7216	0	10
CEMO (VLA)	259	0	1
<i>Klebsiella pneumoniae</i>[#]	3739	5	9
<i>Pseudomonas aeruginosa</i>	4835	13	9
Strangles*	2421	207	12
Strangles PCR	1713	84	1
Strangles ELISA	1579	241	1
Salmonellosis	242	2	10
MRSA	51	4	5
<i>Clostridium perfringens</i>	29	6	1
<i>Clostridium difficile</i> (toxin by ELISA)	51	4	4
<i>Lawsonia intracellularis</i>**	5	0	1

CEMO = contagious equine metritis organism (*Taylorella equigenitalis*); HBLB = HBLB accredited laboratories; [#] =capsule type 1,2,5; VLA = VLA reference laboratory; **Streptococcus equi* subsp.*equi*; MRSA = meticillin resistant *Staphylococcus aureus*. ** *Lawsonia intracellularis* identified using PCR applied to faeces

Of the 2 samples testing positive for *Salmonella* spp., the serotype of both are known after further testing by the VLA. Of the 2 typed strains there was 1 of *S. typhimurium* and 1 of *S. agama*.



FOCUS ARTICLE

Equine Grass Sickness Surveillance Update: June 2008.

Claire Wylie BVM&S, MRCVS, MSc

This spring the Animal Health Trust (AHT) launched the first nationwide surveillance scheme for equine grass sickness (EGS). The aim of the scheme is to record details of prospective and retrospective EGS cases dating back to the year 2000 in order to facilitate the proposed vaccine trial against *Clostridium botulinum*. This is a collaborative project with the Universities of Edinburgh and Liverpool and the Equine Grass Sickness Fund, generously funded by The Horse Trust.



The surveillance scheme consists of two questionnaires for owners to report new cases and provide details of any occurrences since the year 2000. A total of 1300 questionnaires were sent to owners who had previously reported an occurrence of EGS to one of the project collaborators. In addition to this the scheme was widely publicised in the equine press and each equine practice in the United Kingdom (n=846) was contacted requesting their support of the scheme. So far 200 equine practices have responded to this request with 191 (96%) willing to assist with the surveillance scheme and each of these practices was sent a fax-back form to report new cases to the AHT. A new website www.equinegrasssickness.co.uk was developed to allow the reporting of cases by completion of the questionnaire online.

At the beginning of June 2008 the EGS surveillance scheme was aware of 986 cases of equine grass sickness that had occurred since the year 2000 and a total of 1613 separate owners that had ever experienced cases of the disease (Figure 1). For the cases where the location of the horse was known there were: 302 cases (53%) in England, 254 cases (45%) in Scotland and 11 cases (2%) in Wales (Figure 2). Completed questionnaires have yet to be received from the missing cases.

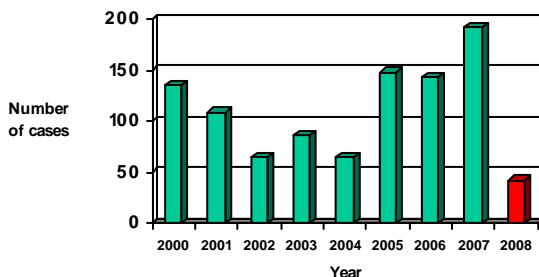


Figure 1: Bar chart showing the number of EGS cases reported from the year 2000 to June 2008 (n=986).

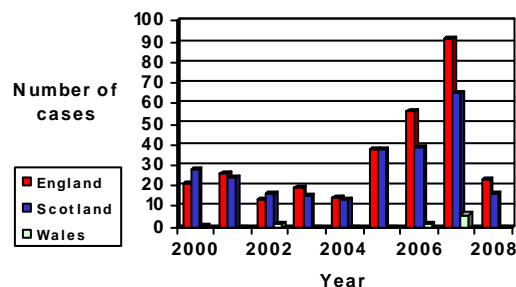


Figure 2: Bar chart showing the country distribution of grass sickness cases from the year 2000 to June 2008 (n=567).



Figure 3 shows the location of owners of any EGS case throughout England, Scotland and Wales (n=1613). Figure 4 shows the location of EGS cases reported via completed questionnaires (n=567). By early June 2008, 42 cases of grass sickness were reported to have occurred in the current year and their location is shown in Figure 5. The areas which reported the majority of EGS cases in the last six months of 2008 were North Yorkshire, England and Aberdeen, Scotland.

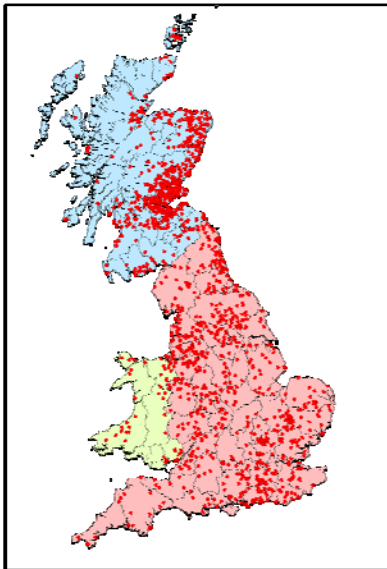


Figure 3: Map showing location of owners of EGS cases on the database (n=1613).

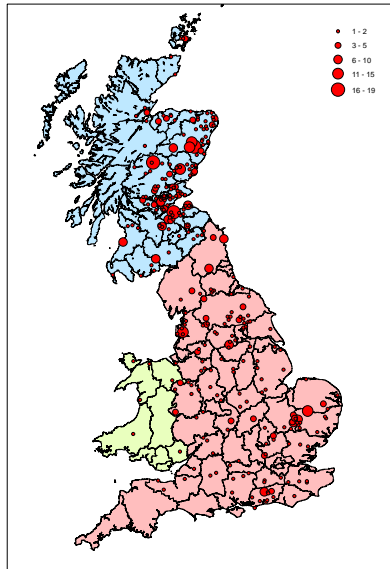


Figure 4: Map showing location of EGS cases reported by questionnaires (n=567).

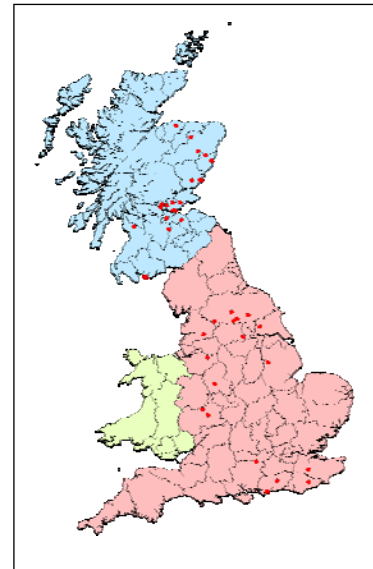


Figure 5: Map showing location of cases reported in the last six months of 2008 (n=42).

As of June 2008 the database consisted of horses, ponies and three cases in donkeys, with 66 different pure breeds represented and Thoroughbreds, Highlands and Cobs appearing most frequently. Both genders were equally represented and there was a range of ages from 2 months to 47 years, with 4 year olds represented most frequently. Since 2000 in each year the majority of cases had been the fatal acute or subacute types, in comparison to chronic cases. Since 2000 most cases of EGS each year had occurred in the spring, with May being the high-risk month consistent with previous reports.

The results from the completed questionnaires received so far need to be interpreted with caution as no reference to the normal equine population is so far possible. With the development of the National Equine Database comparisons can be made in the future.

The nationwide surveillance of equine grass sickness is an ongoing project and to report any occurrence, from 2000 to the present day, or to register your equine practice with the surveillance scheme, please contact Claire Wylie at the Animal Health Trust on 01638 552993 Ext: 1241 or email claire.wylie@aht.org.uk. Further information is available at www.equinegrasssickness.co.uk where both questionnaires can be viewed and completed online.



Toxic and Parasitic Disease Report for the Second Quarter 2008

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 (where applicable).

Table 3: Diagnostic toxicosis sample throughput and positive results for the second quarter 2008

	Number of Samples Tested	Number Positive	Number of Contributing Laboratories
Grass Sickness	20	11	4
Hepatic toxicoses	13	7	5
Atypical myopathy	1	0	1

Table 4: Diagnostic parasitology sample throughput and positive results for the second quarter 2008

	Number of Samples Tested	Number Positive	Number of Contributing Laboratories
<u>Endoparasites</u>			
Ascarids	828	13	6
Cyathostomes	120	9	4
Dictyocaulus	74	2	4
Strongyles	2473	248	9
Tapeworms (ELISA based testing)	978	379	1
Tapeworms (Faecal exam)	374	12	7
Trichostrongylus	28	3	1
Strongyloides	589	8	5
Coccidia	121	2	2
Giardia	3	0	2
Cryptosporidia	5	1	3
<u>Ectoparasites</u>			
Mites	199	2	7
Ringworm	197	14	6
Dermatophilus	52	9	5
Lice	52	2	4



Report on *Post Mortem* Examinations for Second Quarter 2008

East Anglia

60 cases were examined, including 23 fetuses.

Ten aborted fetuses were found to have umbilical cord torsions leading to premature placental separation and or asphyxia and hyoxia. Two cases were associated with dystokia one of which was thought to be due to a hind leg medial deviation. There were single cases of premature placental separation of unknown cause, placental infection with *Streptococcus zooepidemicus* and *Acinetobacter Iwoffii*, placental insufficiency with infection of the chorion with *Acinetobacter baumannii*, placentitis of unknown cause, ante-partum meconium diarrhoea and a case of haemopericardium with cardiac tamponade secondary to aortic fragility. In five fetal examinations no cause could be found for the still birth of the foal.

Ten neonatal foals were examined. Four had septicaemia (with no further details provided), two had gastric rupture and peritonitis secondary to ulceration, single cases of *Rhodococcus equi* infection, duodenal rupture, cranial trauma, and a traumatic bladder rupture secondary to a red bag delivery were seen.

Four older foals were examined, one one month old foal died of unknown metabolic or nutritional disease compounded by arterial thrombosis of the aorta secondary to strongyle larvae migration. *Clostridial* species were also isolated from this case. A two month old foal was euthanased after prolonged treatment for bastard strangles. A large chronic abscess was found in the pre-sternal area as well as micro-abscessation of the liver. A two month old foal suffered a rupture of a pre-existing pleural adhesion that was secondary to larval parasite migration. A four month old foal had a perforated gastric ulcer and associated peritonitis.

A yearling suffered a sudden death, post mortem examination could not determine the cause.

Twenty two adults were examined. Five cases were associated with neoplasia, one lymphosarcoma and four cases without further information. One neurological case of thromboembolic brain infarcts probably due to *Strongylus vulgaris* larvae migration was reported.

Six cases involved the gastro-intestinal system. Three cases of grass sickness were examined, although in one of these the histology was inconclusive despite pathognomic presentation. The remaining cases included caecal impaction and rupture, gastric rupture and a mare that had colic surgery for a suspected motility problem, subsequently foaled and then had post foaling ileus of the small intestine and stomach. Grass sickness was ruled out in this case, hence the cause remains unknown.

Three cases were related to foaling in adult mares. One mare had a broad ligament haemorrhage, another died post abortion but no cause could be found and another died 17 days post foaling of an aortic rupture and subsequent pericardial haemorrhage leading to compromised heart function.



Four welfare cases were examined on behalf of the RSPCA. These included a two year old with chronic laminitis including prolapsed phalanges, an old pony with chronic fistulous withers, an aged pony and an aged donkey. The aged pony was very thin, covered in sarcoids and lice and infested with worms. The worm larvae had caused thrombosis of the mesenteric and colic arteries. The aged donkey that was very thin, had several teeth missing and chronic laminitis with prolapsed phalanges, amongst other aged related problems.

Home Counties

25 cases were examined this quarter, including one fetus.

One fetus had an umbilical cord torsion complicated by a coconut sized yolk sac remnant. Two neonatal foals were examined - one two day old foal died of *E. coli* septicaemia, and another foal was euthanased due to a congenital heart defect consisting of an interventricular septal defect, over riding aorta and right ventricular hypertrophy.

One neurological case was seen in a seven year old warmblood gelding suffering from ataxia due to a cervical vertebral arthropathy affecting C2-3 and C3-4.

Five cases of grass sickness were seen, three cases aged 2, 7 and adult were electively euthanased. One case was a two month old foal with gastric reflux. Surgery did not reveal gross abnormalities but the reflux continued so the foal was euthanased. The fifth case was a six year old gelding that was positive on phenylephrine eye test, developed stiffness in all four limbs and had elevated white cell count on peritoneal tap. Exploratory surgery was normal grossly, but the horse had colic post surgery and was euthanased. Further samples were positive for *Borrelia* spp and grass sickness.

Eight gastro-intestinal cases were examined. All eight cases presented as severe colic. Three suffered surgery related problems – one had a cardiac arrest, one had post operative ileus after a side to side jejunocaecostomy and another had post operative peritonitis and adhesion formation after a jejunocaecostomy. Of the remaining five cases, an aged pony had a pedunculated lipoma causing intestinal strangulation, a pregnant pony mare had a caecocolic intussusception, one horse was euthanized on humane grounds, another had irresolvable caecocolic torsion and one had a rupture of the gut after a colic episode of six days duration.

A thirty three year old Shetland pony was euthanased as a result of weight loss due to a pituitary adenoma causing hyperadrenocorticalism, the pony also had tracheal stenosis.

Two cases of hepatic disease were examined both had pyrrolizidine alkaloid toxicity causing liver failure secondary to ragwort ingestion.

Four musculoskeletal cases were examined; these included one of multiple traumatic pelvic fractures, one chronic carpal arthritis, and two chronic tenosynovitis cases. A twelve year old polo pony died as a consequence of traumatic haemothorax.



South West

One donkey and thirteen horses were examined this quarter.

The donkey was electively euthanased after unremitting severe colic. On *post mortem* it was found to have a 17.25 kg leiomyosarcoma derived from mesenchymal tissue within the abdomen.

Two foals were examined including a one day old foal with head trauma and pneumonia, and an older foal with multiple lung abscesses.

One case of grass sickness was examined but no further details were provided.

Three other gastro-intestinal cases were reported – one ruptured intestine with associated peritonitis, one endotoxic shock post colic surgery and one of enteritis of unknown cause.

Two hepatic cases were examined one adult with hepatopathy and lymph node abscessation and another adult with suppurative nephritis and focal necrotising hepatitis.

One case of diaphragmatic rupture and haemoabdomen was reported.

Three musculoskeletal cases were examined, a horse with an osteosarcoma of the pastern, a case with a fractured tibia and horse with a skull fracture involving the frontal bone.

One welfare case that was collapsed emaciated and had cyathostomiasis was also reported.

Scotland

Twenty eight cases were examined this quarter, including one fetus.

One fetus was examined and found to have an umbilical cord torsion.

One neonatal foal was examined, the foal had uroperitoneum secondary to urachal rupture and bladder necrosis.

One case of chronic renal failure, also in a foal was examined.

One neurological case was examined. The examination revealed a cholesteatoma (a cholesterol granuloma, no further details given)

Twelve cases of grass sickness were examined; two acute and ten acute to sub-acute.

Six gastro-intestinal cases were examined, including a small intestinal volvulus post foaling, an ileal entrapment secondary to a pedunculated lipoma, a diaphragmatic hernia with secondary small intestinal herniation, peritonitis post caesarian section, lymphoplasmacytic enteritis and acute anterior enteritis associated with *Salmonella spp* infection, and a miniature shetland foal with an oesophageal stricture that developed dilation post surgical intervention.

An interesting case was seen, in a six year old warmblood mare with multi-focal vascular thromboses affecting many vessels including both jugular veins, the right internal carotid



and mesenteric vessels. This was thought to have lead to ischaemic necrosis of the jejunum. Intussusception or volvulus were suspected however this may have been altered by handling during examination as it was difficult to exteriorise and separate the intestinal organs at post mortem as there was also a severe diffuse fibrinous peritonitis present. *Salmonella spp* had been isolated from faeces prior to death and it is thought that this was likely to have contributed significantly to the animal's condition and ultimate demise.

Two cases of sudden unexplained death were examined but no definitive cause could be found. Three further cases were examined but cause of death could not be determined.

Northern Ireland

Nineteen cases were examined, including two fetuses.

Two aborted fetuses were examined. One case had *Streptococcus zooepidemicus* infection of the fetal stomach contents and lung as well as in the placenta, the second case had no significant findings.

Three neonatal foals were examined. A one day old foal had *Actinobacillus equuli* isolated from several sites. It was shown to have insufficient colostral anti-bodies and also had a meconium impaction. A three day old foal with enteritis had *Listeria monocytogenes* type 1 thought to be causing septicæmia. A six day old foal was found dead with trauma to the left side of the chest. Acute necrotising purulent pneumonia was present. *E. coli* was found and thought to be contributing to septicæmia.

Four older foals were examined. A three month old foal had evidence of a previous neonatal infection as the umbilicus contained purulent material, several joints were enlarged and the right kidney had pyelonephritis. All the sites grew *Streptococcus agalactiae*. A three month old foal had ill thrift and hair loss (ringworm diagnosed) as well as pneumonia, no significant pathogens were isolated. It was noted that the dorsum of the tongue was thickened and hyperkeratotic with keratin clumps present. Two foals died of ruptured gastric ulcers.

Six adult horses were examined. The cases included a leg fracture, laminitis, a granulosa-theca cell tumour and a horse that died whilst being exercised with findings reported as being consistent with exertion. Two of the cases were gastro-intestinal and included a ruptured stomach and a colon torsion.

Four other examinations were reported but no details provided.



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

Animal Health Trust

Lanwades Park, Kentford, Newmarket, Suffolk, CB8 7UU

Telephone: 01638 750659

Fax: 01638 555659

E-mail: equinesurveillance@aht.org.uk

Website: www.aht.org.uk