



DEFRA / AHT / BEVA EQUINE QUARTERLY DISEASE SURVEILLANCE REPORT Volume 2, No. 1: January-March 2006



Highlights in this issue:

- [Avian H5N1 influenza: are there risks for horses?](#)
- [Endometrial cytological and bacteriological examinations in equine stud farm practice](#)
- [Making informed decisions about exotic disease risks](#)

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 first quarterly equine disease surveillance report for 2006 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 first quarter of 2006 saw several important events that demonstrate the continuing improvements in collaboration between elements of the horse industry and the Government. For those of you wishing to remain in touch with these developments more information can be found on the 'Gateway to equine issues in Government' page of DEFRA's website ([Click here](#)).

On the 27th February 2006 various representatives from the equine industry met with DEFRA to initiate discussion on reviewing and remaking the Infectious Diseases of Horses Order 1987. The industry welcomed inclusion at the start of this process.

The 6th March 2006 saw publication of The Action Plan to support The Strategy for the Horse Industry in England and Wales ([Click here](#)) which was launched on the 6th December 2005. The Action Plan will live on the newly created BHIC website ([Click here](#)) and is based on the 50 action points in the Strategy. The Strategy has been developed by the British Horse Industry Confederation in partnership with Government, and sets out a vision of where the industry aspires to be within ten years. Its purpose is to foster a robust and sustainable horse industry, increase its economic value, enhance the welfare of the horse, and develop the industry's contribution to the cultural, social, educational, health and sporting life of the nation. The strategy has eight key aims with specific action points included under each aim.

On 17th March 2006, 150 people from a wide range of animal health and welfare interests came to Leicester Racecourse for the first conference on the Animal Health and Welfare Strategy for Great Britain. A summary of the day is available at <http://www.defra.gov.uk/animalh/ahws/gbconference/record.htm>. The morning session comprised a series of presentations to set the context and illustrate the range of work already going on across Britain, including a presentation on establishment of the equine surveillance reports ([Click here](#)). Much of the remainder of the conference comprised species-specific workshops that discussed the key priorities for their sector and how they might go about addressing them. Notes from the equine workshop are available ([Click here](#)). Importantly, these notes express the personal views of those who attended the workshops and do not represent either the views of the Government or of organisations to which attendees belong. Of the many priorities identified in the equine workshop, the areas of 'education', 'legislation and its enforcement' and 'disease control and contingency planning' were identified as the top three and were discussed in some length.

The annual Joint Government/Equine Industry Liaison meeting took place on 24th March 2006 in London and was attended by a wide range of equine industry and DEFRA representatives. The agenda covered a wide range of topics including:

- The Equine Health and Welfare Strategy
- Surveillance and Codes of Practice reports
- Exotic disease updates including avian influenza
- International trade matters
- Horse passports and National Equine Database



In line with previous reports we continue to include focus articles kindly supplied by recognised contributors that provide novel insights into topics covered in the surveillance report. 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. Focus articles in this issue have been kindly contributed by Dr. Janet Daly, Professor Sidney Ricketts and Jackie Cardwell.

Following her article in the last report on the jump of equine influenza virus across the species barrier into dogs, **Dr. Janet Daly**, Head of the Influenza Research Group at the AHT, provides a brief summary of the current assessment of the risk posed to horses from the H5N1 strain of avian influenza. This infection has spread across Europe during the first quarter of 2006 and included a fatal case in a domestic cat in Germany.

Professor Sidney Ricketts, senior partner at Rossdales equine veterinary practice in Newmarket and head of their Beaufort Cottage Laboratories equine clinical pathology services,, provides an experienced insight into cytological and bacteriological methods used in modern stud farm practice to evaluate the status of mare's endometrial health. A compelling case is provided for the concurrent evaluation of both types of sample, as one without the other may lead to inappropriate disease management decisions being taken.

Dr Ken Smith is currently Head of Pathology at the Animal Health Trust and **Jackie Cardwell** is undertaking PhD studies within the Epidemiology Unit at the AHT. Prior to commencing these studies Jackie was closely involved with Ken in the preparation of risk assessments and decision trees for exotic equine diseases. A decision tree for the differential diagnosis of neurological diseases based upon clinical signs and travel history prepared by Jackie and colleagues at the AHT was included in the Specified Type Equine Exotic Diseases (STEED) consultation document (Annex C) referred to in the last surveillance report. Ken and Jackie's article explains the rationale behind this concept.

Access to all of the equine disease surveillance reports can be made on a dedicated page on the Animal Health Trust website ([Click here](#)) or via the BEVA ([Click here](#)) and Defra websites ([Click here](#)). We would also remind readers and their colleagues that there is available on the AHT website a form for registration to receive reports regularly via e-mail as they are produced ([Click here](#))



Virology Disease Report for the first quarter of 2006

The results of virological testing for January to March 2006, are summarized 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 43 serology positives detected by the VLA, 21 were among export samples, 2 from imports, 6 from overseas, 6 were related to artificial insemination, 6 were private requests and 2 were for diagnostic purposes (with the findings from import samples of relevance to the UK).

Table 1: Diagnostic virology sample throughput and positive results for first quarter 2006

	Number of Samples Tested	Number Positive (%)	Number of Contributing Laboratories
<u>Serological Tests</u>			
EVA VN/ELISA	8499	544 (6.4%) [#]	3
VLA EVA VN	1022	43 (4.2%) [#]	1
EHV-1/-4 CF test	1074	37 (3.4%)*	1
EHV-3 VN test	2	0 (0%)	1
ERV-1/-2 CF test	246	20 (8.1%)*	1
Influenza HI test	250	9 (3.6%)*	1
<u>Virus Detection</u>			
EHV-1/-4 PCR	147	19 (12.9%)	1
Influenza NP ELISA	30	4 (13.3%)	1
Influenza VI in eggs	4	1 (25.0%)	1
EHV VI	150	35 (23.3%)	1
EVA VI/ PCR	0	0 (0%)	1
VLA EVA VI/ PCR	12	0 (0%)	1
Rotavirus	57	21 (36.8%)	4

VN = virus neutralisation, ELISA = enzyme-linked immunosorbent assay, CF = complement fixation, HI = haemagglutination inhibition, PCR = polymerase chain reaction, NP ELISA = nasopharyngeal swab VI = virus isolation, ERV = equine rhinovirus, # = Serpositives include vaccinated stallions

* = Diagnosed positive on basis of seroconversion between paired sera

Equine Herpes Virus (EHV)

EHV-1 Abortion

A total of 19 EHV-1 abortions and 3 neonatal foal deaths were confirmed during the quarter. Of these, 12 of the abortions and all the neonatal foal deaths occurred in Thoroughbreds. A single case was identified as being an atypical EHV-1 abortion on the basis of detection of EHV-1 antigen in the placenta but negative fetal tissues.

Most of the abortions were reported as single cases, however there was an outbreak of EHV-1 abortion on a stud in Gloucestershire where, in addition to two abortions there were two neonatal foal deaths, consistent with EHV-1 infection, on the same premises. This outbreak remains under investigation and the HBLB Codes of Practice are being implemented.



EHV-1 Neurological Disease

Early in 2006 there was an outbreak of EHV-1 neurological disease involving two premises in Wales and Cheshire. The outbreak was first detected in Wales but spread to the Cheshire yard via an infected animal that was moved while shedding virus and before a diagnosis had been made. Two animals on the Welsh yard showed neurological signs and one became recumbent and was euthanased. Three in-contact animals were found to be viraemic and two shed virus from the nose. Screening of horses on the Cheshire yard failed to detect any viraemia but two nasal shedders were detected. Code of Practice restrictions were put in place and no further neurological cases were reported.

A second outbreak occurred in Berkshire with a single neurological case in a 12-year-old retired racehorse. Diagnosis was on the basis of high CF titres on an acute blood sample and positive virus isolation from heparinised blood. This animal was euthanased due to recumbency after rapid deterioration. Some horses on this yard were vaccinated in the face of the outbreak despite advice to the contrary, however no further neurological cases were reported.

EHV-1,4 Respiratory Disease

Serconversion to EHV-1,4 was detected on paired serology from a two-year-old Thoroughbred with respiratory signs. High titres to EHV-1,4 were detected in the acute sample from an elderly hunter at livery showing signs of respiratory disease. In both cases only the individual animals were clinically affected.

Equine Influenza

There was an outbreak of influenza on a livery yard of approximately 80 horses in Cheshire. Four cases were diagnosed by ELISA on nasopharyngeal swabs and at least one other animal had been clinically affected. The affected horses were believed to have been vaccinated, as were the majority of in-contacts, however their vaccination history was uncertain. Movement restrictions and close monitoring of in-contact animals was advised. Investigation of the influenza virus isolated from the outbreak has confirmed that it was of an American-lineage, but unexpectedly was more closely related to viruses that had been isolated prior to the large outbreak in Newmarket in 2003 and as such was unlike any virus that had been isolated in the UK for at least 3 years.

[Focus Article - Avian H5N1 influenza: are there risks for horses?](#) **[\(Dr Janet Daly, Centre for Preventive Medicine, Animal Health Trust\)](#)**

During 2006, highly pathogenic avian influenza (HPAI) of the H5N1 subtype (the so-called 'bird flu') has been spreading across Europe. The first reported case of HPAI in a domestic mammal in Europe (a cat in Germany) has brought into sharp focus, concerns about the possible spread of HPAI to other species, including the horse.

Aquatic birds are the reservoir of all influenza A subtypes, certain of which have transmitted to and become established in mammalian species (man, pigs and horses) in the past. Two subtypes are known to infect horses; H7N7 and H3N8.

The HPAI H5N1 virus is known to infect a number of mammalian species including man, rats and mice, stoats, weasels and ferrets, pigs and cats.



It is known that domestic cats and big cats (in zoos) can become fatally infected (both experimentally and naturally) with the HPAI H5N1 virus by eating infected raw infected birds.

There is serological evidence from a study in Central Thailand that dogs may also be infected with the HPAI H5N1 virus.

The currently circulating strains of the virus appear to be inefficient at infecting non-avian species; very few cases of H5N1 infection in non-avian species have been reported and it appears that close contact with an infected bird resulting in exposure to high levels of excreted virus is required for infection to occur.

No case of infection of a horse with H5N1 virus has been reported.

For horses, the risk of infection must be considered much lower than for carnivorous animals.

Potential routes of infection for the horse may be drinking from a water supply contaminated with faeces from an infected bird (e.g. a pond) or eating grass / hay similarly contaminated.

In conclusion, it is not known if horses are susceptible to infection with H5N1 virus. Although it may be assumed that horses would become infected if exposed to a high enough dose of virus, the risk of such exposure is low.

Bacteriology Disease Report for the first quarter 2006

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, although none of these isolated the organism and no infection was confirmed during the quarter.

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. Of the 1298 samples submitted from 495 horses, none were found to be positive. During this period there were 3 suspect isolates submitted from HBLB-accredited laboratories and none of these were positive.

Table 2: Diagnostic bacteriology sample throughput and positive results for first quarter 2006

	Number of Samples Tested	Number Positive	Number of Contributing Laboratories
CEMO (HBLB)	9430	0 (0%)	10
CEMO (VLA)	1298	0 (0%)	1
Strangles*	536	55 (10.3%)	6
Salmonellosis	211	8 (3.8%)	5
MRSA	50	3 (6.0%)	3
Clostridium difficile	19	3 (15.8%)	2

CEMO = contagious equine metritis organism (*Taylorella equigenitalis*); HBLB = HBLB accredited laboratories; VLA = VLA reference laboratory

*Streptococcus equi; MRSA = methicillin resistant Staphylococcus aureus



Case study on *Klebsiella pneumoniae* (kindly contributed by Kate Colles, Avonvale Veterinary Practice, Ratley Lodge, Banbury, Oxfordshire)

A mare originating from France and which had had a difficult foaling at a local stud was subsequently shown to be carrying *Klebsiella pneumoniae* on a routine clitoral swab. The isolate was typed as a venereally non-pathogenic capsule type 7 and as such was not subject to restrictions under the HBLB Codes of Practice for venereally transmitted bacterial diseases (capsule types 1, 2 and 5 are considered pathogenic). An endometrial swab taken at the foaling heat showed the presence of inflammatory cells and *Klebsiella pneumoniae* capsule type 7 again. *Klebsiella pneumoniae* was also recovered from an endometrial swab taken at the next oestrus cycle. A third endometrial swab was clear. On all three occasions, the isolate showed resistance to Ampicillin, Gentamicin, Penicillin G and Sulphamethoxazole/Trimethoprim. This multiple antibiotic resistance is not commonly encountered with *Klebsiella pneumoniae* isolates in the experience of this laboratory.

Focus Article - Endometrial cytological and bacteriological examinations in equine stud farm practice (Professor Sidney Ricketts, Rossdale and Partners, Newmarket)

The equine species is unusual in that the mare's cervix relaxes during oestrus allowing the stallion to ejaculate semen into her uterus. In most other species, the female's cervix remains closed and male ejaculation occurs into the vagina. Therefore, the mare's endometrium is normally challenged at natural mating by seminal plasma and the contaminating microflora of the stallion's penile skin and the mare's perineal skin and vaginal mucosa. The endometrium responds to this challenge by mounting a normal protective/repairing inflammatory response (endometritis). In mares with otherwise healthy genitalia and associated natural defence mechanisms, the endometritis successfully resolves within 2-3 days so that when the fertilised ovum enters the uterus from the fallopian tube at approximately 5 days post-ovulation, the endometrium is healthy in preparation for pregnancy. In some mares, resolution does not occur and pregnancy does not ensue, because:

The mare's natural defence mechanisms are defective and the endometritis persists to frank infection. This may occur when:

- a) The mare has been mated at first post-partum oestrus before her uterus has fully involuted and the competence of its natural defence mechanisms has not been restored.
- b) The mare's perineal conformation deteriorates with advancing age and pneumovagina leads to cervicitis and endometritis.
- c) The mare's uterine and abdominal musculature fail in their competence to eject uterine luminal fluid accumulations, through the mare's cervix.

These problems, singly or in combination, perhaps with other as yet inadequately defined genital inadequacies, predispose to persistent post-mating or post-parturient endometritis associated with the common opportunist equine genital pathogens, most commonly *Streptococcus zooepidemicus*, *Escherichia coli* and *Staphylococcus aureus*.

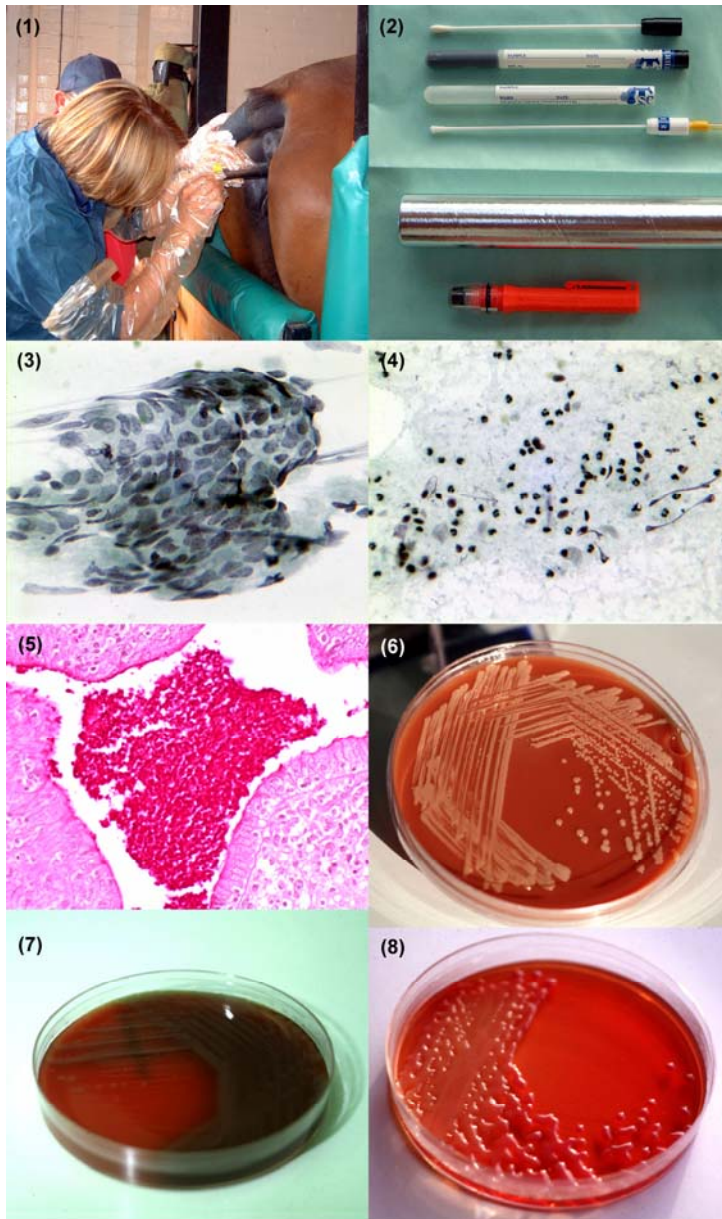
The microorganism is one that is able to overcome the mare's natural defence mechanisms and frank infection develops. Such infections may be sexually transmitted from carrier mare to stallion and onto other mares in a true venereal manner. Bacteria recognised as potential equine venereal disease producers are *Taylorella equigenitalis*



(the cause of Contagious Equine Metritis), *Klebsiella pneumoniae* (capsule types 1, 2 and 5) and *Pseudomonas aeruginosa*.

Veterinary surgeons in equine stud farm practice therefore need to be able to assess the genital health of mares routinely at the first post-partum oestrous period, at other oestrous periods pre-mating and when mares have failed to conceive or pregnancy fails. They do this by assessing the external and internal genitalia for signs of discharge, inflammation, injury and conformational competence, by visual inspection externally, by vaginoscopic examination, by rectal palpation, ultrasound imaging and videohysteroscopic examination, by the cytological and bacteriological examination of endometrial smear and swab samples and by the histological examination of endometrial biopsy samples, as appropriate to the individual mare.

Endometrial smear and swab samples are collected during oestrus, via a sterile vaginoscope, by passing suitably extended swabs through the mare's relaxed cervix into her uterine lumen.



(1) Collecting an endometrial swab or smear via a sterile vaginoscope through the open cervix of an oestrous mare.

(2) A selection of commercially available equipment for collecting equine endometrial samples for cytological and bacteriological examinations: swabs with and without transport medium, one connected to a disposable intrauterine catheter for necessary extension of length, a disposable vaginoscope and 'penlight' torch.

(3) Endometrial smear from a normal oestrous mare, stained with Pollack's rapid trichrome stain, showing normal endometrial epithelial cells and no polymorphonuclear leucocytes (PMNs).

(4) Endometrial smear from an oestrous mare with acute endometritis, stained with Pollack's rapid trichrome stain, showing degenerate epithelial cells and many degenerate polymorphonuclear leucocytes (PMNs).

(5) Endometrial biopsy from an oestrous mare with *Candida* endometritis, stained with Periodic Acid Schiff (PAS) stain, showing many yeast spores in the uterine lumen.

(6) *Taylorella equigenitalis* growing on specialised CEMO haemolysed blood agar after 5 days microaerophilic culture, showing typical colony formation.

(7) *Pseudomonas aeruginosa* growing on blood agar after 24 hours aerobic culture, showing a typical greenish pigmentation.

(8) *Klebsiella pneumoniae* growing on McConkey's agar after 24 hours aerobic culture, showing typical mucoid colony formation.



Cytological examinations

Smear samples are rolled onto gelatin-coated slides, fixed with a suitable cytological fixative (e.g. polyethylene glycol) and stained with a suitable cytological stain (e.g. Pollack's trichrome). For urgent or on-the-studfarm results, smears may be rolled onto pre-stained (Romanowski) slides (Testsimplets, BCL), incubated at room temperature for 3 minutes, washed off and cover-slipped. Smears are examined for the presence of endometrial epithelial cells to assure that the smear was reliably endometrial and for the presence or absence of polymorphonuclear leucocytes (PMNs) as indicators of inflammation, i.e. endometritis. The numbers of PMNs seen on the smear may be graded as +/- (the occasional scattered cell only), 1+ (a small but consistent number), 2+ (a moderate number) and 3+ (a large number), with 1+ and more considered a sign of significant endometritis. Fungal stains (e.g. Periodic Acid Schiff, PAS) may help to identify cases of mycotic endometritis.

Bacteriological examinations

Swab samples are collected into Amies charcoal transport medium and need to reach a Horserace Betting Levy Board designated laboratory within 48 hours of collection for official Code of Practice certification. Swabs are plated onto specialised haemolysed CEMO blood agar for up to 7 days microaerophilic (10% CO²) culture for *T. equigenitalis* and onto blood and McConkey's agar for up to 48 hours aerobic culture for *K. pneumoniae*, *P. aeruginosa* or opportunist pathogens. The organisms are identified by their cultural characteristics, by biochemical reactions and by specific latex agglutination testing (*T. equigenitalis*). *K. pneumoniae* isolates may be capsule typed by specialist laboratories using the Quellung method or more sophisticated analyses. In some cases, anaerobic culture may be used for the identification of the most common equine uterine anaerobe *Bacteroides fragilis*, which may act synergistically with opportunist aerobes to potentiate pathogenicity. In other cases swabs may be plated onto Sabaraud's agar for fungal cultures. The most common equine mycotic endometritis isolates are *Candida* spp. and *Aspergillus* spp.. The laboratory isolation of *T. equigenitalis* in UK must be reported to DEFRA under the Infectious Diseases of Horses Order, 1987.

Concurrent smear and swab examinations

No matter how careful the clinician is when collecting endometrial swab samples for bacteriological examination and irrespective of the equipment and techniques ~~are~~ used, insignificant contaminant or commensal microorganisms may be collected and cultured by the laboratory, particularly in samples delayed by transit through the postal services. When opportunist pathogens are concerned, the only way to determine the significance of the isolate (in the absence of clinical signs of inflammation and/or discharge) is to look for the presence or absence of inflammation (PMNs) in a concurrently collected endometrial smear. Without concurrent smear and swab tests, clinicians may misinterpret bacterial and mycotic culture results leading to false positive diagnoses of endometritis leading to the inappropriate treatment and management of the mare. Without endometrial smear tests, clinicians may miss cases of sterile endometritis or cases from which a pathogen is present but cannot be isolated, leading to failure to treat and inappropriate management of the mare.



Toxic and Parasitic Disease Report for the First Quarter of 2006

A summary of diagnostic toxicosis testing undertaken by contributing laboratories is presented in Table 3.

Table 3: Diagnostic toxicosis sample throughput and positive results for first quarter 2006

	Number of Samples Tested	Number Positive	Number of Contributing Laboratories
Grass Sickness	12	5 (41.7%)	1
Hepatic toxicoses	165	10 (6.1%)	1

A summary of diagnostic parasitology testing undertaken by several contributing laboratories is presented in Table 4.

Table 4: Diagnostic parasitology sample throughput and positive results for first quarter 2006

	Number of Samples Tested	Number Positive	Number of Contributing Laboratories
<u>Endoparasites</u>			
Strongyles	62	19 (30.6%)	4
Tapeworms	42	6 (14.3%)	4
Cyathostomes	615	159 (25.9%)	3
Dictyocaulus	7	0 (0%)	3
Ascarids	33	1 (3.0%)	4
Cryptosporidium	2	0 (0%)	1
Hydatids	1	1 (100%)	1
<u>Ectoparasites</u>			
Lice	184	0 (0%)	3
Ringworm	210	0 (0%)	3
Mites	217	10 (4.6%)	5



Report on *Post Mortem* Examinations for First Quarter of 2006

East Anglia (Animal Health Trust, Beaufort Cottage Laboratories and Greenwood Ellis and Partners)

A total of 82 abortion or stillbirth investigations and 19 full post mortem examinations (PME) were performed over the quarter. The outcome of these investigations are summarised below.

The abortions included 16 cases of umbilical cord torsion, 14 cases of bacterial placentitis, 14 cases of EHV-1 abortion and 3 cases of amniotic rupture. The other abortions included cases of placental vascular compromise, premature placental separation and fetal diarrhoea syndrome. In 3 cases no diagnosis was reached as to the cause of the abortion. The stillbirth investigations were all non-infective intrapartum losses, variously associated with malpresentation, relative fetal oversize or other dystocia.

PME of 3 foals and yearlings identified severe trauma including skull fracture with associated cerebral injury, spinal fracture with severance of spinal cord and femoral fracture causing arterial haemorrhage. A single case of pulmonary embolism resulting from vegetative endocarditis was diagnosed.

Other cases of note included:

- A one-month old Thoroughbred foal examined after suffering from acute collapse and convulsions. Blood samples confirmed massive elevation of AST, raised bilirubin and acute phase proteins, leucopaenia and dehydration. PME revealed multiple necrotic foci in the liver, with associated surrounding hepatitis. Hepatocytes adjacent to the necrotic foci contained intra-cytoplasmic bacilli characteristic of *Bacillus piliformis* the organism causing Tyzzer's disease. The small intestine was found to have five intussusceptions which were easily corrected and thought to be due to agonal hypoxia.
- An emaciated pony with a pituitary adenoma and typhlocolitis secondary to cyathostomiasis (likely to have been associated with a protein-losing enteropathy).
- An apparently normal Thoroughbred foal that succumbed to acute disease at 5 days old and died within 2 hours of onset of clinical signs was subjected to PME. A diagnosis of idiopathic acute myopathy was made on the basis of CK levels of 64,656 U/l resulting in haemolytic disease and death.
- An 8 month old pony filly examined in poor bodily condition. Major findings included severe parasitism (*Strongylus vulgaris* larvae causing verminous arteritis as well as a residue of larvae and tapeworms in the gut lumen) and a severe myopathy.
- A case of neglect involving a pregnant mare that became recumbent after developing colic. Findings included oesophageal impaction, verminous arteritis and evidence of acute renal failure.
- A 5 year old Thoroughbred mare found suddenly recumbent in the field was found to have suffered severe multiple fractures of L5 and L6 causing marked local haemorrhage and displacement of L5. There was also ventral tearing of the right sacroiliac joint.
- Four cases of uterine artery rupture (two pre-foaling and two post-foaling).

Home Counties (Avonvale Veterinary Practice and Baskerville Horgan and Partners)

A total of 10 PME were performed this quarter with an additional three abortions/ neonatal foal deaths being referred to the AHT for examination (these are included in the East Anglia returns above). Cases included one abortion due to placentitis, one sudden death in a laminitic, one sudden death due to a ruptured artery, one case of cyathostomiasis in a neglected animal and a colic that was found to have an impaction.

South West (Bristol University)

Nine PME were performed this quarter. One case of neurological disease was found to have brain lesions including pituitary and pituitary fossa inflammation and a ventricular abscess. Single cases of neglect, mesenteric tear, gastric impaction and post-parturient fatty liver were diagnosed in addition to a rectal tear, a case of cyathostomiasis, a vacuolar hepatopathy and one case where no diagnosis was reached.

Scotland (Edinburgh University)

Three PME were performed during the quarter including two cases of sudden death with findings of gastric rupture and small intestinal entrapment and one case of starvation resulting from severe neglect.

Northern Ireland (Agri-Food and Biosciences Institute Northern Ireland)

Four cases of abortion were investigated this quarter and in one case infection with *Streptococcus zooepidemicus* was identified. Viscera submitted from a field PME showed evidence of Cyathostomiasis. A Shetland pony was found to be carrying a mummified fetus with associated metritis and peritonitis.



**Focus article: Making informed decisions about exotic disease risks
(Dr Ken Smith and Jackie Cardwell, Centre for Preventive Medicine, AHT)**

Decision-making in equine infectious disease management, as in life, is often difficult. There are many situations in which decisions must be made effectively and reliably to ensure optimal case management, population health and efficient running of a commercial equine enterprise. Decision trees are a type of flow chart or algorithm that represent complex decision-making processes in a simple form. However to date decision trees have been rarely applied in veterinary medicine. The horse is unique amongst domestic animals in travelling in a largely unrestricted manner around the globe, thus exposing indigenous populations of horses as well as their handlers to exotic, sometimes zoonotic, diseases. This international movement is increasing, both in geographic extent and in volume, and combined with the unpredictable effect of global warming on insect vectors and changing patterns of bird migration may well be contributing factors influencing equine disease spread and risk.

The STEED (specified type equine exotic diseases) consultation recently undertaken by DEFRA and recent incursions of exotic disease such as foot and mouth disease and classical swine fever into the UK have emphasised the need for veterinary surgeons and laboratory diagnosticians to be vigilant. Serious zoonoses, such as the STEEDs, are of particular concern. Many of these exotic diseases are clinically indistinguishable from each other and from endemic diseases such as paralytic EHV-1 infection.

The Animal Health Trust was commissioned by DEFRA in 2002 to create a decision tree for the management of neurological disease in horses arriving in the UK from abroad. This was of particular concern to DEFRA at that time in light of the West Nile Virus (WNV) epidemic in the USA in 2001. The rationale was that any veterinary surgeon confronted with a case of equine neurological disease could use the tree, in conjunction with DEFRA advice, as a means objectively to establish a likely or confirmed diagnosis and thereby to estimate risks to other horses and to human handlers and to enforce appropriate biosecurity measures. Preparation of a workable decision tree for equine infectious disease management relies upon a clear case definition. This requires a good understanding of clinical signs and differential diagnosis for each disease. Risk analysis may then be undertaken on the basis of knowledge of incubation period, routes of transmission, current diagnostic tests and their interpretation and animal health legislation. The tree was structured so that if each question is answered in sequence and reference made to the appendices at the appropriate points then it provides a comprehensive list of differential diagnoses and relevant advice on how each disease might be further investigated and managed. This was a collaborative effort between equine epidemiologists, pathologists and virologists and was informed by current literature (published and unpublished) accessible via the internet through specialist advisory bodies such as the Office International des Epizooties (OIE). **Note: WNV in horses is a notifiable disease and this, as with other notifiable diseases, is a key component of disease surveillance. As yet, no cases have been diagnosed in the UK.**

The decision tree maybe accessed via the following link ([Click Here](#))

The tree will be accessible to veterinary surgeons via the DEFRA website and will be updated on an annual basis according to current disease trends. Successful updating is contingent on good communication between veterinary surgeons in the field and their colleagues in DEFRA regarding changes in disease presentation and incidence. A similar



approach could be applied to other important equine disease syndromes such as respiratory disease, reproductive loss and sudden death.

ACKNOWLEDGEMENTS

**This report was compiled by the Animal Health Trust.
We are extremely grateful to the following laboratories for contributing data for this report.**

Agri-Food and Biosciences Institute of Northern Ireland

Avonvale Veterinary Practice

Beaufort Cottage Laboratories

BioBest Laboratories Ltd

Greenwood, Ellis and Partners

Hampden Veterinary Hospital

J.S.C Equine Laboratory Ltd

Liphook Equine Hospital

NationWide Laboratories

SAC Veterinary Services

University of Bristol, Department of Pathology

University of Edinburgh

University of Liverpool, Equine Hospital, Leahurst

Vetlab Services Ltd

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:**

Animal Health Trust

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