DEFRA / AHT / BEVA

EQUINE QUARTERLY DISEASE SURVEILLANCE REPORT

Volume 4, No.3: July – September 2008

Highlights in this issue:

- **Review of successful eradication of EIA from Ireland**
- **Anthelmintic resistance**
- **Leiomyosarcoma in a donkey**

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 third 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.

The British Horseracing Authority (BHA) has recently released new guidelines for the Veterinary Certification of Equine Influenza Vaccination. National animal health and racing authorities rely on vaccination to control influenza virus. This is an important factor in the free movement of racehorses between the UK and other countries. There have been a number of problems with equine passports including where alterations to entries need to be made. The BHA's view concluded that simple rules need to be followed and that a clear commitment to disease control was needed. If an alteration must be made then only the veterinary surgeon that made the original entry shall be able to alter it. A single line should be struck through the erroneous entry; the original information should still be readable. A new full entry should be made on the next available line. From 2009 thoroughbred passports will have a new format where the initial three primary vaccinations are in a separate section. If these should need to be repeated then they should be labeled 1, 2 and 3 on a new line of the passport. If an incorrect entry is found the BHA veterinary officer endorsing the passport will use the same practice as the FEI, i.e. use red ink below the entry to enter the reason why it is out of order. A BHA V2 form will then be stapled to the passport.

A pilot study has recently been carried out to determine the frequency of common syndromic conditions in horses in the UK. This has been led by the Blue Cross horse charity in conjunction with other equine welfare groups. This is the first study of this kind to establish the frequency of common conditions in the general horse population. Initial results have proved very promising and it is proposed to extend the project to gather further information. Once these data are available it is hoped to include a summary of the findings in a future quarterly disease surveillance report.

Scientists at The Animal Health Trust (AHT) and Liverpool University have been awarded funding from the Horse Trust to find a way to identify and eventually eliminate Fell Pony Syndrome. The scientists will be working in conjunction with the Fell Pony Society. Fell pony syndrome is associated with a severe immune deficiency caused by a genetic defect; foals born with the defect do not survive more than a few weeks. Dr June Swinburne of the AHT hopes that once the genetic fault is identified breeders will be able to test whether their breeding stock are carriers and thus prevent diseased foals being born. Fell ponies are designated as at risk by the Rare Breeds Survival Trust, as there are less than 1,500 breeding mares globally.

Internationally 'Glanders' (a potentially zoonotic infection caused by infection with the bacterium *Burkholderia mallei*) was reported in the Sao Paulo region of Brazil on 8th September 2008. Prior to this the last report of the disease from this part of Brazil was in the 1960's. As it was possible that horses had been imported to the UK from Brazil at this time, Defra undertook a preliminary outbreak assessment and tracing exercise (Click here) which identified 4 consignments containing a total of five horses being imported to Britain. As there was a low risk to the UK equine population Defra located, isolated and re-

tested these five horses. Defra is also working with the European Commission to ensure that current import standards from Brazil are being met. Veterinary surgeons should familiarize themselves with the clinical signs of Glanders and immediately report any suspicious cases (especially South American imports) to their Divisional Veterinary Manager.

Continuing on the theme of emerging equine infections, we are pleased to say that for the first time these reports include data on testing for West Nile virus (WNV) infection. These data have been made available from the Veterinary Laboratories Agency (VLA), Weybridge and follow a welcomed modification of policy from Defra that allows WNV to be eliminated from differential diagnoses for equine neurological cases without immediately invoking statutory restrictions up on request of the test. Readers may be aware that a large outbreak of WNV has occurred this autumn in Europe in Italy and indeed the single positive case reported among the VLA data in Table 1 on page 6 of this report was actually a horse from that outbreak and not one from Britain. Further details on the Italian WNV outbreak may be found via the OIE's World Animal Health Information Database (WAHID; Click here) and through Defra's preliminary outbreak assessment (Click here) that was published shortly after notification was first received. The potential importance of WNV to the UK horse population was highlighted on 8th October 2008 when Animal Health, an Executive Agency of Defra, hosted an equine stakeholder seminar on WNV at Writtle College, Chelmsford, Essex. The seminar reviewed the disease, its current status and significance to both equine and human health, and the policy actions and outbreak responses being developed in the UK at the present time.

The Olympics and Paralympics were held in Hong Kong in August and September 2008 and were deemed a success with no reports of disease outbreaks among the equine athletes. However, six animals did fail dope tests for banned substances.

We are very pleased to confirm that the Horserace Betting Levy Board (HBLB) has pledged to actively support an important aspect of data collection for this report from 2009 as part of its approved laboratory scheme for contagious equine metritis (CEM). Approved laboratories for 2009 received notice as part of their renewal documentation that the HBLB is strongly supportive of the Defra/AHT/BEVA surveillance report scheme and consider participation in the scheme to be mandatory for all approved laboratories. They added that failure to comply with this recommendation may prejudice future applications for approval from the HBLB. We look forward to corresponding early in 2009 with approved laboratories that may not have contributed CEM data before to discuss with them how they might contribute data in future with minimal disruption.

In this report we are pleased to include three articles. Simon More from the Veterinary Sciences Centre at University College, Dublin has kindly provided a review article which summarises the successful eradication of equine infectious anaemia (EIA) from Ireland in 2006. Regular readers will recall the concern that this outbreak caused in the UK at the time. This led to markedly increased amounts of testing for the infection among horses throughout Europe and to the inclusion in 2008 of a specific code for EIA among the HBLB Codes of Practice.

Annie Cooke, BVetMed MRCVS, who recently left the Equine Epidemiology group at the Animal Health Trust, Newmarket, writes on anthelmintic resistance. Alex Thiemann MA,

VetMB, CertEP, MRCVS of the Donkey Sanctuary, Devon reports on an interesting case in a donkey.

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 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 Third Quarter of 2008

The results of virological testing for July to September 2008 are summarised in Table 1 and include data relating to equine viral arteritis (EVA), equine infectious anaemia (EIA) and West Nile virus (WNV) from the 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 (EVA and EIA), although with recent Defra concessions VLA now provides testing for WNV as part of clinical work up of neurological cases on specific request and provided the local DVM has been informed.

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

	Number of Samples Tested	Number Positive	Number of Contributing Laboratories
Serological Tests			
EVA ELISA	755	14#	3
EVA VN	830	578#	3
VLA EVA VN	1259	71#	1
EHV-1/-4 CF test	498	4*	1
EHV-3 VN test	1	0	1
ERV-A/-B CF test	250	0	1
Influenza HI test	308	7*	1
EIA (Coggins)	63	0	1
EIA ELISA	123	0	1
VLA EIA (Coggins)	1266	0	1
VLA WNV (PRNT)	5	1¥	1
Louping ill	1	0	1
Virus Detection			
EHV-1/-4 PCR	18	1	1
EHV-2/-5 PCR	0	0	
Influenza NP ELISA**	305	0	1
Influenza Directigen	78	0	1
Influenza VI in eggs	0	0	1
EHV VI	135	3	1
EVA VI/PCR	0	0	1
VLA EVA VI/PCR	10	0	0
Rotavirus	35	12	5

ELISA = enzyme-linked immunosorbent assay, VN = virus neutralisation, VLA = Veterinary Laboratories Agency, CF = complement fixation, HI = haemagglutination inhibition, Coggins = agar gel immuno diffusion test, PCR = polymerase chain reaction, NP = nucleoprotein, VI = virus isolation, EVA = equine viral arteritis, EHV = equine herpes virus, ERV = equine rhinitis virus, EIA = equine infectious anaemia

= 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. 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.

¥ = The positive WNV test reported here was not from a British based horse but an animal from Italy

Of the 71 EVA VN positives detected by the VLA, 47 were from overseas requests, 17 were among export samples and 5 were private requests. A mare that returned to the UK from Germany in early July was identified with a high antibody titre to EVA. Two subsequent samples from the horse demonstrated a further slight increase in titre, suggestive of a recent EVA infection, although the animal was considered to be no longer infectious. The 10 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. Six of these were diagnostic samples and 4 were submitted for pre-export testing.

All 1266 agar gel immuno diffusion (AGID; Coggins) conducted for import or export purposes and were all negative.

Five samples were tested for WNV using plaque reduction neutralisation test (PRNT). Of these one sample from a UK-based horse with neurological signs and three samples from Irish horses tested pre-export were all negative. The fifth sample was from an Italian animal with neurological signs that came from an area in Italy close to where WNV had recently been confirmed. This sample tested positive for antibody to WNV.

Virological Diagnoses for the Third Quarter of 2008

EHV-1 Abortion

One case of abortion due to EHV-1 infection was reported this quarter. The thoroughbred fetus was at 186 days gestation and the mare was vaccinated against equine herpes virus. Four other in foal and vaccinated mares were in contact but did not show any signs of disease. The diagnosis was made using PCR on mixed fetal tissues and EHV-1 was also isolated from these tissues.

EHV-1 Neurological Disease

One outbreak of neurological disease due to EHV-1 infection was reported in a livery yard housing twenty horses in Shropshire. One horse was euthanased due to severe neurological clinical signs. Complement fixation (CF) testing on a serum blood sample revealed moderately high antibody titres to EHV-1/-4 and the horse was not vaccinated. Of the nineteen unvaccinated horses that were in contact with the case, 13 had high antibody titres to EHV-1/-4 at the time of the first blood sample. Three other animals demonstrated seroconversion to EHV-1/-4 on paired serum samples run on the CF test. Three horses showed low, stable antibody titres on paired serum samples tested using CF. None of these nineteen horses showed any respiratory or neurological clinical signs.

EHV-4 Respiratory Disease

An unvaccinated pony with clinical signs of respiratory disease, from Perthshire, Scotland had EHV-4 isolated from a nasopharyngeal swab. An animal in contact with it was unaffected. One horse from Buckinghamshire, with clinical signs of respiratory disease was found to have sero-converted to EHV-4 on paired serum blood samples that were tested using the complement fixation test. No other animals were affected.

Equine Influenza

Two outbreaks of equine influenza were reported this quarter. Two unvaccinated cobs from Humberside, England showed seroconversion to equine influenza virus, H3N8 by haemagglutinin inhibition (HI) test applied to paired serum samples. Most of the in contact

horses in the group, which were all unvaccinated, also displayed clinical signs consistent with equine influenza virus (EIV) infection. Five unvaccinated horses from a riding school in the Cardiff area of Wales showed seroconversion to EIV on paired blood samples using the HI test. Other horses and ponies on the premises also showed clinical signs consistent with EIV infection.

REVIEW ARTICLE
Successful eradication of equine infectious anaemia (EIA) from Ireland

Simon More, University College, Dublin

Ireland experienced an outbreak of equine infectious anaemia (EIA) in 2006. This was the first outbreak of this disease in Ireland with evidence of transmission of infection. During the outbreak, two broad control strategies were used, including movement controls on premises and individual horses, and a programme of surveillance of premises and individual horses. The commitment from the Irish government, in terms of human and financial resources, was substantial. No EIA cases have been detected in Ireland since December 2006.

Infection was first detected on 15 June 2006, in a mare (case *C1[p3]*) following euthanasia at a veterinary hospital. During the following 6 months, a total of 38 cases were detected, in two distinct epidemiological clusters (centred on counties Meath and Kildare) (Figure 1, from More et al., 2008, with permission).

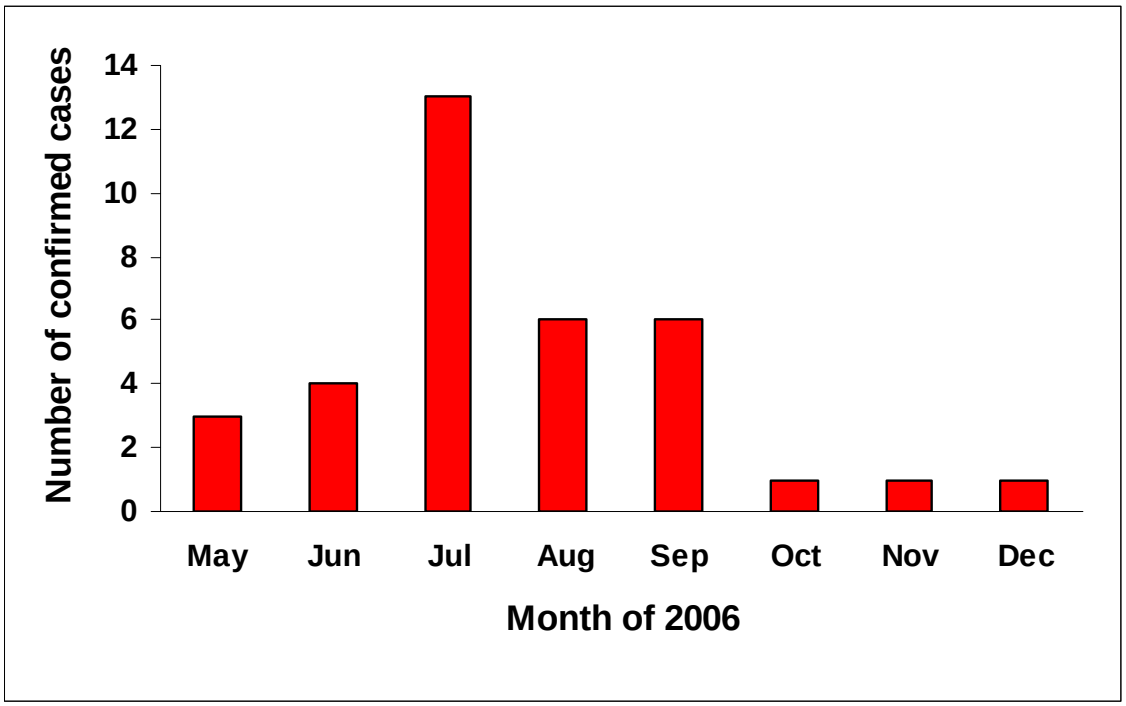

Figure 1: The number of confirmed EIA cases during 2006, by month date of diagnosis

Thirty five of these cases were confirmed, with serological and/or virological evidence of infection with EIA virus, based on results from the agar gel immunodiffusion (AGID, Coggins) test, one or more commercially-available ELISA tests, immunoblot and/or

quantitative PCR and RT-PCR. A further three (unconfirmed) cases had clinical and/or epidemiological (but no collaborating serological and/or virological) evidence consistent with EIA infection. The outbreak affected horses from 18 separate home premises in 8 Irish counties (Kildare, Meath, Dublin, Wicklow, Wexford, Limerick, Louth and Monaghan) and 1 county (Derry) in Northern Ireland (Figure 2, from More et al., 2008, with permission). Twenty one cases were linked to the Meath cluster, and 17 to the Kildare cluster.

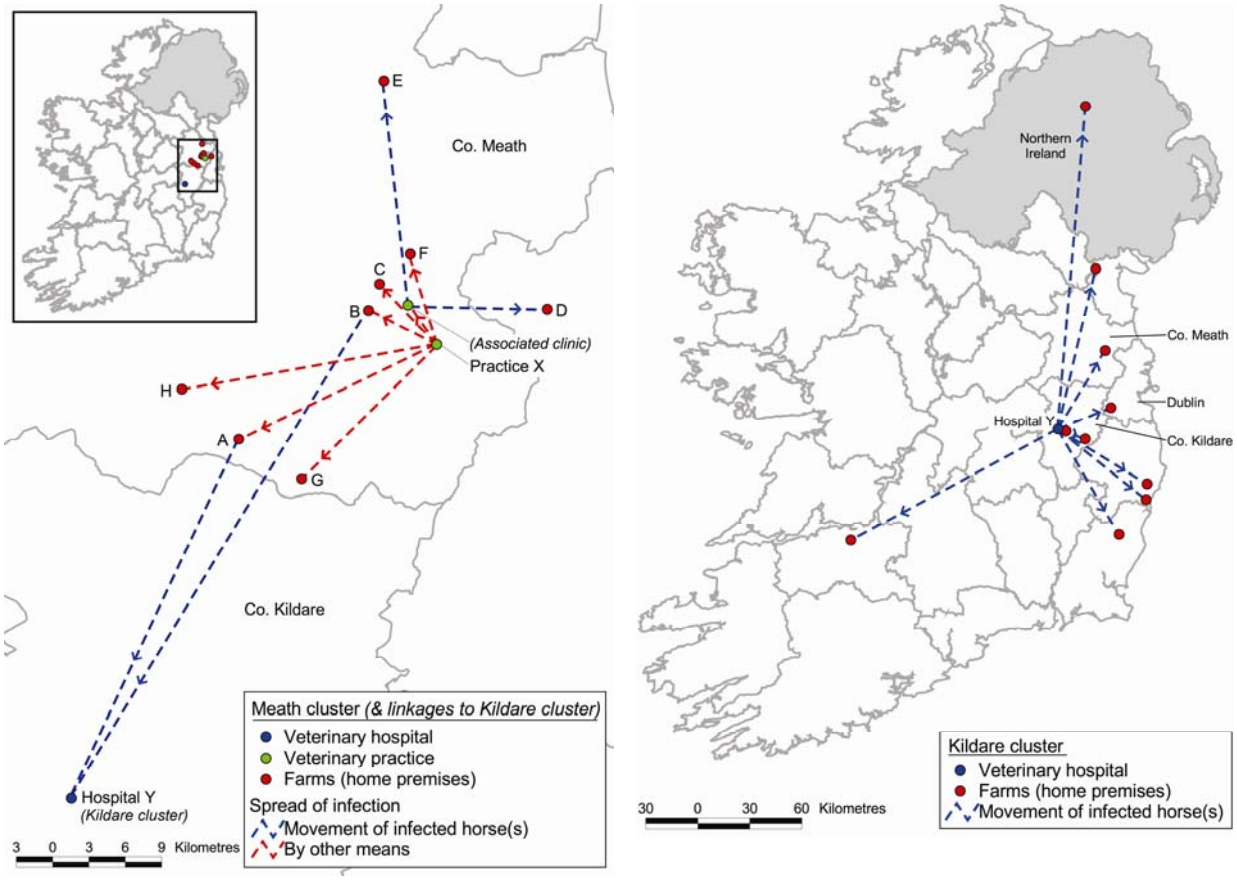

Figure 2: Location of the 38 EIA cases during the 2006 outbreak in Ireland, including EIA cases associated with the Meath (left) and Kildare (right) clusters

EIA was probably introduced into Ireland with the importation, without licence, of contaminated hyperimmune plasma, and it is likely that initial administration of this plasma, and much of the subsequent transmission and spread of the agent in the Meath cluster, was related to iatrogenic causes. In contrast to previous reports, principally from the US, vector-borne transmission was of lesser importance. Investigation of transmission in the Kildare cluster, which was centred at a veterinary hospital, was conducted using both qualitative and quantitative epidemiological investigation methods. For 16 of the 17 horses in the Kildare cluster, there was no evidence in support of commonly-described methods of transmission (iatrogenic, close-contact, vector-borne). Transmission was most likely to have occurred during a narrow infection window, during hospitalisation of case *C1[p3]* in Barn A. At this stage, we can only speculate as to the mechanism of transfer of infection from *C1[p3]* to at least 13 other horses in this barn during a 13 hour infection window.

A number of lessons-learned have been identified as a result of this outbreak, which may also be relevant to other countries:

- Cooperation was critical to eradication success, across organisations and disciplines and between government and industry;
- Epidemiological investigations, concurrent with ongoing control efforts, can play a critical role during exotic disease incursions;
- A range of factors have been identified to minimize the risk of further EIA incursions;
- The risk of equine infectious diseases will continue, highlighting the need for detailed planning in preparedness and response; and
- There is a need to critically evaluate the roles and responsibilities of both industry and government, noting the substantial level of private, as well as public, good associated with the national equine industry

Detailed information about the outbreak are presented in three papers in the November 2008 issue of the *Equine Veterinary Journal* (Volume 40, pp 702-711) including:

- The national response (control and eradication strategies, programme management, linkages with industry and the international community, resource issues) to the outbreak and lessons learned
- Detailed information about the epidemiological investigation methodology, the initial source of infection, aspects of diagnosis and clinical presentation during the outbreak, and the modes of transmission and spread in the Meath cluster
- The findings from the investigation of the Kildare cluster, with emphasis on the modes of transmission and spread of infection.

Reference

More, S.J., Aznar, I., Bailey, D.C., Larkin, J.F., Leadon, D.P., Lenihan, P., Flaherty, B., Fogarty, U. and Brangan, P. (2008). An outbreak of equine infectious anaemia (EIA) in Ireland during 2006: the investigation methodology, the initial source of infection, diagnosis and clinical presentation, the modes of transmission and spread in the Meath cluster. *Equine Veterinary Journal* **40,** 706-708.

Virology Disease Report for the Third Quarter of 2008

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 July to September 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. No isolates were identified as CEMO positive by either HBLB approved laboratories or the reference laboratory at the VLA.

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

	Number of Samples Tested	Number Positive	Number of Contributing Laboratories
CEMO (HBLB)	810	0	10
CEMO (VLA)	1725	0	1
***Klebsiella pneumoniae*[#]**	762	3	9
Pseudomonas aeruginosa	762	7	9
Strangles*	2750	280	11
Strangles PCR	1509	167	1
Strangles ELISA	1500	310	1
Salmonellosis	276	5	9
MRSA	82	3	4
Clostridium perfringens	24	8	3
Clostridium difficile (toxin by ELISA)	151	6	3
Cryptospridium	0	0	0
Lawsonia intracellularis**	15	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

A total of 29 positive isolates were tested by the VLA representing 16 incidents. There was one *Salmonella anatum* identified, one *Salmonella Newport* and the remaining 27 were *S. typhimurium*.

Toxic and Parasitic Disease Report for the Third 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 third quarter 2008

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	Number of Samples Tested	Number Positive	Number of Contributing Laboratories
Grass Sickness	18	1	2
Hepatic toxicoses	6	3	3
Atypical myopathy	0	0	0

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

	Number of Samples Tested	Number Positive	Number of Contributing Laboratories
Endoparasites			
Ascarids	669	26	7
Cyathostomes	800	195	9
Dictyocaulus	121	68	6
Strongyles	767	165	8
Tapeworms (ELISA based testing)*			
Tapeworms (Faecal exam)	641	2	5
Trichostrongylus	28	8	1
Strongyloides	341	14	8
Oxyuris equi	16	1	1
Ectoparasites			
Mites	228	4	7
Lice	142	0	5
Ringworm	236	34	8
Dermatophilus	104	16	6

FOCUS ARTICLE

Anthelmintic resistance in equines – a new perspective

Annie Cooke BvetMed MRCVS, Animal Health Trust

In this article it is hoped to bring the reader up to date with the current situation and give information on how to do something about it.

Anthelmintic resistance in horses has been reported since the 1970's, mainly to the benzimidazole group of drugs. The widespread use of ivermectin based products means it is only a matter of time before we see a marked increase in resistance levels to that drug. Resistance has in the past been a very significant problem in ruminants most especially sheep and it is from these species that we can learn how resistance develops and how to avoid the situation becoming so significant in the equine population. Ivermectin resistance has also been widely reported in humans in Africa where River Blindness caused by the nematode *Onchocerca volvulus* is a significant problem. If we get to the stage where no horse wormers are efficacious then equine welfare will be severely compromised.

Steps to prevent or reduce resistance to anthelmintics include:

1) Use of existing products sensibly – minimise excessive frequency of dosing, estimate weight of animal accurately and do not over or under dose, rotate the class of drug (not brand) annually, monitor the treatment with regular faecal worm egg counts.
2) Try to minimize pasture contamination (pick up droppings) and make pastures low risk (de-horse them; graze with other species for a year or two).

3) Most of the worms live within a few susceptible animals; these animals need identifying and treating accordingly.
4) Treat brought in animals on arrival and keep indoors until clear of infestation.

Understanding the life cycle of the parasite is important in devising successful control measures. The worms are not in the host for very long as for most of the cycle they are as free living infective larvae on the pasture. The phenomenon of "refugia" has been known of since the early 1980's and it may well be a major way forward in reducing/preventing anthelmintic resistance. "Refugia" refers to the population of worms that are not exposed to drug treatments and therefore have not developed resistance.

Three factors that influence the numbers of worms in "refugia" are:
1) Number of larvae on the pasture,
2) Percentage of animals treated with anthelmintics,
3) The ability to kill all developmental stages within the host (if inhibited worms in the gut mucosa are not treated then the young emergent worms are in "refugia" and this is how the worm can survive drought).

In order to make the numbers of worms in "refugia" greater, reliance should be placed on removal of faeces and limiting treatment of animals with wormers to only those that require it, possibly only young stock and those with positive worm egg counts). The population of worms in "refugia" then dilute the population of resistant worms, with a pool of sensitive genes.

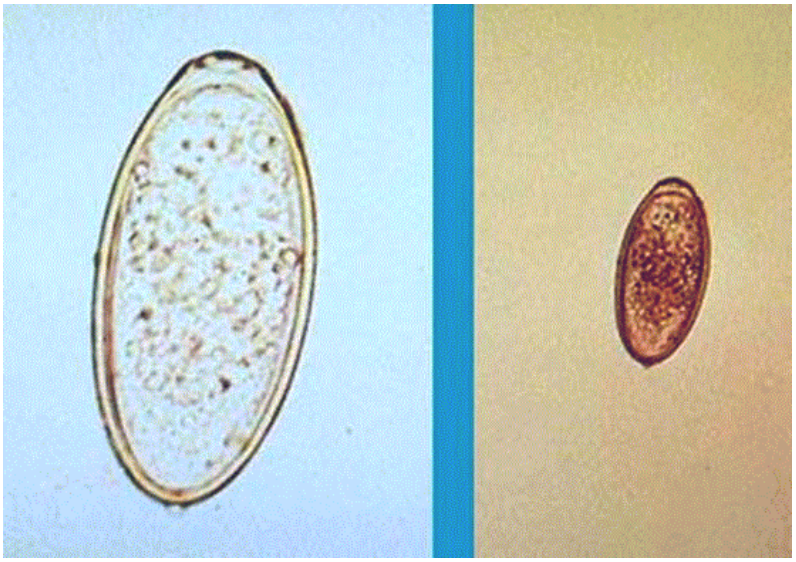


Figure 1: Strongyle eggs as seen under the microscope.

The molecular method of drug resistance within the parasites is poorly understood, the only gene associated with resistance that has been isolated so far is the beta tubulin gene.

It is thought that genes for pyrantel/ivermectin resistance are naturally rare in nematodes of equines and therefore resistance should be slow to develop. However, the advent of drugs that do kill the encysted stages (such as moxidectin) is decreasing the worms in "refugia" and thus increasing both the likelihood of resistance and the speed at which it will

arrive. As no new anthelmintic products are likely to be developed in the foreseeable future we have to look to alternative methods of worm control.

As well as increasing the numbers of worms in "refugia" other areas that should be researched as methods of worm control, include possible vaccine development, forms of biological control and host selection. All of which require a greater understanding of the genetics and molecular methods of survival employed by the nematodes both within the host and in the environment.

Report on *Post Mortem* Examinations for Third Quarter 2008

East Anglia

Thirty one cases were examined including fourteen fetuses, one of which was from a miniature donkey.

Of the fourteen fetuses examined this quarter six were from thoroughbred mares. One thoroughbred fetus of 186 days gestation was positive for EHV-1 which was diagnosed by virus isolation on mixed fetal tissues. This diagnosis was confirmed by PCR testing on mixed fetal tissues. The mare was vaccinated against herpes virus and none of the in contact mares have shown any clinical signs of disease. One thoroughbred fetus of 200 days gestation had placental malperfusion, one thoroughbred fetus of 160 days gestation had acute umbilical cord torsion with eleven twists of the cord identified and one thoroughbred fetus of 210 days gestation was found to have umbilical herniation with eventration of small intestine and liver, however it was unclear if this was the cause of the abortion. One thoroughbred mare had an abortion at 180 days gestation no cause could be found. This was not the first occurrence of this problem in this mare and it was recommended that she had a thorough pre-breeding examination. One thoroughbred mare aborted at 150 days gestation; no cause could be identified. Seven other fetuses were examined but no definite cause of the abortions could be identified.

A multiparous miniature donkey jenny gave birth to a still born full term foal. The foal was still in the fetal membranes (apart from the nose where the jenny had tried to release it from the membranes). The foal was tested negative for EHV however *Areomonas hydrophilia* was isolated from swabs of fetal lung, the chorion and the jenny's uterus. There were unconfirmed reports that the jenny had been ill during the pregnancy and post delivery bloods revealed lipaemia, the significance of which is unknown. A maiden jenny from the same stud had also had a red bag delivery, which the foal did not survive, a few weeks earlier.

A neonatal foal was examined and found to have a congenital heart defect. It was euthanased and mitral valve dysplasia was identified at *post mortem* examination.

A two month old foal died of haemothorax which was thought to be caused by breakdown of an adhesion between the right lung and a healing rib fracture. The rib fracture had no acute pathology associated with it and was thought to be an injury from parturition.

A six month old foal with a history of previous strangles infection was found dead in the field. It had been being treated for suspected *Rhodococcus equi* infection at the time. *Post*

mortem examination revealed multiple kidney abscesses, which were confirmed as *Rhodococcus equi* infection.

The fourteen remaining cases were all adults.

A two year old colt developed extensive infection at multiple sites up to and including the shoulder on one foreleg. The infection was unresponsive to antibiotics. The colt then developed laminitis in the contra-lateral forelimb and therefore it was electively euthanased. The colt had undergone cryotherapy on both forelegs to treat sore shins ten days previously.

Five gastrointestinal cases were examined. A three year old gelding suffered a gastric rupture. It had been gelded ten days earlier but this was not thought to be related. One case of a three year old draught gelding was examined on behalf of the RSPCA. It had a severe gastric impaction where over 60 kg of stomach contents were removed at *post mortem* examination. Two cases with abdominal adhesions were seen one of these also had chronic colon displacement. One case of grass sickness was examined. The pony was approximately 15 months old and had classical clinical and *post mortem* signs of the disease.

A miniature Shetland pony mare died as a result of haemorrhage following rupture of an adhesion that had formed between her two ovaries. The mare had a three and a half month old foal at foot and an early pregnancy in utero. Incidentally two small chondroids were also found but these were negative for *Streptococcus equi* (strangles) infection.

A second case was examined for the RSPCA. A pony was found dead in it's field. On *post mortem* examination it was found to have hepatic atrophy. Histology showed the liver to have a fibrosing hepatopathy. The pony also had an acute myopathy of the intercoastal muscles. It is not known if this myopathy contributed towards the death of the pony which was thought to be mainly caused by liver disease secondary to pyrrolizidine alkaloid toxicity (ragwort poisoning).

Single cases of bronchial pneumonia, cardiac hypertrophy, adrenal carcinoma, squamous cell carcinoma, osteomyelitis and ethmoid haematoma were also reported.

Home Counties

Twenty one cases were examined this quarter.

Eleven gastrointestinal cases were examined. They included a five year old polo pony with anterior enteritis, a twenty year old Welsh cob mare with acute cyathostomiasis, a four year old Friesian mare with grass sickness and a nine year old Haflinger mare with post operative ileus after successful surgical correction of right dorsal displacement of large colon and volvulus of small intestine. Other gastrointestinal cases included twelve week old colt foal with intussusception of small intestine, a twenty year old new forest pony gelding with small intestinal volvulus, and a sixteen year old new forest pony mare with small intestinal volvulus secondary to a pedunculated lipoma. Also examined were a nineteen year old Norwegian warmblood gelding with ileal incarceration within gastrosplenic ligament tear and an adult mixed breed horse with acute peritonitis secondary to a rectal tear. An aged horse with colic and a rectal tear was euthanased but

was not examined *post mortem.* Another horse was euthansed following recurrence of colic following intestinal resection secondary to a pedunculated lipoma.

Four neurological cases were examined including a twenty five year old mixed breed gelding with cholesteatomas in the brain and a phaeochromocytoma in the adrenal gland. A six year old riding pony had non-suppurative meningitis and a six year old Hlosteiner gelding had behavioural changes but no significant CNS abnormalities could be found. A four year old Warmblood gelding had cervical stenotic myelopathy.

Two respiratory cases were examined. A ten year old Welsh mare had necrotising pneumonia, hyperlipaemia and laminitis and a thirty five year old cob cross gelding had ulcerative and suppurative laryngitis that was suspected to be secondary to a penetrating injury.

Two musculoskeletal cases were examined. A ten year old mixed breed mare with cervical vertebral arthropathy and a four year old Irish draught cross gelding with septic arthritis affecting the third metacarpal bone secondary to a penetrating injury.

Two cases of neoplastic disease were seen, one that involved a thirty one year old mixed breed gelding with a pituitary adenoma and hyperadrenocorticalism and one that involved an aggressive ocular tumour that spread to involve the cornea. This animal was euthansed at the owner's request.

South West

Nine cases were examined during this quarter.

Four gastrointestinal cases were seen. A donkey was examined and found to be infested with encysted larval cyathostomes. One case had chronic ulcerative typhlitis, thrombosis and infarction with evidence of renal tubular necrosis and diffuse subcutaneous oedema. Another case had volvulus of the large colon and evidence of cyathostominosis and multifocal hepatic necrosis. One animal had pelvic flexure ulceration, rupture and associated peritonitis.

Two respiratory cases were seen. One case had a nasal carcinoma. This animal also had a pars intermedia tumour. The other case had a pulmonary abscess with cyathostomnosis also observed.

One case of olecranon fracture was diagnosed. A donkey with terminal neurological signs was examined histopathologically; no cause of death was determined.

A mare suffered fatal haemorrhage from ruptured broad ligament vessels three months after foaling.

Scotland

No reports were received from Scotland this quarter.

Northern Ireland

Sixteen equine post mortem cases were examined during this quarter.

A single equine fetus and placenta were examined and leptospiral antigens were detected by immunofluorecsence in the placenta.

A four-month-old foal was examined *post mortem* in which the small intestinal mucosa was haemorrhagic and marked enteritis was present. High levels of strongyle eggs were present in the faeces.

Enteritis was also present in three other foals which were examined *post mortem*, although no significant pathogens were recovered from these cases.

A two-month-old foal, which died suddenly, had an intussusception and strangulation of the small intestine.

A one-month-old foal which had a history of pneumonia and scour before becoming ataxic and recumbent was found to have a comminuted fracture of the left femur with extensive haemorrhage into the surrounding gluteal muscles was seen. Large numbers of *Strongyloides* spp eggs were also present in the faeces.

A six-week-old foal, which died suddenly, was found to have a parasitic gastroenteritis. High numbers of *Strongyloides* spp eggs were present in the intestinal contents.

A four-mouth-old foal, which was found dead in a shallow river, had mud, gravel and other debris present in the trachea. The lungs were over inflated and contained gritty material. Histologically, there was a large amount of foreign extraneous material present in the airways. In this case the gross and histological findings were indicative of drowning.

A two-and-a-half year old Shetland pony mare, which had died suddenly, was found to have a grossly distended stomach which was impacted with a hard mass of dry digesta. In addition, high levels of larval cyathostomes were obtained from caecal and large intestinal contents.

A six-year-old mare, which had died suddenly, was found to have thickening of the caecal wall with multifocal areas of caseous necrosis. Histologically, there was a typhlitis with multiple mucosal and submucosal nodules and an associated eosinophilia.

A one-year-old donkey mare and a one-year-old male pony were examined with a history of dying shortly after being moved to fresh pasture. The stomachs of both animals were distended with grass digesta and gas. In these cases a diagnosis of acute gastric distension was made.

A six-year-old mare, which died after showing clinical signs of colic, had a large intestinal impaction.

A ten-year-old pony had been observed wobbling from side to side before death. A white calcified vermiform track was present in the epicardium of the right atrium. A possible cardiac conduction problem due to an aberrant ascarid nematode migration was suspected as the cause of death.

A five-year-old horse was examined *post mortem* with the most significant gross findings being ulceration of the pars oesophagea and haemorrhagic stomach contents.

CASE REPORT

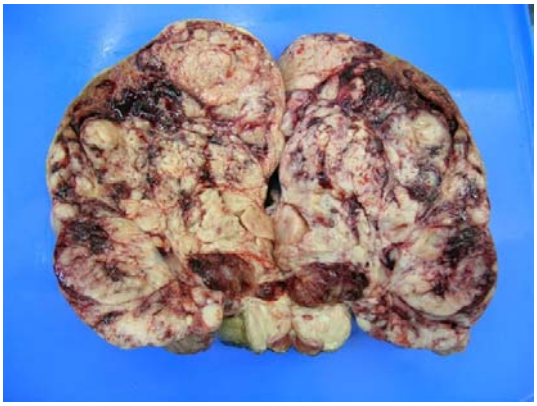
Abdominal tumour in a donkey

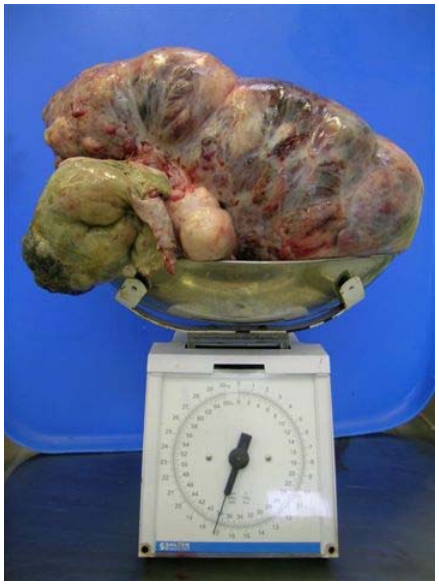
Alex Thiemann MA, VetMB, CertEP MRCVS, The Donkey Sanctuary

A 26 year old donkey was presented for an attack of severe colic with distended intestines and a palpable painful mass in the mid line. He had a history of mild anaemia, gradual weight loss and low plasma proteins. Previous investigations had included protein electrophoresis and rectal biopsy which indicated chronic eosinophilic proctitis, possibly due to endoparasitism. Other than that no loss of appetite or signs of discomfort had been reported. Regular dental work and appropriate anthelmintic treatment had been carried out. Due to low grade laminitis the donkey was on equipalazone at 2.2mg /kg daily.
The donkey was euthanized due to unremitting pain, before further investigations could be performed.

At post mortem a large tumour was identified originating from the base of the caecal lumen, and attaching to the ventral body wall, the tumour measured 43 x 35 cms weighing 17.25kg, and occupied 20% of the abdominal cavity. Five litres of blood were present in the peritoneal cavity and there was widespread lymphadenopathy of the abdominal and thoracic lymph nodes.

Histology identified the tumour to have “plump spindle cells with typical morphology of a leiomyosarcoma”, a form of gastrointestinal stromal tumour (derived from the mesenchymal tissue).





The case highlights several of the problems when treating geriatric donkeys. They are stoical animals often not exhibiting signs of mild-moderate colic in a demonstrative fashion, especially when pain relief is being administered for a chronic condition. Weight loss is common in elderly donkeys and could partly have been explained by this donkey's dental condition. Surgery for colic may not be a prudent option in geriatric animals with multiple problems (laminitis, dental disease).

Practitioners should take seriously reports of loss of weight and condition in geriatric donkeys and bear in mind that abdominal neoplasia is not uncommon in this age group.

Reference:

Hafner S, Harmon B G and King T (2001) Gastrointestinal stromal tumours of the equine cecum. *Veterinary Pathology* **38**, 242-246.

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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