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Epidemiology

Chaired by James Wood

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13.20–13.35

A cross sectional study assessing the current prevalence of trypanosomiasis in the equid population of the central river region of The Gambia

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Aim: In 2006 a cross sectional study of the equid population of the Gambia indicated a high prevalence of trypanosomiasis (Pinchbeck *et al.* 2008). The relative prevalence of different species of trypanosomes and their association with clinical parameters was assessed. A recent outbreak of cerebral trypanosomiasis in the equid population of the Gambia caused by *Trypanosoma brucei* (Peachey *et al.* 2010) suggests that the epidemiology or virulence of this disease is changing. A repeat of this cross sectional study was performed in 2009 to assess this.

Materials and methods: A total of 241 horses and donkeys were sampled at clinics and local markets in the central river region of The Gambia. Blood was preserved on FTA cards (Whatman, UK) and clinical parameters were recorded for each individual. Polymerase chain reaction (PCR) for *Trypanosoma congolense* was performed on all 241 samples and for *Trypanosoma brucei* on a subset of 70.

Results: The prevalence was calculated at 15% for *T. congolense* and 45% for *T. brucei*. Infection with *T. congolense* was significantly associated with pale mucus membranes ($P = 0.04$) and a depressed demeanour ($P = 0.03$). The current prevalence was compared with 2006 values which were 31% for *T. congolense* and 18% for *T. brucei*. This work is ongoing; a complete dataset for all species of trypanosome will be presented. **Conclusion and practical significance:** The results thus far indicate that the prevalence of *T. congolense* and *T. brucei* has decreased and increased, respectively since 2006. In addition *T. congolense* is no longer significantly associated with a low packed cell volume, as was previously found. These data suggest that the epidemiology and pathogenicity of equid trypanosomiasis in The Gambia is changing, this may be associated with the sudden increase in neurological disease in affected animals.

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13.35–13.50

Frequency and speculated causes of equine laminitis in Great Britain

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Aims: To determine the frequency of equine laminitis in Great Britain (GB) reported by veterinary surgeons and to determine owner-suspected causes of the disease. **Methods:** A prospective cohort of horses/ponies under the care of a geographically representative sample of 28 veterinary practices was studied. Veterinarians reported each case of active laminitis by completing a clinical signs checklist ('laminitis reporting form', LRF). Monthly denominator data on the number of horses registered to and attended by the veterinary practices were obtained from a subset of 15 practices. Owners who participated in a nested case-control study of risk factors for laminitis were sent a list of speculative causes of laminitis and were asked to select one option. **Results:** Five-hundred-and-sixteen LRFs were received between March 2009 and January 2011, with case numbers peaking in May and June 2009, January 2010 and May and June 2010. The frequency of veterinary-diagnosed laminitis was 0.75% (95% CI = 0.66–0.84%) in the registered population (275 LRFs; 36,792 horses) and 0.36% (95% CI = 0.32–0.40%) in the attended population (299 LRFs; 82,543 horse visits). Forty-seven responses were received from case owners (48.5% response rate). The most common speculated cause of laminitis was grazing on lush pasture (29.8%), followed by equine Cushing's disease (21.3%), obesity (12.8%) and equine metabolic syndrome (8.5%). Other speculated causes were farrier, contralateral limb lameness, grain overload, cold weather, less exercise, chronic obstructive pulmonary disease and plant poison. Speculated causes not selected by respondents were colic, diarrhoea, drug administration or foaling complications. **Conclusions and practical significance:** Laminitis occurred in <1% of the horse population studied, considerably lower than previously published frequency estimates. Laminitis was most frequent in the spring and winter, consistent with previous epidemiological research. The most common speculated causes indicate that endocrinopathic laminitis may be of major importance in GB. **Acknowledgements:** This project is funded by World Horse Welfare.

13.50–14.05

Assessment of the impact of a charity training programme on health of working horses in Lesotho

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Aims: To assess the impact of an equine charity's farriery, saddlery and nutrition training programme in Lesotho on horse health and owners' knowledge and husbandry practices. **Methods:** One survey (S1) was undertaken before the first training programme began (April–June 2007) and one (S2) 20 months after its completion (August–October 2009). Randomly selected horses (312 and 245 in S1 and S2, respectively) underwent a structured



Hall 12 ■ Thursday 8th September

clinical examination; blood and faecal samples were obtained for haematology, biochemistry and worm egg counts, respectively. Tack was assessed for condition, cleanliness and fit, following a standardised protocol. Owners were interviewed using a pretested questionnaire administered face-to-face in local language. Differences between survey findings were assessed using Chi-squared and *t* tests. **Results:** Most horses provided ridden transport (S1: 79% vs. S2: 91%). Frequency of forefoot shoeing increased (S1: 14% vs. S2: 29%, *P* = 0.02) but frequency of overgrown forefeet horn was unchanged (S1: 45% vs. S2: 42%). Owners appreciated enhanced skills of trained farriers but reported poor affordability of shoeing. Tack availability, condition and cleanliness remained suboptimal but bridle fit improved (*P* = 0.03). Widespread tack-associated injuries (S1: 58% vs. S2: 78%) and pain on spinal palpation (S1: 53% vs. S2: 72%) persisted; injuries were seen most frequently on spine and withers. Mean body condition score remained suboptimal (S1: 2.5 vs. S2: 2.1) and many owners (S1: 62% vs. S2: 41%) recognised their animal's diet was unbalanced. Approximately one-fifth of horses had low red blood cell counts (S1: 21% vs. S2: 17%). Strongyle infestation was endemic (S1: 88% vs. S2: 89%) and most horses had ticks (S1: 59% vs. S2: 76%). **Conclusions and practical significance:** Although some positive impact has been achieved, key equine health issues remain. Since Lesotho is ranked low (141st/169) on the United Nations' Human Development Index, a sustained intervention period may be required before improvements are seen. Results could aid in selecting topics for future community-based interventions. **Acknowledgements:** World Horse Welfare; Lesotho Department of Livestock.

14.05–14.20

Rates of horse passport compliance as assessed by Local Authority inspections conducted in Great Britain between 2005 and 2010

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Aims: To investigate horse passport noncompliance rates in Britain from 2005–2010 using data from Local Authority horse passport checks; with noncompliance defined as missing passports or passports containing inaccurate information. **Methods:** Data on numbers of passports checked and proportions of these that were compliant, missing or contained inaccurate information were requested for the period 2005–2010 via the Freedom of Information Act from 202 Local Authorities across Britain. Spatial and/or temporal variations in passport checking and noncompliance rates were described. **Results:** Of 202 Local Authorities, 100 (49.5%) checked horse passports and recorded the data, 62 (30.7%) did not check horse passports and the remainder, although they checked passports, data were not stored in an accessible format. Between 2005 and 2010 there were annual increases in numbers of Local Authorities conducting horse passport checks and numbers of checks conducted. Geographical variations in levels of checking and rates of passport noncompliance were seen, with East Anglia having the highest noncompliance rate (25.1%), and the North West the lowest (1.6%). In the period 2005–2010 17,048 individual passports were checked by 64 Local Authorities. Of these, 1558 (9.1%) were

noncompliant, with 963 (5.6%) containing inaccurate information and the remaining 595 (3.5%) being missing passports. A further 12 authorities checked 2772 passports, but recorded individual numbers of noncompliant passports, therefore compliant and noncompliant figures did not equal the denominator data. **Conclusions and practical significance:** A significant proportion of equine passports in Britain were found to be missing or did not comply with statutory regulations. Some caution is required in interpreting these particular data; however, they do suggest that collated passport data in the National Equine Database may contain significant inaccuracies. **Acknowledgements:** This project is funded by the Horserace Betting Levy Board.

14.20–14.35

Equine lameness: Incidence, causes, outcomes and risk factors in a working horse population

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Aims: Lameness is a common equine health problem, yet surprisingly, information regarding UK lameness incidence is restricted to studies of racing or performance horses, and referral hospital populations. This study investigated lameness in a working horse population over a prospective one year period. Study objectives were to determine overall lameness incidence, identify common causes and possible risk factors of lameness, and investigate the incidence, duration and outcome of conditions observed. **Methods:** Lameness questionnaires were distributed to an equine army establishment, and lameness cases recorded. Basic population information was requested for every horse, and further information relating to the nature and outcome of lameness episodes recorded for horses experiencing lameness. Descriptive and univariable statistical (Chi-square/2-sample *t* test, *P*<0.05) analyses were performed. **Results:** Questionnaire response rate was 93%; data for 273 horses were analysed. Overall lameness incidence was 23.3 cases per 100 horses per annum. Mean monthly incidence was 2.12% and a mean of 1.23 lameness episodes per horse in the lame population observed. The most common diagnoses were cellulitis/lymphangitis (18.6%), skin wounds (16.3%) and foot/shoeing problems (11.6%). Other diagnoses included tendon/ligament injuries, arthritis, foot abscesses, muscle bruising and exertional rhabdomyolysis. Age, years of army service and height were similar between lame and nonlame horses. Similar incidence in each work type category was observed. Recent change of rider was reported in 70.6% of cases, and recent exercise/management change in 17.6%. **Conclusions and practical significance:** This study showed a different distribution of lameness causes compared to other studies; however, there are no studies in similar populations, or using similar methodology, for comparison. Type and workload of horses in this study are similar to some of the general equine population, therefore findings from this study may have relevance to the general horse population. **Acknowledgements:** Defence Animal Centre, Household Cavalry Mounted Regiment, Royal Army Veterinary Corps.

14.35–14.50

An investigation of risk factors associated with superficial digital flexor tendon strain in hurdle racing in the UK

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Reasons for performing study: Tendon injuries are common in Thoroughbred racehorses. The risk of tendon injury has been shown to be greater in jump than in flat racing in the UK. The factors associated with this altered risk have not previously been investigated. **Aims:** To identify risk factors for superficial digital flexor tendon (SDFT) strain in Thoroughbred horses racing over hurdles. **Methods:** A retrospective analysis of records from horses running in all hurdle races in the UK between 2001 and 2009 identified cases diagnosed with a strain of the SDFT whilst still at the racecourse. A total of 1031 case starts and 168,637 control starts were then used for univariable and multivariable logistic regression to identify risk factors for SDFT strain at any one start. The potential effect of clustering within horse, race, racecourse, trainer and jockey was also examined by including each of these variables as random effects in mixed-effects models. **Results:** In the final multivariable model several statistically significant risk factors were identified, including: firmer going, increased horse age, having had a previous SDFT injury, having previously run in a flat race and racing in the summer compared to other seasons; all resulting in increased odds of sustaining an SDFT strain. Conversely, being trained by a more successful trainer and having run at least once in the previous 90 days resulted in decreased odds of SDFT strain. **Conclusions:** The risk factors identified provide important information about the risk of SDFT injury. Multiple avenues for further investigation are highlighted, including unmeasured variables at the level of the racecourse and trainer. **Practical significance:** The results of this study will direct future research and shape the development of interventions to minimise the risk in hurdle starts in the future. **Acknowledgements:** The project is funded by the Horserace Betting Levy Board.

14.50–15.05

Associations between exercise and joint injury in Thoroughbred racehorses in training

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Aim: To identify risk factors for carpal and metacarpal/tarsophalangeal (MCP/MTP) joint injury occurrence and/or progression in Thoroughbreds in flat race training, particularly in relation to exercise regimens. **Methods:** In a prospective cohort study, young Thoroughbreds entering training in 13 training yards throughout England were monitored for up to 2 years. Daily exercise records and information on veterinary-diagnosed carpal and MCP/MTP injuries and treatments were collected. Injuries were allocated to one of 4 categories: 1) localised to a carpal or MCP/MTP joint based on clinical examination and/or use of diagnostic analgesia, no diagnostic imaging performed (n = 21); 2) localised to a carpal or MCP/MTP joint, diagnostic images taken but no abnormalities detected (n = 21); 3) evidence of an abnormality of subchondral bone and/or articular margin(s) identified using diagnostic imaging (n = 72) and 4) evidence of

discontinuity of the articular surface identified by diagnostic imaging (n = 70). Cox regression analyses were performed to identify risk factors for injury type and category and injury progression. **Results:** Six-hundred-and-forty-seven horses spent 7785 months at risk of joint injury and 184 injuries were recorded (82 carpal, 102 MCP/MTP injuries). Increasing distances cantered in short periods (daily or weekly) were associated with decreasing risk of any joint injury, injuries in Categories 1, 2 and 3 and MCP/MTP injuries. Category 4 injury risk increased with greater distances cantered in 30 days. Risk of Category 1 injury increased with increasing distances of weekly high-speed exercise. Risk of MCP/MTP injury increased with accumulation of canter or high-speed exercise since entering training. Risk of joint injury progression increased with increasing exercise distances in short time periods. Injuries treated with medication were more likely to progress to a more severe injury. **Conclusions and practical significance:** Modifications to exercise regimens could reduce joint injury occurrence. **Acknowledgements:** Participating trainers and veterinary surgeons, the Horserace Betting Levy Board.

15.05–15.20

Equine grass sickness surveillance in Great Britain from 2000 to 2011: Incidence and aspects of disease epidemiology on affected premises

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Aims: To describe incidence rates and epidemiological aspects of Equine Grass Sickness (EGS) on British premises affected since 2000. **Methods:** A nationwide surveillance scheme using postal and online questionnaires collected retrospective premises-level and prospective case-level information for EGS cases occurring in Great Britain between January 2000 and January 2011. Nonparametric methods were used to test the statistical significance of differences in continuous measures between categories of binary/categorical variables. **Results:** A total of 1517 cases were reported from 1246 locations. There were 249 'recurrent' premises that either reported a history of previous cases or reported multiple cases to the surveillance scheme (median = 2 cases; range = 1–9 cases). Median incidence was not significantly different on 'recurrent' compared to 'nonrecurrent' premises (2.3 cases/100 horse-years-at-risk, and 1.8 cases/100 horse-years-at-risk, respectively, P>0.05). Clinical presentation was recorded for 1324 EGS cases, of which 46.6% (n = 617) were classified as acute, 20.4% (n = 270) as subacute and 33% (n = 437) as chronic. Compared to acute/subacute cases, horses with chronic EGS had been resident for a significantly longer period on both affected premises (median 365 days and 730 days respectively; P = 0.05) and affected paddocks (median 60 days and 90 days respectively; P = 0.009). Total size of premises, paddock size, total number of horses on premises and number of horses per paddock were greater in 'recurrent' premises, compared to premises reporting single EGS cases (all P<0.001). **Conclusions:** Chronic EGS was associated with longer time spent on affected premises and paddocks compared to acute or subacute EGS, which may be consistent with acquisition of partial immunity. Larger premises and those with greater numbers of horses were more likely to report recurrence of EGS. **Practical significance:** Estimates of and factors associated with EGS incidence on premises in Great Britain will be important in developing detailed protocols for future intervention studies such as *Clostridium botulinum* vaccine trials.