Equine Grass Sickness: What is it?
Equine Grass Sickness (EGS) is a debilitating and frequently fatal disease of horses, with cases occurring predominantly, but not exclusively, in northern European countries, particularly Great Britain. Although the cause of EGS has not been confirmed, there is strong evidence to suggest that the bacterium *Clostridium botulinum* plays a role. It is thought that a toxin produced in the horse’s gastrointestinal tract, by this soil-borne bacterium, causes damage to the nervous system, leading to clinical signs which may include colic, difficulty eating/defaecating, patchy sweating, muscle tremors and rapid weight loss.

The EGS Surveillance Scheme:
The Animal Health Trust (AHT) is developing the first nationwide surveillance scheme for EGS, following funding from The Horse Trust in 2006. EGS surveillance will allow accurate quantification of the disease frequency and its risk factors. Mapping of the cases over time and space will assist the design and conduct of vaccine trials against *C. botulinum*.

Aim: To produce a system to collate details of clinical cases and produce an accurate representation of the true and current frequency of EGS in Britain.

Objectives:
- Establish and maintain a *confidential database* of EGS affected premises in Great Britain.
- Develop a system to *collect data from EGS cases and in-contact horses*.
- Calculate *EGS occurrence rates* at a premises, regional and national level.
- Monitor and analyse *regional and national trends* in EGS occurrence in Great Britain.
- Use those data to develop a study protocol for an *EGS vaccine field trial*.

Results to date:
A Microsoft Access database containing details of reported EGS cases has been established, concentrating on cases from the year 2000 onwards.

Questionnaires:
Two project questionnaires have been developed to gather information on EGS occurrence:
- *New Case Report Questionnaire* - information on new cases occurring in GB
- *Premises Questionnaire* - history of disease on the premises since 2000

Since the beginning of April, questionnaires have been posted to 1394 owners with 332 responses, and 42 owners have contacted the scheme directly to...
Types of EGS:
- **Acute Grass Sickness (AGS):** Survival 1-2 days
- **Subacute Grass Sickness (SAGS):** Survival 2-7 days
- **Chronic Grass Sickness (CGS):** Survival >7 days

Clinical Signs:
- **AGS** (more severe) + **SAGS** (less severe):
  - Depression
  - Absence of gut sounds (ileus)
  - High heart rate (tachycardia)
  - Salivation
  - Reflux of gut contents through the nose (naso-gastric reflux)
  - Muscle tremors (fasciculation)
  - Drooping eyelids (ptosis)
  - Patchy or generalised sweating
  - Difficulty swallowing (dysphagia)
  - Abdominal discomfort (colic)
  - Constipation (impaction)

- **CGS** (gradual onset):
  - Rapid and severe weight loss leading to emaciation
  - Markedly tucked up abdomen
  - Base narrow stance
  - Dry, crusty nose (rhinitis sicca)
  - Drooping eyelids (ptosis)
  - Slightly elevated heart rate (tachycardia)
  - Muscle tremors (fasciculation)
  - Patchy sweating
  - Reduced appetite (inappetance)
  - Slight difficulty swallowing (dysphagia)

Veterinary Practices:
Every equine practice in the UK (n=846) has been asked to assist by reporting cases occurring since the year 2000. Two hundred practices have responded so far, of which 96% are willing to assist the scheme.

Publicity:
Leaflets and stickers have been produced, following development of the scheme’s own logo, to generate awareness among the public. Recent publications have included articles within Horse and Hound, Your Horse, Horse and Rider, Equine Bloodstock News and the Thoroughbred Breeders Association website. Various events have also been attended such as Bramham Horse Trials and BEVA’s International Colic Research Symposium. The website www.equinegrasssickness.co.uk has also been created where information on all aspects of the scheme can be accessed.

Analyses:
Currently, the database holds 2304 individual cases of EGS occurring between the years of 1942 and 2008 and 1613 individual owner’s details.

- The highest proportion of EGS cases have occurred in the spring, with May being the high risk month for the disease (Figure 1).

- The distribution of EGS case owners can be seen in Figure 2, with England accounting for the majority of cases (58%) since 2000, possibly due to a larger equine population in England. Scotland and Wales exhibited 40% and 2% of cases respectively and the regions exhibiting the most cases nationally were North Yorkshire, England and Aberdeen, Scotland.

- From the database of owners, 482 unique horse locations were identified, of which 326 premises reported 1 case, while 156 premises reported more than 1 case.

- Each year since 2000, a large proportion of cases have been fatal acute or subacute cases, with less chronic cases, highlighting the high mortality rate of this disease (Figure 3). When analysing the outcome of chronic cases however (n=369), an almost equal proportion of cases survived, although this may be due to reporting bias with owners of survival cases being more inclined to report an occurrence. Survival from CGS appears to be greater in Scotland (60% of cases) when compared to England (45% of cases), but the reasons for this are currently unclear.
The age of horses at highest risk from EGS was shown to be between 5 and 9 years when looking at all ages represented (ranging from 2 months to 47 years). This was then narrowed down to 5-6 years when considering horses less than 10 years of age (Figure 4). The genders of horses represented were roughly equal, however, with 46% mares, 48% geldings and 6% stallions, suggesting little gender difference in disease frequency.

There was a wide representation of horses and ponies, with 3 donkeys also on the database. Cross-breeds were represented most frequently, accounting for 34% of the cases. There were 66 different pure breeds and out of these Thoroughbreds (12%), Highlands (9%) and Welsh Cobs (8%) were most commonly represented.

Care is required in interpreting these preliminary data as they only represent the cases submitted to the project collaborators, with no current reference to the underlying horse population. It is hoped that following the development of the National Equine Database comparisons should be able to be made in the future.

What’s Next?

Following a successful year in the hands of Claire Wylie, the position of EGS Research Assistant has been handed over to Georgette Kluiters. Claire developed the initial surveillance scheme and is now moving on to do a PhD project in equine epidemiology at the AHT. Georgette has recently joined the AHT after completion of a postgraduate degree in infectious disease control at the Royal Veterinary College. She will be taking the surveillance scheme to its next stage by analysing the data to determine disease frequencies and trends.

The EGS surveillance scheme is an ongoing project and in order for our data to be representative of the disease within the UK it is vital that both owners and veterinary practices continue to report cases of the disease. This can be done by either filling in a questionnaire online at www.equinegrasssickness.co.uk, allowing your veterinary practice to pass on your details to us or by contacting Georgette Kluiters directly at the AHT.

Acknowledgements:

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If you would like to order EGSF merchandise, including Christmas cards and promotional items, please click on this link to access their website. www.grasssickness.org.uk/main.htm