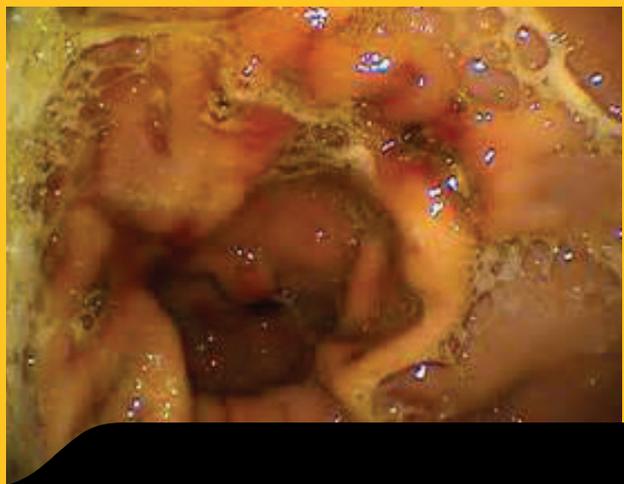
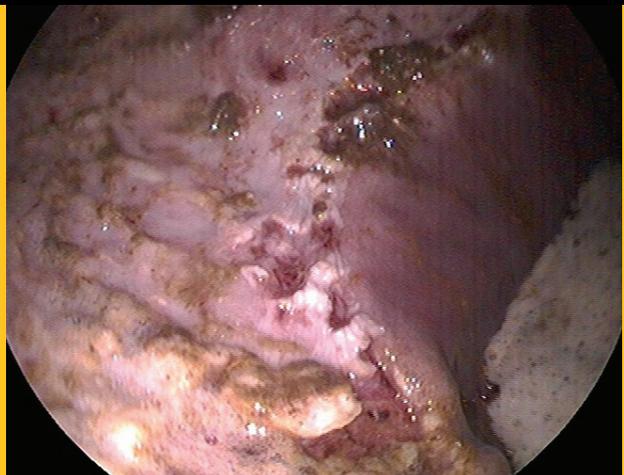


RANDLAB
Gastroscopy
Standard Operating
Procedure



RANDLAB
VETERINARY MEDICINES





RANDLAB Gastroscopy Standard Operating Procedure

Randlab is keen to extend its leadership in EGUS management by partnering with clinics. The aim of the partnerships is to supply the clients of the clinics with the gold standard in education, diagnosis, treatment and follow up of Equine Gastric Ulcer Syndrome (EGUS).

Randlab proposes the following protocol and feels that it represents the gold standard to build upon. The protocol covers the following areas:

- Marketing the Gastroscopy Day
- Obtaining informed consent
- Preparation of the horse for the gastroscopy (fasting, water deprivation)
- Sedation of the horse
- Restraint of the horse
- Passing of the stomach tube/insertion of dental gag
- Passing of the gastroscope
- Navigating the gastroscope to observe all relevant areas of the stomach
- Recording of scoping data
- Cleaning the scope and tube between patients
- Recovery from sedation
- Prescription of anti-ulcer medication
- Management/husbandry recommendations
- Follow up gastroscopy

Equipment that will be required on the Gastroscopy Day:

- 3m (9mm diameter) gastroscope fully charged
- Trolley/stand to place gastroscope
- Leads for ongoing charging
- Deionized water for gastroscope lens flushing
- Stomach tube
- Detomidine HCl (or equivalent)
- Flunixin Meglumine (Colix)
- Twitch
- Lubricant
- Matrix wipes
- Bucket with clean water for flushing stomach
- 60ml syringes
- Biopsy forceps for biopsying unusual lesions such as gastric squamous cell carcinomas

Marketing of the Gastroscopy Day

The scoping day is most productive when pre-event planning is performed.

This should be planned over a period of approximately 30-45 days prior to the scheduled gastroscopy day. An important part of this planning is to circulate the over the counter/email client brochure *“Does Your Horse Have Ulcers?”* that is supplied by Randlab (copy attached). This should go to all clients of the clinic and at the same time a gastroscopy day should be advertised and discussed with the clients. Obviously when planning such a day the “better” or more compliant clients should be targeted along with horses suspected of having gastric ulcers.

It is essential that the clinic have enough ulcer medication on hand to cope with the likely increased demand generated by the gastroscopy day. Approximately 70% of horses scoped will require a course of ulcer medication and it is preferable that the client leave with the medication on the day.

A diary/schedule should be kept with appointments approximately 25 minutes apart. Where there is a large number of bookings, consideration should also be given to an hour break for lunch. This enables ample time to catch up if the schedule is running behind and also gives the veterinarian/technician/nurses ample time to freshen up.

Although gastroscopies are a low risk procedure, it is important to explain any potential adverse events/risks to the clientele. These risks include adverse reaction to sedation, possibility of injury if the horse becomes fractious, low possibility of mild colic symptoms due to insufflation of the stomach during the gastroscopy and the possibility of a blood nose associated with the passing of the stomach tube (see below).

It is recommended that each client sign an informed consent document stating that they have been advised of the risks of the procedure and are prepared to indemnify the Clinic and its employees and Randlab and its employees of any responsibility in the unlikely event that any such adverse event should occur. Randlab have a template for such an informed consent/indemnity waiver if required.

Preparation of the Horse for a Gastroscopy

Fasting of the Horse

In the 24 hours prior to the day, each client should be reminded that their horse requires fasting for a period of **no less than 12 hours** prior to their scheduled gastroscopy. This is more reliably achieved when the horses are delivered to the veterinary practice on the afternoon prior to the gastroscopy day as compliance is routinely better at the clinic. Ideally the horse is boxed from the evening prior to the gastroscopy. At this time, all food and hay must then be removed from the horse's enclosure. Care must be taken to ensure that all scraps are also removed. It is also preferable to fit a grazing muzzle to the horse to further ensure that the horse does not continue to graze on bedding/shavings/wood from the stable and walls. Routinely clients leave horses in the paddock ahead of gastroscopy days assuming that if they don't feed the horse it is therefore "starved". Horses will then fill up on grass from the paddock and render the gastroscopy undiagnostic. It should be stressed that horses should not be left in the paddock on the evening before gastroscopy. In the event that it is not possible to house the horse at the vet clinic, stable or bare yard prior to the scoping day, it is essential that the horse be fitted with a grazing muzzle.

Removal of Water

At no later than 4 hours but as many as 6 hours prior to the planned gastroscopy time, the horse should then have water removed from its enclosure. In periods of high temperature this should be restricted to 4 hours, but in cooler climates this can be extended to the full 6 hours.

Preparation of the Veterinary Clinic for the Gastroscopy

The Randlab technician will arrive at the clinic a minimum of 30min prior to the first scheduled gastroscopy. He/she will require approx. 20 min to set up and test the equipment.

Only deionised water should be used to fill the flush bottle attached to the light source.

A 10L bucket of warm water should be prepared to flush the stomach wall free of feed residues through the biopsy channel.

A 20L bucket of warm water and chlorhexidine should be prepared for soaking the stomach tube between patients.

The horse should arrive at the veterinary clinic approximately 30 minutes prior to the planned gastroscopy time. This enables sufficient time for the horse to settle in the event that it had become fractious during the travel. The horse should have a head collar/ halter and a lead on at all times and preferably a rearing bit for further restraint.

The gastroscopy procedure should be explained to the horse's owner/trainer/representative, including potential complications, and then informed consent obtained. The owner should also be asked to complete a short questionnaire regarding the horse's relevant history, diet, exercise, previous ulcer treatment, etc. This form can be supplied by Randlab and becomes part of the medical record.

At this point the horse should be handed to the nurse ahead of being sedated. Routine observation of heart function and aseptic techniques should be used when administering sedation. The veterinarian should then sedate the horse in preparation for the gastroscopy. The horse may well be placed in the crush (see below) prior to sedation for a quieter horse, or for a more fractious horse, the horse may be sedated in proximity to the crush and then placed in the crush once the onset of the sedation is observed.

The preferred sedation is Detomidine Hydrochloride (10mg/ml). The dose rate should be 10-20µg/kg or 0.1-0.2ml/100kg BW. Prior to continuing with the procedure, the horse's details are entered into the video recording software.

Restraint, Handling and Personnel involved in the Gastroscopy procedure

The gastroscopy should preferably be undertaken in a standing crush. If a crush is not available, the gastroscopy can be performed in a stable or box where the equipment and gastroscopist can be physically protected by the front wall of the box.

A minimum of three people are required to perform a gastroscopy. The horse should always be handled by a dedicated handler whose responsibility is solely to restrain the horse relieving the veterinarian and technician to perform the procedure (see below). Once sedated and in position in the crush (box) the horse should then have a nasal twitch applied to offer further control of the horse.



The Procedure

Passing of the Stomach Tube

The veterinarian will now pass a large bore stomach tube, as supplied by Randlab. The tube is lubricated and then passed via either nostril. Normal care and procedure should be taken when passing the stomach tube. The stomach tube will be passed to a length pre-marked on the tube. The role of the stomach tube is to protect the scope and prevent it retroflexing in the oropharynx and subsequently appearing in the horse's mouth where it is likely to be chewed/damaged. The scope will be passed through the centre of this stomach tube.

In the event that the horse is too small to be tubed, a well fitted dental gag can be applied to the horse's mouth. The mandibles are then physically separated prohibiting the horse from biting down. In these cases, the scope will still be passed nasogastrically.

Passing the Gastroscope

The external part of the scope should then have lubricant applied liberally to approximately the distal 1 metre. No lube should be placed on or near the terminal lens which would obscure the view. At this point the scope should be passed down the stomach tube (or nasogastrically where a dental gag is fitted).

The light source should only be turned on once the scope has passed the nostrils to avoid frightening the horse.

Unless otherwise determined, the veterinarian will now attend to the tube and/or gastroscope at the nostril of the horse for the duration of the procedure ensuring that it remains in place and aid the technician in manoeuvring the scope around the stomach. The Randlab technician will operate the angulation of the gastroscope and assist with inflation and flushing of the stomach as required.

Navigating the Gastroscope to Observe the Relevant Regions of the Stomach

Once the scope is in the tube, the gastroscopist will start recording the procedure using the viewing software. The gastroscope will continue to be passed down the tube until it enters the stomach. In an average 500kg horse, the stomach is found at a length of approximately 1.8 metres.

The gastroscopist should then spend some time looking for landmarks, orientating the scope and establishing the degree of gastric fill present.

The first view should be of the *greater curvature of the stomach*. In the event that the stomach is not adequately distended, the gastroscopist may elect to further insufflate the stomach at this point.

The saccus caecus, greater curvature and margo plicatus are initially readily observed. Depending on the amount of residual gastric fill, the fundus and some of the glandular mucosa in this region may also be observed at this time.

The *margo plicatus should be followed* with the scope to enable a thorough view of this part of the stomach. Any adherent food should be flushed off the stomach wall to enable a thorough inspection of the mucosa. Images documenting findings should be captured at this time.

Bott fly larvae are often found congregating around the margo plicatus. This always impresses the horrified owner and provides a further opportunity for the veterinarian to discuss worming programs and provide the owner with a mectin based wormer on discharge.

The scope should then be passed further around the greater curvature until it retroflexes. This will enable the gastroscopist to observe the *lesser curvature* of the stomach and the surrounding squamous and glandular mucosa. If necessary, the stomach can be further inflated to ensure that the lesser curvature is not submerged in the gastric fluid. The lesser curvature is the most common site for squamous ulcers and should always be fully visualised. Again photos should be taken.

The classic *retroflexed view* demonstrating the scope exiting the cardia, the lesser curvature, the path forward to the pyloric region and the dependent gastric fluid pool should be obtained. At this point the gastroscopist will decide if the stomach is suitably presented to enable the pyloric region to be viewed. If there is too much food/fluid present in the stomach, it is likely to preclude visualisation of the pyloric region and the gastroscopy should finish at this point.

Finding the pylorus is the most technically complex part of the gastroscopy procedure. It should be noted that this might take a number of attempts and could take between 0-10 minutes depending on the proficiency of the gastroscopist and other prevailing factors (amount of residual feed in stomach). In the event that the stomach is deemed to be appropriately presented, the scope should be further passed to endeavour to observe the pyloric antrum and pylorus. This will usually involve the scope diving below the gastric fluid level and re-emerging in the antrum. In the average 500kg horse, the pylorus is found at approximately a length of 2.6 metres. Images documenting findings should be captured at this time.

Once the pylorus has been observed, recorded and photographed the gastroscopy is complete. The scope will be carefully withdrawn from the tube followed by the veterinarian removing the tube from the horse's nose. Care should be taken when removing the stomach tube which should be slowly and gently pulled down parallel to the direction of the nasal bones whilst steadying the horse's head with the contralateral hand in order to avoid nose bleeds.

Care must also be taken to ensure that the tip of the scope does not hit the ground upon withdrawal.

Some Clinics choose to offer their clients a "Gastroscopy + Dental" deal and capitalise on having the horse in the clinic and sedated to perform a dental maintenance check at this time. Obviously, additional veterinary staff will be required to be on hand to perform the procedure and so as to maintain the flow of the gastroscopies.

Cleaning the Tube and Scope Between Patients

The external casing and lens of the scope should be wiped with Matrix™ wipes (supplied by Randlab) immediately upon withdrawal of the scope. These wipes contain a biofilm removing detergent. The biopsy channel should then be flushed with 120mL of tap water and the scope hung vertically to drain and dry.

Chlorhexidine and alcohol should not be used to clean the scope as both damage the outer casing and/or internal elements.

The stomach tube should be wiped with a Matrix™ wipe before being soaked in a bucket of chlorhexidine and then being hung to drain and dry.

Horse Recovering from Sedation

Some horses will be sufficiently recovered from the sedation to leave the clinic soon after completion of the gastroscopy. However, the sedation might take upwards of 40 minutes to completely wear off, depending on the size of the dose initially administered and an individual horse's response to the sedation.

If this is the case, once the gastroscopy equipment is safely out of the way of the horse, the horse should be led from the crush to a stall or area deemed appropriate for it to recover. This area should be secure, free from hazard and have a relatively non-slip floor surface. Further care should be taken to prevent the horse from eating until the sedation has thoroughly resolved to avoid the possibility of oesophageal choke.

Once the sedation has resolved the horse may be safely taken back to its box or alternatively transported home.

Recording of Findings of Gastroscopy

The video of the gastroscopy and associated captured images for each patient will be transferred to a USB stick and left with the Clinic.

The veterinarian should now report and record the findings of the gastroscopy. This should be recorded according to the 2015 ECEIM EGUS recommended scale (a copy of which is attached). Each area of the stomach should be recorded as follows:

- Equine Squamous Gastric Disease Greater Curvature: 0-1-2-3-4
- Equine Squamous Gastric Disease Lesser Curvature: 0-1-2-3-4
- Equine Glandular Gastric Disease: NSF, Mild, Moderate, Severe
- Equine Glandular Gastric Disease Pyloric Region: Not visualised, NSF, Mild, Moderate, Severe

Descriptions of these gradings can be found in the ECEIM Consensus Statement 2015 (attached).

Prescription of Anti-ulcer Medications

Essential to the planning of an EGUS treatment program is the provision of a follow up gastroscopy. Given the remote nature of some clinics and the time availability of Randlab staff and equipment, Randlab has designed a treatment program template that takes into account these factors and devised treatment protocols that are likely to be successful in treating varying grades of EGUS. Randlab proposes follow up gastroscopies at approximately day 90 and the protocols below take this into consideration.

The prescription of medicine falls predominately in line with the suggestions of the ECEIM and assume the horse is to continue in full work during this period. For ESGD not associated with EGGD, the recommended treatment protocol would be:

Recommended Treatment Regimen Equine SQUAMOUS Gastric Disease

EGUS GRADE	RECOMMENDED TREATMENT PROTOCOL
Grade 0	No treatment
Grade 1	30 day "treatment trial" 4mg/kg Ulcershield. – No observed change in "clinical signs" discontinue treatment. – Observed improvement in "clinical signs" follow Grade 2 ESGD treatment protocol
Grade 2	45 days 4mg/kg Ulcershield, followed by 45 days 2mg/kg U/S
Grade 3	60 days 4mg/kg Ulcershield, followed by 30 days 2mg/kg U/S
Grade 4	90 days 4mg/kg Ulcershield



If the horse has any form of glandular disease (EGGD), either alone or concurrently with ESGD, the treatment regimens should be more aggressive. It is currently recommended by the ECEIM that sucralfate at a dose rate of 12mg/kg bd be added to the omeprazole treatment program.

Recommended Treatment Protocol Equine GLANDULAR Gastric Disease (\pm ESGD)

ESGD GRADE	RECOMMENDED TREATMENT REGIMEN
Grade NSF	No treatment
Grade Mild	60 days 4mg/kg Ulcershield, then 30 days 2mg/kg U/S <i>PLUS</i> 60 days 12mg/kg Sucralfate bd
Grade Moderate	60 days 4mg/kg Ulcershield, then 30 days 2mg/kg U/S <i>PLUS</i> 60 days 12mg/kg Sucralfate bd
Grade Severe	90 days 4mg/kg Ulcershield plus 60 days <i>PLUS</i> 60 days 12mg/kg Sucralfate bd



Concurrent EGUS Management Strategies

Although Omeprazole treatment alone is a safe and effective way of treating horses with EGUS, additional management strategies should also be introduced and discussed with the horse's owner/trainer/representative at the time of the consultation. These include:

- 1) Omeprazole is best administered a minimum of **20 minutes prior to feeding**. The presence of feed in the stomach (especially hay) significantly reduces the absorption of omeprazole.
- 2) Omeprazole should be given at approximately the **same time of day each day**.
- 3) Ideally the omeprazole should be given in the mornings, approximately **90-120min prior to exercise**. Gastric pH is at its most acidic early in the morning.
- 4) It is important that the horse be **fed prior to exercise**. The presence of food in the stomach absorbs the gastric fluid, reducing acid "splash" damage.
- 5) Wherever possible, the horse should have extended periods of access to hay/pasture or roughage.
- 6) Ensure that the horse is on the **full treatment dose** of omeprazole at **times of increased stress or activity** (e.g. prolonged transport, competition, heavy training schedule, etc.).

Follow Up Gastroscopy

Whenever possible, it is important that a follow up gastroscopy is scheduled for approximately 90 days after commencement of treatment. This can be done sooner by mutual arrangement but preferably not later. This will allow identification of any potential treatment failures. The reasons for these failures can usually be ascertained (they are normally related to management/husbandry deficiencies) and revised recommendations determined.



Randlab Resources

Randlab provides a series of resources to assist equine veterinary practices with the Gastroscoping Days. These include:



“Second-Opinion” Referral Service

– Randlab has ready access to specialists with interest in EGUS both in Australia and overseas. We frequently access second opinions from these experts on behalf of our veterinary clients.



Ongoing Technical Support – Our technical team follow up each Gastroscoping Day to ensure all inquiries have been addressed.

TechTalk Journal – EGUS specific technical information for Equine Veterinary practices.



EGUS Council Consensus Statement –

This is provided by Randlab as the reference source for Equine Veterinary practices on the diagnosis, treatment and management of EGUS.



Randlab Technical Library

– Available on our website and contains hundreds of technical articles.



Consumer Education Leaflets.

Promotional Videos of the Clinic’s Gastroscoping Day

– These can be provided for a nominal cost.



Post Gastroscoping Day Marketing

– Images and activity from the day are uploaded to the Randlab and Clinic Facebook pages for further promotion of the practice and the service.



RANDLAB

VETERINARY MEDICINES



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