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# Equine gastric ulcers

## The scale of the problem

Gastric ulceration is a serious yet common condition that can affect any horse, at any age. Studies indicate that gastric ulcers occur in up to:

93%  
of racehorses  
in training<sup>4</sup>

63%  
of performance  
horses<sup>2,3</sup>

37%  
of non-performance  
horses<sup>1</sup>

Foals are also at particular risk with around 50% of foals developing gastric ulcers, particularly during the first few months of life – and they may show no clinical signs. In foals, the condition can be fatal<sup>5</sup>.

Gastric ulcers tend to be under-diagnosed because:

- Horses often show no outward clinical signs of gastric ulceration
- A limited number of veterinary establishments own a three-metre video gastroscope
- It is a common misconception that gastric ulceration only affects racehorses.

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# Equine gastric ulcers

## What you can't see

### Pathogenesis

Equine Gastric Ulcer Syndrome (EGUS) describes the range of disorders in which there is acid-induced damage to the oesophageal, gastric or duodenal mucosa, although only the stomach is involved in most cases<sup>6</sup>.

Gastric ulcers develop when aggressive factors – such as acid and digestive enzymes – overpower the protective factors in the gastric mucosa<sup>6</sup>.

**Foals** are known to secrete substantial amounts of gastric acid by two days of age, resulting in highly acidic stomach contents especially when intervals between nursing become extended. Orphan foals are therefore a high-risk group as, despite our best efforts, we can rarely feed them more than every two to three hours over a 24 hour period, whilst naturally they would nurse every 20 minutes<sup>7</sup>.



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### Physiology of the equine stomach

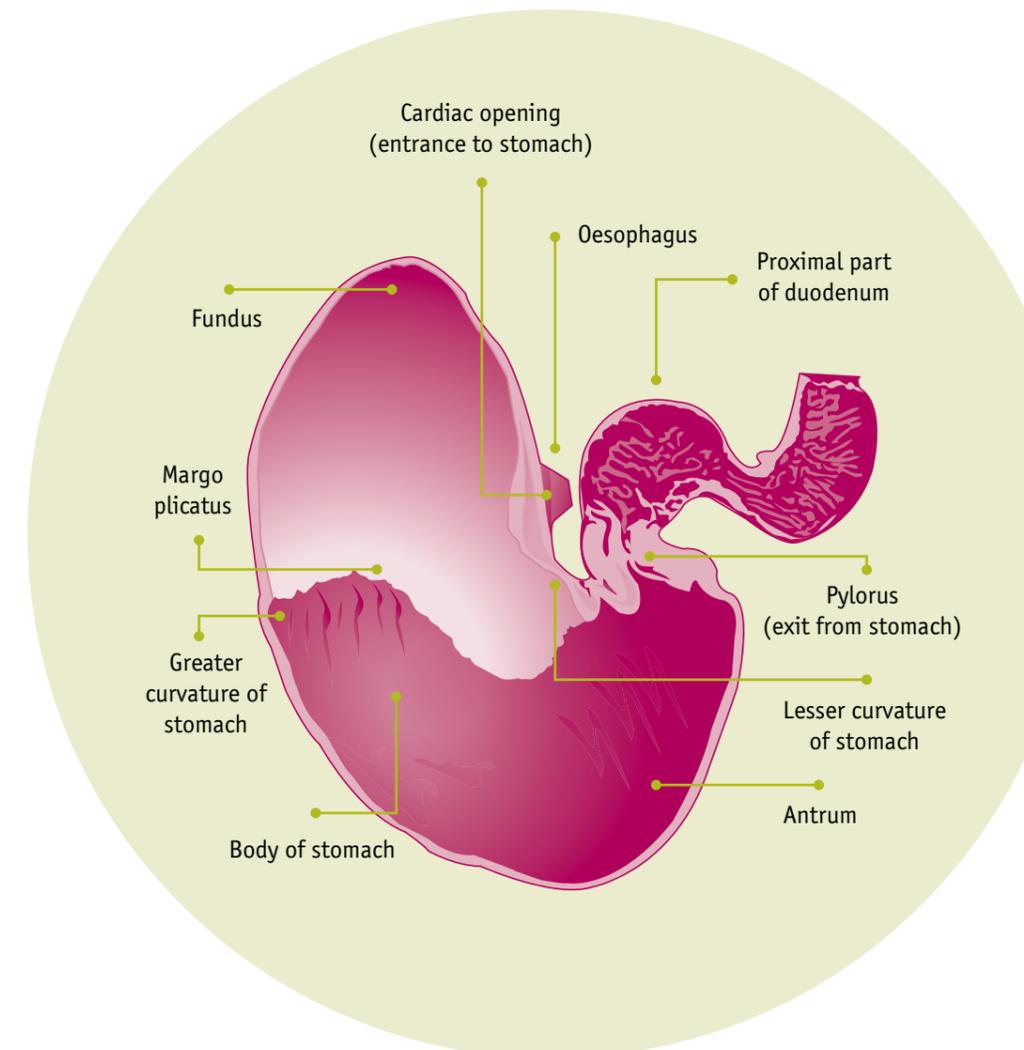
The equine stomach is divided into two distinct regions: **dorsal** and **ventral**.

#### Squamous ulceration

The dorsal region of the stomach is covered by stratified squamous epithelium and has no glands. Ulcers in this region occur as a direct result of extended exposure to acid. Most equine gastric ulcers occur at the lesser curvature of the stomach – adjacent to the oesophagus – as the stratified squamous lining here is particularly sensitive to acidic secretions<sup>8</sup>. In neonatal foals the developing squamous epithelium is thinner than in adults, increasing their susceptibility to gastric ulceration<sup>7</sup>.

#### Glandular ulceration

The ventral region of the stomach has glands that are able to produce a bicarbonate-rich protective mucus layer. Ulcers in this region occur when the protective mucus layer is compromised, enabling acid erosion of the gastric wall<sup>9</sup>.



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# Equine gastric ulcers

## What you can't see

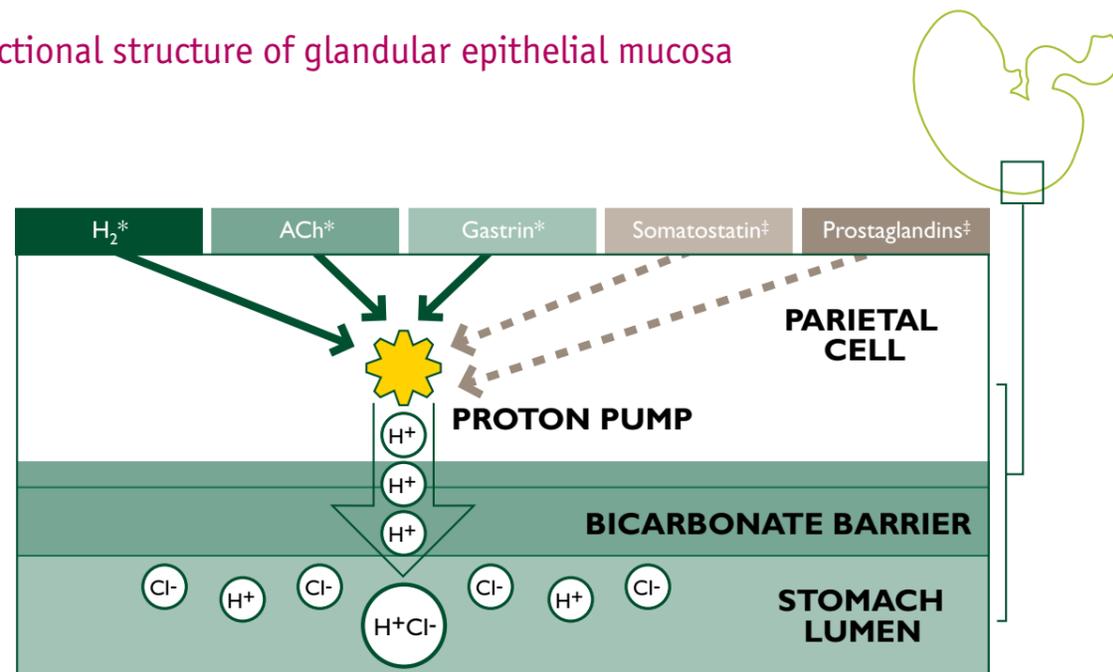
### The acid pump

Hydrochloric acid is produced by parietal cells in the ventral portion of the stomach, using an  $H^+$ ,  $K^+$ -ATPase enzyme system termed the proton pump.

This pump is regulated by three pathways:

- Neuroendocrine – via acetylcholine from nerves in the stomach wall
- Endocrine – via the hormone gastrin
- Paracrine – via histamine, somatostatin and prostaglandins.<sup>10</sup>

### Functional structure of glandular epithelial mucosa



† Somatostatin and prostaglandins act to downregulate acid production

\* Acid-Stimulating Receptors

### Diagnostic classification

Equine Gastric Ulcer Syndrome spans a wide spectrum of severity:

- Inflamed but intact epithelium
- Superficial erosions or scarring
- Discreet or widespread erosions or ulcers
- Bleeding erosions or ulcers
- Deep ulcers with necrotic centres
- Perforation – usually fatal (most likely in foals).

Approaches used to simplify diagnostic classification include the four-point ulcer scoring system<sup>11</sup>.

Grades 2 or above are considered **clinically significant**.

Squamous mucosa					
	<b>GRADE 0</b> The epithelium is intact and there is no appearance of hyperaemia or hyperkeratosis	<b>GRADE 1</b> The mucosa is intact, but there are areas of hyperaemia or hyperkeratosis	<b>GRADE 2</b> Small, single or multifocal lesions	<b>GRADE 3</b> Large, single or multifocal lesions or extensive superficial lesions	<b>GRADE 4</b> Extensive lesions with areas of apparent deep ulceration
Glandular mucosa					
	<b>GRADE 0</b> The epithelium is intact and there is no appearance of hyperaemia	<b>GRADE 1</b> The mucosa is intact, but there are areas of hyperaemia	<b>GRADE 2</b> Small, single or multifocal lesions	<b>GRADE 3</b> Large, single or multifocal lesions or extensive superficial lesions	<b>GRADE 4</b> Extensive lesions with areas of apparent deep ulceration or mucosal pathology

### Clinical signs?

It is important to note that horses can have potentially serious gastric ulcers – confirmed by a gastroscopy – without initially displaying outward signs. In a survey of 187 horses in 1989 (71 thoroughbreds, 3 standardbreds and 113 other horses) ulcers were found in 92% of those presenting with clinical signs of gastric ulceration, such as abdominal discomfort, poor appetite, weight loss or diarrhoea. But gastric ulcers were also found in over half of the horses showing no signs of GI disease.<sup>1</sup>



# Equine gastric ulcers

## What you can see

### Impact of ulcers

Gastric ulceration is a serious condition that can be fatal in foals<sup>7</sup> and can also seriously impede an adult horse's performance, with negative effects on training, appetite, temperament and overall health and wellbeing.

### Signs of Equine Gastric Ulcer Syndrome:

#### Adult horses/yearlings

- Poor performance
- Poor appetite and weight loss
- Poor body condition, dull coat
- Mild or recurrent colic
- Dullness and attitude changes
- Other behavioural changes.

(Adapted from reference 11)

#### Foals

- Frequent dorsal recumbency
- Poor appetite, intermittent nursing
- Poor body condition, rough hair
- Diarrhoea or a history of diarrhoea
- Depression
- Bruxism
- Ptyalism
- Intermittent colic.

### Confirmation by gastroscopy

One or more of the above clinical signs can indicate the presence of gastric ulcers. **Only a gastroscopic examination can provide a definitive diagnosis**, for use as the basis of an appropriate treatment plan. The size and anatomy of the horse necessitate the use of an endoscope three metres long, in order to reach the pylorus and investigate the entire stomach.

# InnerVision

## Gastric Health Initiative

### What is InnerVision?

**InnerVision** is a national health initiative supported by Merial Equine Health, to increase awareness and clinical diagnosis of gastric ulceration.



### A business opportunity for you

While many signs can point to a horse having gastric ulcers, only veterinary examination using a three metre endoscope provides a definitive diagnosis.

Since May 2010, it has been recommended by BEVA and the Equine Insurers Forum (EIF) that in order to support insurance claims, it is essential for veterinary surgeons to make a definitive diagnosis of EGUS by gastroscopy before treatment will be covered by insurance companies. This means that scoping is increasingly becoming an indispensable and sought-after element of horse health management.

Even though studies indicate that the incidence of gastric ulceration is high, it is estimated that the number of horses diagnosed with ulcers is relatively low.

As such, there is a huge opportunity for practices that either have a scope, or have access to a referral practice with a scope, to benefit both their clients and their business.

Therefore you are in a unique position as a specialist equine practice with a three-metre endoscope, to benefit as a business from this initiative.

Merial would like to invite you to participate and support the **InnerVision** health initiative by holding a gastroscopy clinic.

Your local territory manager will explain how to set up a successful clinic day.

# InnerVision

## Gastric Health Initiative

### Gastroscope Clinic Days

Once you have decided on the date to hold your Gastroscope Clinic Day, Merial will provide you with materials that you can use to promote it to your equine clients. You then book in up to 7/8 horses for that day, and report your gastroscope findings back to Merial.

### The Merial Gastroscope Clinic Day support kit

Our Territory Managers will be able to guide and support your practice to get your Gastroscope Clinic Day off on the right track. They can also supply you with the following easily adaptable materials targeted at horse owners:

#### Before the day

- Two mailing templates to inform owners about EGUS and its prevalence and to promote your Gastroscope Clinic Day
- A Gastroscope Clinic Day appointment confirmation letter template
- Owner information about the preparation of horses for the Gastroscope Clinic Day

#### On the day

- Gastroscope procedure and ulcer grading flip chart
- Owner information booklet about the gastroscope procedure and aftercare
- Owner and vet questionnaire to collect data on clinical signs, examination findings and prescribed treatment details, if applicable.
- Information on how to prevent further ulcers

### Holding your own InnerVision Gastroscope Clinic Day

#### How it works

- 1 Your Merial Territory Manager will provide you with all the marketing materials required to promote it
- 2 In line with the relevant timelines, send out the promotional materials to the equine clients whose horses would benefit from a gastroscope
- 3 You assess horses that have been nominated by clients, and recommend gastroscope where appropriate
- 4 On the day, you perform the gastroscopies that have been booked, and complete the questionnaire to record your findings
- 5 Horses that show signs of gastric ulcers may then be prescribed treatment where appropriate, and a follow-up appointment made.



### Gastroscope Clinic Day checklist

- Questionnaire completed by horse owner
- Questionnaire completed by vet
- Completed questionnaire returned to Merial
- Provide horse owner with information booklet
- Confirm follow-up appointment date with horse owner, if applicable.