

## EQUINE GASTRIC ULCER SYNDROME:

1. ESGD equine squamous gastric disease ( white part)  
Prevalent in 90% of race horses  
Caused by acid damage to the squamous epithelium around the lower esophageal sphincter up to and including the margo plicatus of the stomach  
Incidence increased by low forage, high starch diets, long gaps in fiber provisions, stall confinement (i.e., management)  
Grain meals increase gastrin which increases gastric acid secretions more than forage.  
NSAIDs which block prostaglandin production  
Easily diagnosed with gastroscopy
2. EGGD equine glandular gastric disease (pink part) includes colon  
Prevalent in 80% of pleasure horses  
Caused by high intensity and frequent exercise (5/6 times weekly)  
Acute exercise decreases blood flow to the gut and decreases gastric emptying  
Also increases the erosive effects of hydrochloric acid, volatile fatty acids and bile acids  
Exacerbated by immune factors and stress not yet completely understood  
Gastroscopy can visualize the glandular stomach mucosa but not the colonic mucosa  
Large colon is about 12 feet in length, cecum is 4 feet long, small colon is about 10-12 feet in length (lots of mucosa to damage)

### Clinical signs:

Most horses with ulcers actually look completely healthy unless the ulcers are severe.

Poor performance, weight loss, colic, diarrhea, dull coat, teeth grinding, repeated chokes, sore back, grumpy to owners, handlers and other horses....

Only 30% of girthy horses have ulcers, most have back pain or saddle fit issues.

### Treatment:

Pasture turnout alone and rest will not heal ulcers!!

Decrease starch to  $1 < \text{g/kg BW}$

Increase frequency of forage meals at  $1.6\text{-}2\% \text{BW}$  daily divided  $>3$  times daily

(Test hay for quality and NSC, make no assumptions just by looking at hay and not weighing it)

Improve microbiome of horse: proteobacteria, firmicutes, actinobacteria, bacteroidata...

Good gut microbiome is crucial for overall health!!!

For ESGS :Omeprazole:  $4\text{mg/kg BW}$  but some horses do well on lower  $2\text{mg/kg BW}$  once daily.

Proton pump inhibitor to stop the parietal cells from making acid in the stomach

We only have good data (Gastroscopy) with Gastroguard/Ulcerguard. That does not mean generic or compounded products don't work but there is huge variability in quality control...

Sucralfate: 12-22 mg/kg BW depending on whether treat stomach or colon 3 x daily

Needs an acid environment to work!! So, give first on empty stomach ( one hour before or 2 hours after meals) before other meds.

Liquid works better than tablets as it coats the ulcer erosions like a band aid. It reacts with the hydrochloric acid to form a thick viscous layer over the craters and immediately decreases pain.

For EGGD: Sucralfate as above

Misoprostil: 5ug/kgBW twice to three times daily

Ok with food and as powder, liquid or tablet.

Careful handling!!

Prostaglandin PGE1 analog which increases mucosal blood flow, dilates blood vessels, increases bicarbonate secretion and decreases stomach acid production. Modulates immune response and improves mucosal barrier function

Glutamate, Lecithin, Mannanoligosaccharides to increase mucin, collagen(45 grams BID)

Fish oil increases antioxidants, decrease acid secretions and increases mucus secretions

Safflower and flaxseed oils(60 mls/day) better than corn oil as they are higher in DHA, EPA, GLA which act like anti-inflammatory prostaglandins.

Look for long chain rather than short chain fatty acid supplementation to decrease ESGD

Always protect the mucosa when you treat with NSAIDS as they block prostaglandin production

Have personally witnessed one gram oral bute paste cause immediate colic pain from preexisting ulcers.

**TABLE 1: The Ridden Horse Pain Ethogram, adapted from Dyson *et al.* 2013a**

1. Repeated changes of head position (up/down), not in rhythm with the trot
2. Head tilted or tilting repeatedly
3. Head in front of vertical ( $>30^\circ$ ) for  $\geq 10$  s
4. Head behind vertical ( $>10^\circ$ ) for  $\geq 10$  s
5. Head position changes regularly, tossed or twisted from side to side, corrected constantly
6. Ears rotated back behind vertical or flat (both or one only)  $\geq 5$  s; repeatedly lay flat
7. Eye lids closed or half closed for 2–5 s; frequent blinking
8. Sclera exposed repeatedly
9. Intense stare (glazed expression, 'zoned out') for  $\geq 5$  s
10. Mouth opening  $\pm$  shutting repeatedly with separation of teeth, for  $\geq 10$  s
11. Tongue exposed, protruding or hanging out, and/or moving in and out repeatedly
12. Bit pulled through the mouth on one side (left or right), repeatedly
13. Tail clamped tightly to middle or held to one side
14. Tail swishing large movements: repeatedly up and down/ side to side/ circular: repeatedly during transitions
15. A rushed gait (frequency of trot steps  $> 40/15$  s); irregular rhythm in trot or canter; repeated changes of speed in trot or canter
16. Gait too slow (frequency of trot steps  $< 35/15$  s); passage-like trot
17. Hindlimbs do not follow tracks of forelimbs but repeatedly deviated to left or right; on 3 tracks in trot or canter
18. Canter repeated leg changes in front and/or behind; repeated strike off on wrong leg; disunited
19. Spontaneous changes of gait (e.g. breaks from canter to trot, or trot to canter)
20. Stumbles or trips more than once; repeated bilateral hindlimb toe drag
21. Sudden change of direction, against rider's cues; spooking
22. Reluctance to move forwards (has to be kicked  $\pm$  verbal encouragement), stops spontaneously
23. Rearing (both forelimbs off the ground)
24. Bucking or kicking backwards (one or both hindlimbs)

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Assessments are made in walk, trot (to include 10 m diameter circles in rising trot), canter and transitions on both the left and right reins, and in more advanced movements requiring collection in horses which are trained to do so. A total behaviour score of  $\geq 8$  (out of 24) is likely to indicate the presence of musculoskeletal pain. S, seconds