LEARN WHAT THE CAUSES & RISK FACTORS ARE FOR GASTRIC ULCERS IN YOUR HORSE AND WHAT YOU CAN DO TO HELP STOP THEM COMING BACK.

I THINK MY HORSE HAS ULCERS

WHAT DO I NEED TO KNOW?

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INTRODUCTION

Stomach ulcers (also called gastric ulcers) are one of the biggest challenges you can face as a horse owner.

Treatment is expensive and some horses can't seem to escape the vicious circle of ulcers returning once treatment finishes. With that in mind, we wanted to cut through the confusion and give you a guide based on the latest science, explaining what you need to know about gastric ulcers and what you can do to reduce the risk of them coming back.

What we'll cover:

1. What are gastric ulcers and why do they occur?
2. Is scoping important?
3. Should I treat for gastric ulcers?
4. Are there downsides to treating gastric ulcers with medication?
5. The foundations of a good diet for a horse with ulcers.
6. What are some examples of ulcer-friendly diets?
7. My horse has glandular ulcers, what management changes should I make?
8. Where do Digestive EQ and VM fit?
9. When might I use Stress Paste?
10. What else can I do to help prevent gastric ulcers?

Ready? Let's go!!

1. WHAT ARE GASTRIC ULCERS & WHY DO THEY OCCUR?

Gastric ulcers refer to the damage (lesions) caused to the inner lining (mucosa) of the stomach. We now know there are two different types of gastric ulcers – 'squamous' and 'glandular' – and the distinction relates to where they occur in the stomach.

Squamous ulcers

Squamous ulcers occur in the upper part of the stomach and this delicate tissue – like our skin – has a limited ability to protect itself from gastric acid (stomach acid).

Glandular ulcers

Glandular ulcers occur in the lower part of the stomach. As the name suggests this area contains the many glands which secrete things like gastric acid and mucus in the stomach. Glandular ulcers are thought to occur due to failure of the normal mucosal defence mechanisms[1].

A point to note is that because horses evolved to eat for most of the day and night, their stomach produces acid constantly – unlike ours, which only produces acid when we eat a meal. Knowing this can help us understand why horses are so susceptible to ulcers if they are left without food for extended periods.

It's important to differentiate between the type of gastric ulcer your horse suffers from, as they have different risk factors, causes and implications for treatment.

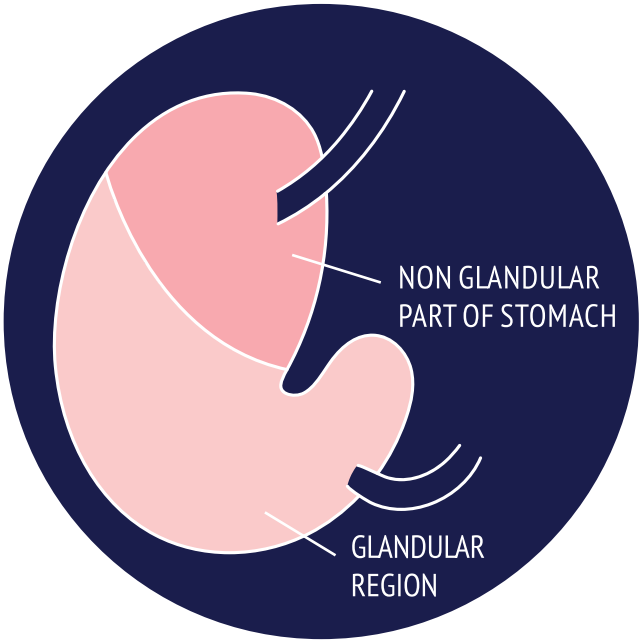


Figure 1. Stomach of the horse

1. Non glandular part of stomach: *This area is not protected by mucous and is highly susceptible to ulcers from 'acid splash'.*

2. Glandular region: *There is also a high prevalence of ulceration in this region, though the cause remains largely unknown. Ulcers here are harder to treat.*

1 Sykes BW, Hewetson M, Hepburn RJ, Luthersson N, Tamzali Y. European College of Equine Internal Medicine: consensus statement equine gastric ulcer syndrome (EGUS) in adult horses. J Vet Int Med. 2015;29(5):1288-1299.

What causes squamous ulcers?

The most common causes of squamous ulcers are diet and exercise related, including inadequate forage intake, large grain-based meals, and high intensity exercise.

Working your horse on an empty stomach may also contribute to squamous ulcers. This happens because if the stomach is empty, stomach acid can splash up onto the delicate squamous region and cause damage to the stomach wall. The risk factors for squamous ulcers are things we can control and manage with appropriate nutrition.

What causes glandular ulcers?

The causes of glandular ulcers seem to be more complex, and we don't know all the risk factors yet. Based on current knowledge, risk factors now identified for glandular ulcers include breed – with warmblood horses more commonly represented – and exercise, if horses are exercised more than 5 days per week.

Stress is also thought to play an important role, so management to reduce stress is vital. What might cause stress can vary between individual horses. Interestingly, in a study of domesticated and feral horses, only a small number of feral horses were shown to have glandular ulcers. This shows that changes in environment and management associated with domestication is placing horses at increased risk of glandular ulcers.

Likened to heart burn, the most common signs of squamous ulcers include difficulty maintaining weight (generally due to reduced feed intake) and changes in behaviour. Glandular ulcers are more commonly associated with signs of pain or discomfort such as irritability, reluctance to work, changes in personality and colic. Not all horses show these classic signs, and some show no signs at all.

> *Stress is thought to play an important role, so management to reduce stress is vital.*

2. IS SCOPING IMPORTANT?

To accurately diagnose gastric ulcers, you will need to get your horse scoped by a vet.

Scoping also enables you to make decisions about treatment. Scoping lets your vet see which part of the stomach is ulcerated, and that will likely influence suitable treatment and management changes. **Always ask what part of the stomach the ulcers were found in** and what treatment plan is recommended.

It's also important to conduct follow up scopes so you can monitor how effective the medication is and when it's time to safely stop it.

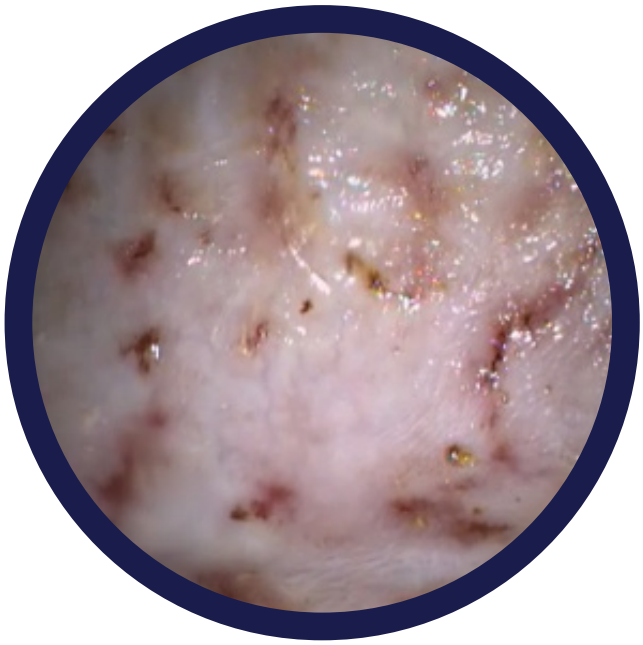


Figure 2. *Image of a horse's stomach with grade 4 ulcers*

3. SHOULD I TREAT FOR GASTRIC ULCERS?

In most of cases, medication is required so that the gastric ulcers can heal quickly.

Medications like Omeprazole inhibit acid production in the stomach and allow for a more neutral environment over long periods so lesions can heal.

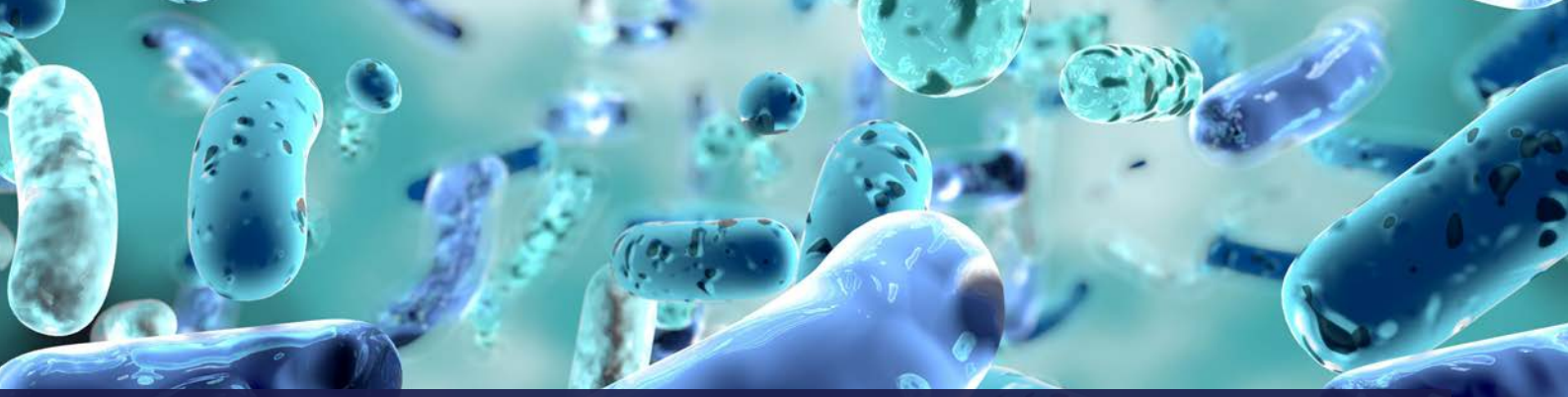
Other medications – such as Sucrafate – are often used in conjunction with Omeprazole, and these form a protective coating over the lesions to protect against the acid environment.

For glandular ulcers specifically, Misoprostol has been shown to be effective in inhibiting gastric acid and pepsin production as well as increasing the blood flow to the stomach lining[2].

Recent research has shown that oral Omeprazole is more effective when given after a period of fasting[3]. So, if treating your horse with oral Omeprazole the current recommendation is to fast overnight and withhold feed for 60 to 90 minutes after giving Omeprazole. This should be followed by a large feed of forage (lucerne hay is perfect here) before any grain-based concentrate is fed. While this totally goes against the basics of feeding horses, it is only short term whilst treating for gastric ulcers and you should immediately return to free choice forage (pasture and/or hay) after treatment ceases and maximise the time your horse spends eating each day.

2 Varley, G., Bowen, I.M., Habershon-Butcher, J.L., Nicholls, V. and Hallowell, G.D.. Misoprostol is superior to combined Omeprazole-sucralfate for the treatment of equine gastric glandular disease. Equine Veterinary Journal. 2019. Volume 51, Issue 5, Pages 575-580.

3 Sykes, B.W., Underwood, C., Greer, R., McGowan, C.M. and Mills, P.C.. The effects of dose and diet on the pharmacodynamics of Omeprazole in the horse. Equine Veterinary Journal, 2017. Volume 49, Issue 4, Page 525-531.



4. ARE THERE DOWNSIDES TO TREATING GASTRIC ULCERS WITH MEDICATION?

In a word, yes...

Unfortunately, as we learn more about gastric ulcers and medication like Omeprazole, we are learning that there are negative side effects and safety concerns, especially with long term use (more than 60 days). These are as follows:

Potential increased fracture risk

In humans, Omeprazole treatment has been associated with an increased risk of fractures. Similar concerns have been raised for horses.

The exact cause/s are unknown however it is suggested that the increased secretion of gastrin (a hormone which stimulates acid secretion and regulates glandular mucosal growth) and the decreased digestion and/or absorption of minerals (such as calcium and magnesium) in horses on Omeprazole treatment, lead to decreased bone mineral density[4].

Decreased effectiveness with time

Supported by studies in other species, in horses there was a 50% decrease in bioavailability (absorption and effectiveness) of oral Omeprazole after 28 days of treatment (4mg/kg BW)[5].

In two separate studies, 16-20% of horses on a 28 day 'preventative' dose (1mg/kg BW & 2mg/kg BW) of Omeprazole, after an initial 28 day 'treatment' dose (4mg/kg BW), experienced development or worsening of squamous ulcers[6,7].

The number of horses which responded to Omeprazole treatment (4mg/kg BW) halved between 60 and 90 days[8].

Hypersecretion (the acid rebound effect)

Acid secretion is regulated by stomach pH – when the pH is above the optimal range, the horse's body wants to secrete more acid to bring the stomach pH back down (so it's acidic). However, Omeprazole supresses acid secretion (to allow ulcers to heal) and pH is increased. But when the treatment stops, a negative feedback loop occurs which causes significantly increased acid production.

Preliminary studies have shown development of squamous ulcers less than 76 hours after the last dose of Omeprazole (Sykes, B. Unpublished).

Dangers with concurrent administration of pain medication like Bute

Horses treated with a combination of phenylbutazone (Bute) in combination with Omeprazole had more intestinal complications, many of them severe, some resulting in death or horses having to be euthanised[9].

Disruption of the gut microbiome

In foals, Omeprazole treatment was associated with diarrhoea[10].

Due to decreased acidity within the stomach, the potential for pathogenic bacteria to survive and disrupt hindgut microbiota may be increased. Further research in this area is needed.

4 Sykes, B.. A free ride: Is long-term Omeprazole therapy safe and effective?. Equine Veterinary Education. 2021, Volume 33, Issue 10, Pages 556-560.

5 Di Salvo, A, Busechian, S., Zappulla, F., Marchesi, M., Pieramati, C., Orvieto, S., Boveri, M., Predieri, P., Rueca, F. and della Rocca, G.. Pharmacokinetics and tolerability of a new formulation of Omeprazole in the horse. Journal of Veterinary Pharmacology and Therapeutics. 2017. Volume 40, Issue 4, Pages 348-355.

6 McClure, S., White, G., Sifferman, R., Bernard, W., Hughes, F., Holste, J., Fleishman, C., Alva, R. and Cramer, L.. Efficacy of Omeprazole paste for prevention of gastric ulcers in horses in race training. Journal of the American Veterinary Medical Association. 2005. Volume 226, Issue 10, Pages 1685-1688.

7 Andrews, F., Sifferman, R., Bernard, W., Hughes, F., Holste, J., Daurio, C., Alva, R., and Cox, J.. Efficacy of Omeprazole paste in the treatment and prevention of gastric ulcers in horses. Equine veterinary journal. Supplement. 1999. Volume 31, Issue S29, Pages 81-86.

8 Kerbyson, N., Knottenbelt, D., Carslake, H., Conwell, R., Sutton, D. and Parkin, T.. A Comparison Between Omeprazole and a Dietary Supplement for the Management of Squamous Gastric Ulceration in Horses. Journal of Equine Veterinary Science. 2016. Volume 40, Pages 94-101.

9 Ricord, M., Andrews, F.M., Yñiguez, F.J.M., Keowen, M., Garza Jr, F., Paul, L., Chapman, A. and Banse, H.E.. Impact of concurrent treatment with Omeprazole on phenylbutazone-induced equine gastric ulcer syndrome (EGUS). Equine Veterinary Journal. 2021. Volume 5, Issue 2, Page 356–363.

10 Furr, M., Cohen, N., Axon, J., Sanchez, L., Pantaleon, L., Haggett, E., Campbell, R. and Tennent-Brown, B.. Treatment with histamine-type 2 receptor antagonists and omperazole increase the risk of diarrhoea in neonatal foals treated in an ICU. Equine Veterinary Journal. 2012. Volume 44, Issue Suppl 41, Pages 80-86.

This does not mean that you shouldn't use medication like Omeprazole to treat your horse for gastric ulcers, but it does show just how important it is monitor for healing with follow up scoping, and to reassess the medication plan with your vet if treatment isn't working after 28 days.

It also shows us how vital it is to make dietary and management changes – to reduce the risk factors for squamous and glandular ulcers long term – so you can rely less heavily on medication.

Lastly, it's important to be aware of hypersecretion (the acid rebound effect) and to consider using a supplement such as Digestive EQ or Stress Paste during this period to support the healing and integrity of the stomach tissue (read on further for more details).

It is vital to make dietary and management changes to reduce the risk factors for squamous and glandular ulcers long term – so you can rely less heavily on medication.

5. THE FOUNDATIONS OF A GOOD DIET FOR A HORSE WITH ULCERS

Diet is the main risk factor for squamous ulcers (which, remember are the ulcers in the top part of the stomach), so the suggestions below are specifically about reducing the risk of them.

However, we should also reassess the diets of horses suffering from glandular ulcers. The recommendations below apply for any horse and have benefits that go beyond stomach health – including hindgut health, which greatly influences overall health, stress levels, performance, and behaviour.

1. Constant access to forage

Inadequate forage intake and extended periods without feed are risk factors for squamous ulcers[11]. When your horse chews forage (pasture and hay) it promotes saliva production. Saliva contains bicarbonate which buffers gastric acid.

The more your horse is chewing throughout the day and night, the greater the opportunity for the gastric acid to be buffered by saliva and the less acidic the contents of the stomach become. Fibre (a major component of forage) also provides a physical barrier to prevent gastric acid splashing up on the unprotected upper region of the stomach.

My horse is out on pasture 24/7

Horses at pasture are generally at less risk of gastric ulcers. Horses naturally graze for long periods of the day (>16 hours). This continuous flow of feed and saliva buffers the gastric acid (and helps protect the stomach) for most of the day.

However, if your pasture is too short (less than 5cm high), you will need to provide extra hay (at 1.5%-2% of your horse's body weight per day) to ensure your horse gets enough forage and chews enough. For a 500kg horse on short pasture, provide approximately 7.5-10kg of hay per day.

Free choice hay or round bales are a practical solution for horses on pasture, because they allow the horse to self-regulate forage intake. However, it is common for horses with gastric ulcers to want to eat less, so it is essential that you monitor hay intake to ensure your horse is eating enough. If a round bale weighs approximately 350kg and your 500kg horse is eating 7.5kg per day, the bale should last no more than 45 days (not accounting for any waste which will vary depending on the type of hay feeders used, if any).

My horse spends only part of the day on pasture

A lot of horses have daytime access to pasture but are stabled or yarded at night. In this situation, it's critical that they are provided with enough forage each evening to last them through the night.

If your horse spends half of their time at pasture, you need to provide the other half of their estimated daily forage intake while they're stabled. For example, a 500kg horse that eats 2% of their bodyweight in forage (10kg), will need to be provided with a minimum of 5kg hay each evening.

Having said that, unless your horse needs to lose weight, there is no reason to limit the amount of hay your horse gets – in fact it's better to provide hay ad lib. You can use slow feeders or small-hole hay nets to minimise waste, slow down intake, and maximise the amount of time your horse spends eating.

My horse has no access to pasture

If your horse has no access to pasture, you'll need to supply them with ALL of their forage for the day – which is at least 1.5%-2% of their body weight in hay per day (7.5-10kg for a 500kg horse). Hay meals should be divided up evenly over the course of the day, with multiple types of hay on offer (which has been shown to increase the time horses spend eating the forages). Again, slow feeders or hay nets can be used to minimise waste and draw out the time your horse spends eating forage each day.

11 Luthersson, N., Hou Nielson, K., Harris, P. and Parkin, T.. Risk factors associated with equine gastric ulceration syndrome in 201 horses in Denmark. Equine Veterinary Journal. 2009. Volume 4, Issue 7, Pages 625-630.

2. Feed limited amounts of grain-based feed

Increased amounts of grain-based feed, increases the risk of gastric ulcers[12,13]. Grain (or specifically, the starch in grain) can start to ferment in the stomach, which produces acidic by-products. This further lowers the pH of the stomach contents and can cause damage to the sensitive mucosa. So, limiting the amount of grain (and hence starch) your horse eats is essential.

Limit the amount of starch to no more than 1g starch per 1kg body weight per meal (maximum 2 meals per day). See the table below for examples on how much grain or grain-based feed you can safely feed per meal (as the only grain source) for a 500kg horse.

Feed	Approximate starch (%)	Safe amount per meal (kg)
Barley	60	0.8
Oats	40	1.2
Corn	70	0.7
Premixed feed (high starch)	50	1.0
Premixed feed (moderate starch)	25	2.0

2. Feed some lucerne hay

Lucerne hay has been shown to be beneficial for horses with, or who are prone to, gastric ulcers[13]. In addition to the buffering effect of saliva produced from chewing hay, lucerne hay is thought to provide even more buffering due to its high protein and calcium content, compared with grass hay.

It is not recommended that lucerne hay is the only type of forage in the diet though, as it supplies large amounts of protein and calcium. Generally 2.5-4kg lucerne hay per day for a 500kg horse is a nice amount.

12 Nadeau, J. A., Andrews, F. M., Patton, C. S., Argenzio, R. A., Mathew, A. G. and Saxton, A. M. Effects of hydrochloric, acetic, butyric, and propionic acids on pathogenesis of ulcers in the nonglandular portion of the stomach of horses. American Journal of Veterinary Research. 2003. Volume 64, Pages 404–412.

13 Lybbert, T., Gibbs, P., Cohen, N., Scott, B. and Siglen, D.. Feeding alfalfa hay to exercising horses reduces the severity to gastric squamous mucosal ulceration. Proceedings of the 54th Annual Meeting of the American Association of Equine Practitioners meeting. Orlando, Florida, December 1–5. 2007. Volume 53, Pages 525–526.

6. WHAT ARE SOME EXAMPLES OF ULCER-FRIENDLY DIETS?

What does an ulcer-friendly horse diet really look like? Here are four examples:

EXAMPLE 1

'LUNAR'

Height: 16.1hh
Weight: 550 kg
Workload: OTTB. Ridden 1-2 days / week (Light work).
Access to Pasture: 24/7 access to a paddock of short pasture (< 5cm in height)
Goals: Provide a balanced, ulcer-friendly diet.
Challenges: recovering from squamous gastric ulcers as a recently retired racehorse.

1. FORAGE

Lunar has constant access to pasture but it is short. She needs grass hay to encourage chewing which buffers stomach acid and also benefits her hindgut health. Lucerne hay also encourages chewing and the high protein and calcium content provide additional buffering in the stomach.

2. HIGH CALORIE FIBRE

To top up energy and diversify Lunar's fibre intake, let's add beet pulp to her diet.

3. HIGH CALORIE FEEDS

To further top up Lunar's intake of energy, we can add lupins and linseed oil.

4. QUALITY PROTEIN

Lunar needs more quality protein in her diet. Let's add lucerne hay (& the lupins will also help).

5. VITAMINS & MINERALS

Lunar is not fed a fortified hard feed or supplement, so we'll feed her Digestive VM at the full rate.

LUNAR'S NEW DIET

24 hours access to short (< 5cm high) pasture
+ 6kg grass hay
+ 2kg lucerne hay
+ 600g lucerne chaff
+ 300g beet pulp
+ 500g lupins
+ 60ml linseed Oil
+ 130g Digestive EQ
+ 50g Digestive VM
+ free choice salt

EXAMPLE 2

'CLIVE'

Height: 17hh
Weight: 640 kg
Workload: 5 days per week Dressage (Moderate work).
Access to Pasture: 8 hours access to paddock ankle height kikuyu pasture.
Goals: Supply enough energy to perform.
Challenges: prone to glandular gastric ulcers (a bit of a stress head!)

1. FORAGE

Clive has access to pasture for some of the day, but for the rest of the day, he needs to be provided with grass and lucerne hay. He is also given 1-2kg of lucerne hay **before work** each day to ensure he isn't exercising on an empty stomach.

2. HIGH CALORIE FIBRE

To top up energy and diversify Clive's fibre intake, let's add beet pulp to his diet.

3. HIGH CALORIE FEEDS

To further top up Clive's intake of energy, we can add extruded full fat soy, lupins and linseed oil.

4. QUALITY PROTEIN

Clive needs more quality protein. Let's add lucerne chaff (the extruded full fat soy & lupins will also help).

5. VITAMINS & MINERALS

Clive is not fed a fortified hard feed or supplement, so we'll feed him Digestive VM at the full rate.

CLIVE'S NEW DIET

8 hours access to green, mainly kikuyu pasture
+ 4kg grass hay
+ 3kg lucerne hay
+ 600g lucerne chaff
+ 300g beet pulp
+ 300g extruded full fat soy
+ 500g lupins
+ 100ml linseed Oil
+ 130g Digestive EQ
+ 80g Digestive VM
+ 30g salt
+ free choice salt

EXAMPLE 3

'TRINKET'

Height: 17.1hh
Weight: 625 kg
Workload: 5 days per week Show Jumper (Moderately heavy work).
Access to Pasture: 8 hours access to paddock ankle height, mixed grass pasture.
Goals: Supply enough energy to perform.
Challenges: Prone to squamous gastric ulcers in the past when on a high grain diet

1. FORAGE

Trinket has access to pasture for some of the day but needs to be provided with grass and lucerne hay for the rest of the day. She is given 1-2kg lucerne hay **before work** each day to ensure she isn't exercising on an empty stomach.

2. HIGH CALORIE FIBRE

To top up energy and diversify Trinket's fibre intake, let's add beet pulp to her diet.

3. HIGH CALORIE FEEDS

To further top up Trinket's energy intake, we can add steam-flaked barley (but not too much!). Linseed oil is added to provide more energy without having to use more grain.

4. QUALITY PROTEIN

Trinket will benefit from a good quality protein source. Let's add extruded full fat soy.

5. VITAMINS & MINERALS

Trinket needs her vitamin and mineral intake balanced, so we'll add Digestive VM at the full rate.

TRINKET'S NEW DIET

8 hours access to ankle height mixed pasture

+ 4kg grass hay
+ 3kg lucerne hay
+ 600g lucerne chaff
+ 300g beet pulp
+ 1.6kg steam-flaked barley
+ 300g extruded full fat soy
+ 120ml linseed Oil
+ 130g Digestive EQ
+ 80g Digestive VM
+ 30g salt
+ free choice salt

EXAMPLE 4

'MONTY'

Height: 16.2hh
Weight: 500 kg
Workload: TB. In Race Preparation (Very heavy work).
Access to Pasture: None. Stabled.
Goals: Supply enough energy to perform.
Challenges: Prone to squamous ulcers and poor appetite.

1. FORAGE

Monty needs all of his forage supplied, so let's add plenty of grass and lucerne hay. This amount of hay will ensure Monty doesn't go for long periods without eating and will encourage lots of chewing to buffer stomach acid. Monty also gets a large proportion of lucerne hay as this is what he finds most palatable and it provides additional buffering in the stomach. He is given 2kg lucerne hay **before work** each day to ensure he isn't exercising on an empty stomach.

2. HIGH CALORIE FIBRE

To top up energy and diversify Monty's fibre intake, let's add beet pulp to his diet.

3. HIGH CALORIE FEEDS

To further top up Monty's energy intake, we can add steam-flaked barley (but not too much!) and lupins. Linseed oil is added to provide more energy without adding too much grain.

4. QUALITY PROTEIN

Monty will benefit from a good quality protein source. Let's add extruded full fat soy (lucerne hay and lupins will also help).

5. VITAMINS & MINERALS

Monty needs his vitamin and mineral intake balanced, so we'll add Digestive VM at the full rate.

MONTY'S NEW DIET

No access to pasture

+ 4.5kg grass hay
+ 4kg lucerne hay
+ 1.2kg 50/50 chaff
+ 300g beet pulp
+ 1.6kg steam-flaked barley
+ 1kg lupins
+ 300g extruded full fat soy
+ 300ml linseed Oil
+ 130g Digestive EQ
+ 80g Digestive VM
+ free choice salt

7. MY HORSE HAS GLANDULAR ULCERS, WHAT CHANGES SHOULD I MAKE?

For horses with glandular ulcers, making changes to reduce stress are strongly recommended.

Some current suggestions to reduce the risk of glandular ulcers include:

- Exercising 4 or less days per week
- 24/7 pasture turnout or regular daily turnout
- Keeping to a routine, ie. exercise and feed your horse at a similar time each day
- Group housing of horses, to allow social interaction
- But if your horse is group housed, be aware of herd dynamics that might be stressing your horse out
- Minimise annoyance from insects

> *Keep to a routine: exercise and feed your horse at a similar time each day.*

8. WHERE DO DIGESTIVE EQ & VM FIT?

Digestive EQ

Digestive EQ is a gut health supplement. It contains ingredients which are known to promote overall gut health, including the health and integrity of the stomach. It contains marine sourced calcium, which buffers gastric acid and hence may help protect against acid injury. Digestive EQ also contains glutamine and threonine which are amino acids the gut uses to repair and regenerate its lining and protective mucous layer, and may assist with wound healing.

Digestive VM

Digestive VM is a vitamin & mineral supplement. It contains a full spectrum of trace minerals including organic selenium and all essential vitamins including natural vitamin E plus essential amino acids. It also contains zinc, which may assist with wound repair.

9. WHEN MIGHT I USE STRESS PASTE?

Stress Paste

After ulcer treatment

Stress Paste can be strategically used after ulcer treatment stops. This involves giving Stress Paste for 5 days post ulcer treatment (starting the same day the last dose of treatment is given).

Stress Paste contains a number of ingredients that may assist in managing gastric ulcers in these initial days after treatment including: magnesium hydroxide, a potent buffer of gastric acid working against acid rebound; pectin, a sticky substance that lines the upper sections of the stomach to help protect against acid splashes; and amino acids, which are used by the gut to repair and regenerate healthy gut tissue and produce its protective mucous layer.

Before scoping

Stress paste can also be used prior to scoping. Scoping must be carried out when your horse's stomach is empty so that your vet can get a proper look at the entire stomach.

BUT, it also means your horse will have a pool of gastric acid fluid in their empty stomach. If you are worried about the damage this may do, you can use Stress Paste up to 4 hours prior to the scoping procedure as it may give the empty stomach some buffering and protection from the acid, and help your horse cope better with the stress caused by travel and the scoping procedure itself.

Check with your vet, but the timeline might look like this:

Midnight	Withdraw access to all feed and forage
6am	Give Stress Paste
6.30 - 8.30am	Travel to scoping location
9am	Scoping procedure
After scoping	Give your horse their usual morning feed with Digestive EQ and allow access to hay with some Lucerne hay if possible.
10 mins before travelling home	Give Stress Paste
Arrival home	Give your horse free access to their usual hay or pasture and then feed their usual evening feed with Digestive EQ.

A number of veterinarians now recommend the use of Stress Paste as part of their pre-scoping protocol. However, please consult with your veterinarian prior to giving Stress Paste to ensure they are okay for you to do so.

10. WHAT ELSE CAN I DO TO HELP PREVENT GASTRIC ULCERS?

Feed lucerne hay before exercise

Feeding your horse 1-2kg of lucerne hay, 30-60 minutes before exercise, is thought to help reduce the risk of gastric ulcers.

As mentioned above, the combination of the buffering action of saliva (from chewing the hay) and its high protein and calcium content, all help to reduce acidity in the stomach. The hay itself also provides a physical barrier which helps stop the stomach acid splashing up onto the delicate, upper squamous region, where it could otherwise damage the mucosa and cause ulcer lesions.

Use Stress Paste or strategic medication during periods of stress

If your horse travels or competes regularly, additional gastric support – strategically administered – can reduce the risk of gastric ulcers. Travel often means that your horse's forage intake is reduced, which reduces saliva production. Travel stress can also induce changes in hindgut microbial populations, which may be linked to a systemic stress response[14]. Together, these increase the risk of glandular ulcers.

Stress Paste may provide additional buffering and a physical barrier to protect the stomach during these periods, and may also assist in supporting your horse's hindgut microbial populations through the action of the yeast derived prebiotic.

14 Schoster, A., Mosing, M., Jalali, M., Staempfli, H.R. and Weese, J.S. 2016. Effects of transport, fasting and anaesthesia on the faecal microbiota of healthy adult horses. Equine Veterinary Journal. Volume 48, Issue 5, Pages 595-602.

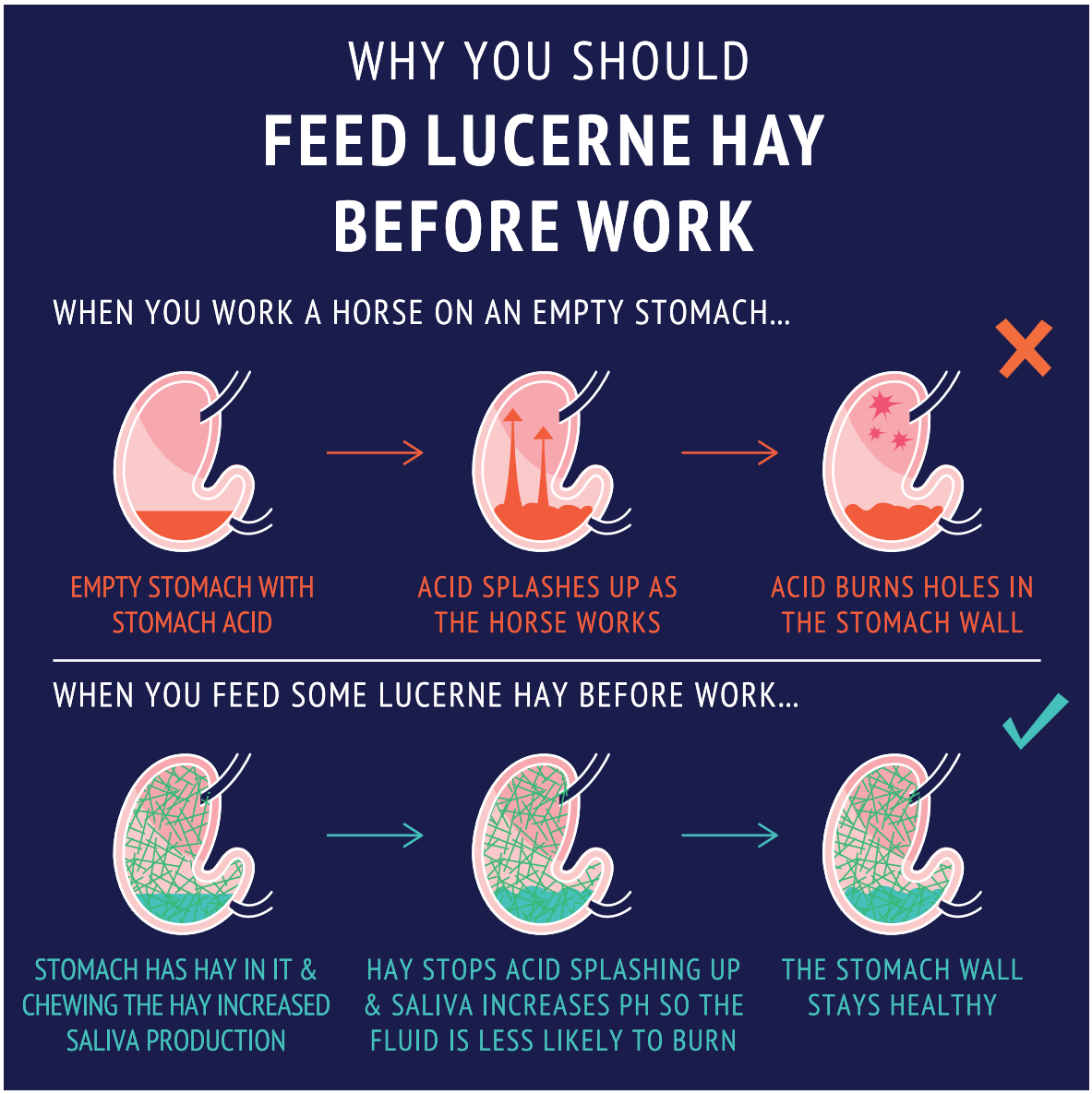


Figure 3. *What happens in the horse's stomach when you do and don't feed hay before work.*

TAKE-AWAYS

Caring for a horse with gastric ulcers is not a challenge any owner relishes. But you can definitely make changes to help your horse. Here are the most important points to remember:

1. Find out what type of stomach ulcers your horse has – squamous or glandular.
2. Work with your vet to treat ulcers and get follow up scoping done to see if ulcers have healed, and treatment can be stopped.
3. Reassess your horse's diet and management to see if you can make changes that will reduce the risk of gastric ulcers reoccurring.
4. Feed Digestive EQ daily to help buffer gastric acid and supply amino acids the gut uses to continuously regenerate and grow healthy tissue.
5. Use Stress Paste strategically once Omeprazole treatment stops and during times of increased stress or reduced feed intake such as travel and competition.

Whilst prevention is undoubtedly better than cure, if your horse already has ulcers, following the tips we've talked about in this e-book might help you prevent further bouts of ulcers recurring.

If you'd like some extra help figuring out where gut health supplements such as Digestive EQ, VM or Stress Paste might fit into your horse's ulcer-prevention program, please just get in touch.

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ABOUT THE AUTHOR

Sam is a qualified equine nutritionist (you might even know her from FeedXL) and one of life's ever-curious, intelligent and caring souls. Sam has a Bachelor of Equine Studies and an Honours and Masters degree in Equine Nutrition from the University of Melbourne. Her focus of study was with the development of methods for measuring obesity in horses and ponies.

Sam has a number of years practical experience through working at racing stables, thoroughbred studs and various equine veterinarians.

Sam's passion is to support and educate horse owners in all areas of equine nutrition, through providing independent nutritional advice.

When Sam is not advising horse owners on what to feed, she can be found helping out on her family's sheep stud, travelling the length and breadth of Australia or loungeroom dancing to country music. She lives with her husband and gorgeous daughter in Colac, Victoria.

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GUT HEALTH SUPPLEMENT

Digestive EQ

Digestive EQ is a **gut health supplement** designed to support the digestive and immune systems of your horse.

Its unique formulation is designed to **assist with fore gut and hind gut digestion, and inflammation and immune challenges.**

It also contains a **mycotoxin binder** to negate mycotoxins and help **get your horse's gut healthy again.**

It comes in a **great-tasting**, easy-to-feed **powder** form.

- DIGESTIVE ENHANCER & PH STABILISER
- DUAL ACTION MYCOTOXIN BINDER
- POWERFUL PREBIOTIC
- THREONINE & GLUTAMINE
- ADDED ENZYMES & ANTIOXIDANTS
- NON SWABBABLE

VITAMIN & MINERAL SUPPLEMENT

Digestive VM

Designed to complement and be fed alongside Digestive EQ, **Digestive VM** is the ultimate **vitamin, mineral and amino acid supplement.**

With ingredients like organic selenium and chromium, natural vitamin E, plus essential amino acids, **Digestive VM is platinum standard.**

For **added digestive support,** it also contains glutamine and a yeast derived prebiotic.

It comes in a **great-tasting**, easy-to-feed **pellet** form.

- ESSENTIAL TRACE MINERALS
- FULLY FORTIFIED WITH VITAMINS INCLUDING BIOTIN
- ORGANIC SELENIUM & NATURAL VITAMIN E ANTIOXIDANTS
- BIOAVAILABLE SOURCE OF CALCIUM & MAGNESIUM
- + EQ FEED WITH DIGESTIVE EQ FOR OPTIMUM GUT HEALTH
- NON SWABBABLE

PASTE FOR ACUTE STRESS

Stress Paste

Stress Paste is a concentrated nutritional formula designed to **support your horse in times of acute stress.** Such times may include when competing, racing, transporting or in extreme heat & humidity.

Acute stress affects horses in many ways. They can stop eating. They can stop drinking. Muscles can fatigue quickly with dehydration and can result in reduced nutrients available to support energy production.

Stress Paste is designed to address each of these responses to stress and **keep the horse eating and hydrated with well-functioning, well protected muscles.** It is also designed to **support the gut** so it can remain healthy during higher stress periods.

- B-VITAMINS FOR MUSCLE ENERGY & APPETITE
- POWERFUL PREBIOTIC FOR GUT MICROBIOME SUPPORT
- VITAMINS C & E FOR ANTIOXIDANT PROTECTION
- MAGNESIUM HYDROXIDE FOR GUT BUFFERING
- NATURAL BETAINE FOR HYDRATION & HEAT RESILIENCE
- THREONINE, GLUTAMINE, PROLINE & SERINE FOR GUT WALL HEALTH
- MAGNESIUM & B1 FOR NORMAL NERVE FUNCTION
- PECTIN TO HELP PROTECT THE STOMACH

TRUE HEALTH BEGINS IN THE GUT

POSEIDON
EQUINE