Eating habits and the food fed to horses are the subject of numerous studies examining how those things impact gut health

Ulcers

A MAN-MADE DISEASE

By **AMANDA DUCKWORTH** / *Photos by* **ANNE M. EBERHARDT**

THE EQUINE GUT is an important but often delicate structure, especially when it comes to Thoroughbreds. Issues with the gut can impact performance, body weight, and temperament. The typical lifestyle of a Thoroughbred in training is quite different from equines in the wild, but helping a horse with those adjustments can prevent some of the typical problems.

One of the most common gut issues Thoroughbreds face is gastric ulcers. It is estimated that the vast majority of the breed will retire from the track with mild to severe ulcers. Adding to the problem is the fact it is one that humans created. The American Association of Equine Practitioners offers a guide titled "Reduce Your Horse's Gastric Ulcer Risk."

"Ulcers are a man-made disease, affecting up to 90% of racehorses and 60% of show horses," explains the AAEP. "The treatment and prevention of gastric ulcers is directed at removing predisposing factors, thus decreasing acid production within the horse's stomach.

"The prevention of ulcers is the key. Limiting stressful situations along with frequent feeding or free-choice access to grass or hay is imperative. Neutralizing the production of stomach acid is nature's best antacid."

Equine gastric ulcer syndrome (EGUS) began as a term to describe all gastric mucosal disease in horses. Further research has identified two distinct diseases that fall under EGUS, which are equine squamous gastric disease (ESGD) and equine glandular gastric disease (EGGD).

In April 2023, Animals (Basel) published "Equine Gastric Ulcer Syndrome: An Update on Current Knowledge." Researchers have defined ESGD as "lesions involving the squamous mucosa encompassing the margo plicatus, greater and lesser curvatures and the dorsal squamous fundus," while EGGD is defined as "lesions of the glandular mucosa involving the cardia, ventral glandular fundus, antrum, pylorus and proximal duodenum."

That same April, Animals (Basel) also published "The Fiber Requirements of Horses and the Consequences and Causes of Failure to Meet Them."

"To provide an energy source for horses, rations often include starch rather than fiber," explained researchers. "This can result in health issues related to the gastrointestinal tract (GIT) in the horse. In the stomach, the main concern is equine gastric ulcer syndrome (EGUS) and, more specifically, equine squamous gastric disease (ESGD).

"Ulcerations are caused either by increasing acidity in the stomach (from starch ingestion and reduced saliva production) or splashing of acidic juices caused by a lack of a forage barrier prior to exercise or prolonged periods without fibrous feed intake, which allows the stomach to collapse and spread acidic gastric fluids into the upper squamous regions of the stomach."

Although there are ample studies which all point to the importance of fiber, horses still struggle with ulcer-related issues.

"Replacing starch in a high-energy diet with a fibrous alternative greatly reduces the risk of gastrointestinal disease and improves digestion, body

condition, behavior, immune function, athletic performance, and adaptation to weaning," said researchers. "In many cases, failing to feed the horse its fiber requirement reflects a lack of knowledge on the part of the owner."

In March 2026, Veterinary Sciences published "Physical vs. Behavioral Clinical Signs in Horses with Squamous and Glandular Gastric Ulcers."

"Equine Gastric Ulcer Syndrome (EGUS) is widely recognized as one of the most common disorders affecting the equine stomach and represents a significant concern for equine health, welfare, and athletic performance worldwide," explained researchers. "Gastroscopic and post-mortem studies have consistently reported a high prevalence of gastric ulceration across a broad range of equine populations, particularly among horses involved in athletic activity.

"Despite its high prevalence, EGUS remains challenging to diagnose clinically, as affected horses often exhibit nonspecific clinical signs that may be overlooked by owners or by clinicians who are less attuned to subtle changes in behavior or performance."

For the retrospective study, researchers evaluated the association between gastric ulcer location and the clinical signs observed in horses. In total, the medical records of 52 horses that had been diagnosed with gastric ulcers between 2014 and 2025 were used as data. Of that group, 19 were used for racing, 17 for show jumping, nine for dressage, and seven for leisure riding.

Researchers classified clinical signs as physical, behavioral, or mixed, and ulcer localization was categorized as equine squamous gastric disease, equine glandular gastric disease, or mixed. Researchers limited inclusion in the study to horses that only had gastric ulceration as a diagnosed condition.

"Regarding the clinical signs observed, 15 horses exhibited physical signs (28.8%), 28 exhibited behavioral signs (53.8%), and nine showed mixed clinical signs (17.3%)," researchers explained. "Some horses presented more than one physical or behavioral sign simultaneously.

"Among physical clinical signs, the loss of body condition was observed in 15 horses, recurrent colic in seven, poor coat condition in five, and diarrhea in one horse. With respect to clinical behavioral signs, 18 horses showed

negative behavior during riding, 17 exhibited girthiness, six had inappetence, five showed poor performance, five demonstrated nervousness or irritability, and one horse displayed stereotypic behavior (crib biting)."

Researchers found that physical clinical signs were more likely to be associated with ESGD, while behavioral and mixed clinical signs were more frequently observed in horses with EGGD or mixed gastric ulceration. Additionally, no horses with glandular ulcers exclusively exhibited physical clinical signs.

"This study demonstrated a significant association between gastric ulcer location and the type of clinical signs observed in horses," concluded researchers. "Squamous lesions were more often associated with physical signs, whereas glandular or mixed ulceration was more frequently linked to behavioral or mixed clinical presentations. These results suggest that, while clinical signs alone are poor predictors of gastric ulcer disease, ulcer location may influence the pattern of clinical expression.

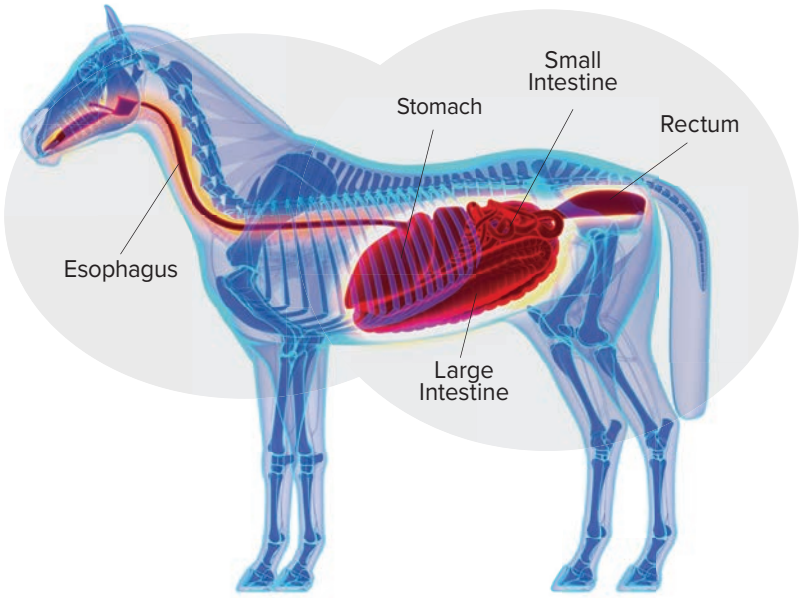
"Further studies are needed to better define the clinical significance of this relationship and to assess whether it can meaningfully support clinical suspicion and diagnostic decision-making. Overall, these findings provide a novel perspective on EGUS, contributing to a better understanding of its clinical manifestations and their possible association with lesion location."

Ulcers are one of the stress reactions researchers investigated in the study "Preliminary assessment of the leukocyte coping capacity as a point of care marker in horses with stress associated diseases," which was published by BMC Veterinary Research in December 2025.

"Stress represents a serious health and welfare concern; however, its objective assessment remains difficult," explained researchers. "The equine gastric ulcer syndrome (EGUS) and orthopedic diseases that cause pain are among stress associated diseases in equine medicine.

"The leukocyte coping capacity (LCC) quantifies oxygen radical generation of neutrophil granulocytes which is altered under stress. Therefore, LCC could be a novel biomarker for stress in horses and we hypothesized that horses with stress associated diseases would have lower LCC values in comparison to

Equine Digestive System



CLOCKWISE FROM TOP: GETTY IMAGES; COURTESY OF NEW VOCATIONS; SKIP DICKSTEIN

Regardless of where the stress emanates from—the racetrack or show ring—ulcers can be a byproduct

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horses without these diseases."

During the observational clinical pilot study, a total of 45 privately owned horses were classified according to the most relevant clinical diagnosis based on clinical, laboratory, and gastroscopic findings into one of four groups. Researchers measured LCC at the first visit (T1) and then again 28 days later (T2).

Group 1, no EGUS, presented with no clinical and/or laboratory and/or gastroscopic signs of EGUS, lameness or other diseases. Group 2, EGUS, presented with any grade of EGUS, but no clinical and/or laboratory signs of lameness or other diseases. Group 3, lameness, had any grade of lameness, but no clinical and/or laboratory signs of other diseases, but with any grade of EGUS possible. Group 4 was reserved for other diseases with no evidence of lameness, any grade of EGUS possible.

"Primary results indicate that horses in group 3 had significantly lower values for LCC compared to horses in the group 1 at T1," researchers concluded. "Also group 3 horses had the highest EGUS scores. At T2, LCC was still significantly lower in this group, even though the severity of EGUS decreased in all horses with treatment.

"Lame horses had higher EGUS scores and lower LCC levels, indicating a possible link between lameness, EGUS, and stress. Our findings support further investigation into the use of LCC as a quantitative immunological marker of stress with strong potential for use at point of care."

It is widely accepted that how a horse eats impacts its gut health, and racehorses aren't the only ones who run into ulcer issues. In late 2024, the Journal of Veterinary Internal Medicine published "Improvement of gastric disease and ridden horse pain ethogram scores with diet

Sweet feed is high in sugar and starches, things that are not gut-friendly

adaptation in sport horses."

"The pathophysiology of ESGD is well described and linked to excessive acidity (hydrochloric acid and volatile fatty acids) in the nonglandular part of the stomach, which leads to ulcerations," explained researchers. "Diets high in starch and sugar have been linked to EGUS and hindgut dysfunction. Many sport horses usually are fed high energy diets, rich in starch and sugar to help support the expected level of performance. The digestion of starch begins in the stomach, mostly through amylolytic bacteria, but an excess of starch exceeds the amylolytic capacity of the small intestine with the remainder being fermented in the hindgut.

Replacing starch with fiber has been linked to an easier weaning process

"The pathophysiology of EGGD is still under investigation and unclear. It seems to be multifactorial and linked to a compromise of the mucosal defense mechanisms (mucus, bicarbonate, mucosal blood flow, prostaglandins), nonsteroidal anti-inflammatory drug (NSAID) use, and stress."

For the prospective observational cohort study, nine Warmbloods trained at the same stable were used. After receiving a pelleted diet, high in sugar and starch, the horses were examined at the beginning of the study (TO). They were then moved to a cooked mueslitype low start diet and examined again after 12 weeks (T12). Additionally, the horses underwent a standardized exercise test (SET) and a ridden pain score was calculated.

During the study, exercise schedules remained unchanged. The horses were trained six days per week and were also involved in 1* to 5* Federation Equestre Internationale show-jumping competitions.

"Eight of 9 horses were diagnosed with gawstric lesions at To," researchers explained. "Horses with hyperkeratosis showed other gastric lesions, glandular or nonglandular or both. The total EGD score improved 12 weeks after the dietary change with a decrease of each separate ESGD and EGGD score. Two of the horses showed complete healing and six horses had a decrease in EGD score after the change of diet.

"We showed that a structured (nonpelleted) diet low in starch and sugars significantly decreased the occurrence of gastric ulcers and miti-

gated the expression of pain-associated behavior during riding in this population of show-jumping horses, without any additional therapeutic intervention. Moreover, we found a positive correlation between gastric ulcer scores and pain scores during exercise."

Ulcers, of course, are not a problem unique to any singular breed, use, or geographic location. For example, in February 2026, Animal Welfare published "Friends, forage, freedom: A cluster analysis investigating horse management styles and welfare in the UK and Ireland."

"Horse management often involves individual stabling or restricted movement, i.e., limited turn-out in small areas, sometimes without close contact with conspecifics," explained researchers. "Horses may also be fed in ways that do not mimic the pattern of trickle feeding of low-value forage seen in the wild. Management practices which do not consider the horses' natural behavioral needs, such as social interaction with conspecifics, continuous provision of a low-quality forage source and unrestricted movement, can result in welfare issues for the horse."

The study, which used recreational horses, examined social interaction (friends), access to suitable forage (forage), and unrestricted movement (freedom). After collecting 1,501 survey responses, researchers identified three distinct management styles: Horse Centered Management Cluster (HCMC), Combined Management Cluster (CMC), and Owner Centered Management Cluster (OCMC).

"Horses managed under the OCMC approach were confined to stabling for extended periods, had less access to forage and sometimes provided limited or no physical interaction with other horses during turn-out," explained researchers. "OCMC horses also demonstrated significantly higher reported rates of GI issues, lameness issues, handling difficulties, abnormal oral behaviors, and antisocial behaviors over the past six months, supporting an association between this management style and reduced welfare outcomes in this cluster.

"Whilst the overall number of horses exhibiting poor welfare indicators in this study was relatively small, these findings underscore the importance of further in-depth investigation."

The realities of modern living for horses can be a balancing act when compared to the needs of their physical makeup. BH