

# Blood-Horse®

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A publication of the Thoroughbred Owners and Breeders Association, the national organization of Thoroughbred breeding and racing

**PLUS:**  
Combating  
Colic

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# COMBATTING COLIC

How to increase your horse's chance of recovery

BY NATALIE DEFEE MENDIK

St Nicholas Abbey, Laughing, Silver Train, Summer Bird, Dullahan: careers cut short and lives ended by colic. Just hearing or seeing the word “colic” strikes fear into any horse person. Colic can manifest in various forms, from gas discomfort to a twisted bowel requiring emergency surgery.

“Colic is really just a generic term; it’s a clinical sign the horse is exhibiting, or more specifically, a particular behavior that we perceive to indicate body-cavity pain,” explained Dr. Barbara Dallap Schaer, associate professor of Emergency Medicine and Critical Care at the University of Pennsylvania School of Veterinary Medicine’s New Bolton Center.

“It may be mild, violent, or anywhere in between,” noted Dallap Schaer. “What we’re talking about is a horse that is having some sort of issue with the abdominal cavity that’s related to the GI (gastrointestinal) tract, manifesting itself by exhibiting outward signs of pain; from not eating or lying down, to pawing, rolling, or becoming quite violent.”

To understand how the horse arrives at

this full-blown belly ache, it helps to get a sense of the unique nature of the GI.

## HIGH-TECH HELP

In an effort to raise colic awareness in the horse-owning public, the University of Guelph in Ontario, Canada, has developed an online colic risk assessment calculator. Through analyzing risk factors and educating about preventative strategies, Equine Guelph aims to reduce colic incidences, which it identifies as the number-one killer of horses other than old age.

[www.equineguelph.ca/Tools/colic.php](http://www.equineguelph.ca/Tools/colic.php)

## Inside the Horse

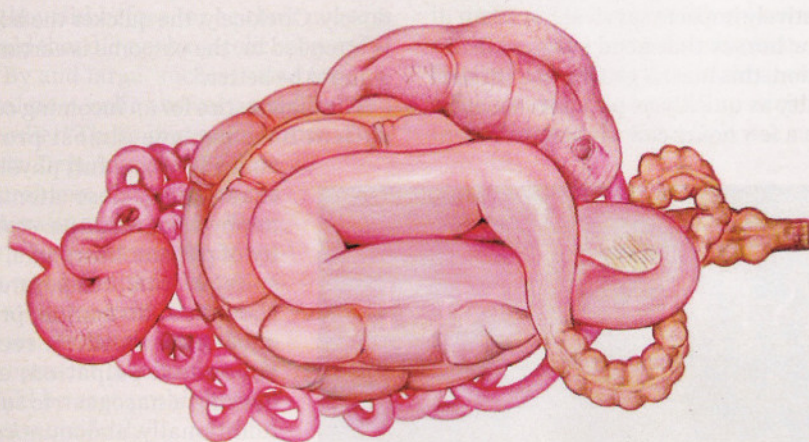
“Eighty-five-plus feet of twists and turns.”

No, this is not a new slide at the local water park but rather the succinct explanation Equine Guelph (see sidebar) offers for the equine GI tract. While just about every horseman knows the horse is unable to vomit, the extent to which the gut is a mobile, winding organ might come as a bit of a surprise.

The equine foregut consists of the esophagus, stomach, and small intestine, a one-way system in which enzymes go to work digesting feed. A simple-stomached animal, the horse’s eight- to 10-liter-capacity stomach is designed for continual grazing. The small intestine itself is composed of three parts: the duodenum, jejunum, and ileum. Mesentery, a ligamentous tissue that affixes the colon to the body wall, allows the small intestine to be fairly mobile inside the abdominal cavity.

The hindgut takes care of fermenting fiber, first in the cecum, where bacteria





The equine GI tract is "eighty-five-plus feet of twists and turns"

break down fiber, before ingesta moves on to the large colon, where plant fibers are further broken down. Finally, in the small colon, fecal balls are formed.

With all the bends and kinks in the intestine, including U-shaped turns, it's no wonder the equine GI tract is prone to problems. Add to that a system with little anchorage and much mobility, changes in colon diameter, sensitivity to endotoxins, and the possibility of the colon telescoping in on itself, and you have the perfect storm for gastrointestinal problems.

Dr. J. Brett Woodie, Diplomate of the American College of Veterinary Surgeons, and a surgical specialist and partner at Rood & Riddle Equine Hospital in Lexington, gives an example of an anatomic feature in the GI tract that can play a role in the horse's propensity toward colic.

"If we are discussing an impaction, for example, especially in the large

colon, there are areas, such as the pelvic flexure, where there's a turn in the intestine, so there is a change in direction of the intestinal tract. Also, there are areas such as the pelvic flexure and right dorsal colon where the lumen of the large intestine narrows, so we go from a larger area down to a smaller area. We tend to find impactions at those locations. There's also the potential for change in motility or function, such as at the pelvic flexure, which may make passage of ingesta slow at that point."

In addition, the horse's digestive tract is designed to accommodate a lifestyle of nearly continual roaming and foraging, not a diet with concentrates and time spent stalled.

"We can speculate colic might be the result of our asking horses to interact with us in a specific way," said Dallap Schaer. "It's possible that in many cases we're taking an animal that was anatomically designed to graze about 23 hours a day, and we now have a schedule for them that relates to whatever the activity is that we do with them. We take them to events, shows, and race tracks; there's going to be a balance between natural state and our relationship with them as utilitarian horses."

### Common Forms of Colic

Gas, impaction, enteroliths (intestinal "stones"), twisted bowel, displaced bowel, endotoxemia, inflammatory conditions, intestinal lesions, sand colic, fecaliths (compacted feces), and more—the types and severity of abdominal issues can run a wide spectrum.

## RACHEL RECOVERS

From Dullahan suffering a burst colon to St Nicholas Abbey struggling with first a fracture, followed shortly afterward by emergency colic surgery only later to develop laminitis before fatally colicking again, colic is a frightening scenario. However, while dire cases get plenty of press, so do those with successful outcomes, such as Preakness Stakes (gr. I) winner and 2009 Horse of the Year Rachel Alexandra, who pulled through abdominal surgery to address post-foaling complications last year.

As attending surgeon for Rachel Alexandra when she was treated at Rood & Riddle Equine Hospital in 2013, Dr. J. Brett Woodie commented, "With Rachel we were fortunate; she had a very severe problem, but we were able to address that quickly. Certainly in her favor, when we started, she wasn't debilitated—she was in great health, and we were able to operate on her early. Also, one thing you can't underestimate is the toughness of the horse; she never gave up at all. That was a huge part. She was a great patient. She let us do all of the things we needed to do without any problem."

Unfortunately, even with the best medical attention, some colic cases are not treatable.

"There are certainly abnormalities that aren't able to be corrected," noted Woodie. "Either the severity of the lesion is such that the horse is likely to have a very poor prognosis from either the standpoint of adhesion formation and subsequent colic in the future, or there are certain things such as gastrointestinal tract rupture, where you have gross contamination of the abdominal cavity with ingesta. Those types of problems are very difficult, if not impossible, to resolve. Even under close observation some problems are not amenable to being corrected."

Despite this, Woodie offered encouraging thoughts: "The survival rates and success rates are much improved over what we had historically. Horses can and do return to their jobs post-colic surgery. My advice would be to seek attention quickly, and if surgery is indicated, don't delay."

By Natalie DeFee Mendik



An abdominal ultrasound is part of the diagnostics for an incoming colic patient



"Some things are very mild, like a simple gas colic treated at the farm that resolves with one dose of an analgesic," said Dallap Schaer. "With simple gas distention, everything's in the right place; it doesn't require referral or intensive medical management."

On the other hand, Dallap Schaer noted Penn Vet's emergency practice often treats three major categories of colic: twisted large bowel, twisted small bowel, and simple obstruction.

"These are big, catch-all categories of equine colic; there are lots of other causes within them you can get into," she said.

"Speaking as an emergency clinician, the things we are probably most concerned about are those that have to be dealt with in the most urgent manner, such as a twisted or displaced piece of intestine, the severity depending on how far out of position the bowel gets and how tightly it twists. Also, with roughly 70 feet of small intestine, it can get trapped in something like a lipoma (fatty tumor) in the abdomen, which gets wrapped around the small intestine and causes it to lose its blood supply."

With an obstruction or impaction, Dallap Schaer explained, "instead of having something that's very twisted or tangled, you have something that's in the correct position, but things are not able to move forward. That includes things like large colon, ileal, cecal, and small colon impaction. There is literally something within the lumen of the bowel that makes it impossible for material to move forward."

### Not a Waiting Game

Urgency is the name of the game with colic; a wait-and-see approach can be detrimental.

"Once the colic starts, the clock is ticking. Timeliness of referral is key to prognosis," said Dallap Schaer. "We've really come a long way with our success

rate with colic surgery; delay of referral negatively impacts survival."

For horses that need surgical intervention, this means getting to a surgical facility as quickly as possible. Delay by even a few hours can worsen the poten-

has increased our success rates tremendously. Obviously, the quicker the horse is attended to, the outcome is certainly going to be better."

The diagnostics for an incoming colic patient have become almost protocolized, with a full physical exam paying close attention to physiologic status: stability of patient, heart rate, respiratory rate, temperature, abdominal distention, presence of GI motility; rectal abdominal palpation; and passing a nasogastric tube. Additionally, abdominocentesis (extraction and analysis of peritoneal fluid within the abdomen) and abdominal ultrasound are becoming standard.

"We form a treatment plan from the workup information—the main thing is figuring out whether the horse has a surgical problem, and if so getting to table as quickly as possible," said Dallap Schaer.

### Hopeful Prognoses

All this digestive doom and gloom can lead to real panic, but Woodie and Dallap Schaer note things are really not as bad as they seem.

"Most people who have been around horses for any number of years have an exaggerated fear of colic, but if you actually look in the literature, our prognosis for colic has improved dramatically," Dallap Schaer said. "We get close to 90% of horses that have surgical colic out of the hospital and discharged to go home; whereas if you look back at some of the very early reports in the 1980s, you would get 40-50% of the horses out of the hospital. I

think some of the fear is related to that historical perspective.

"To make an orthopedic analogy, it would be the same as saying if any bone is broken, we have to shoot the horse. With colic, people think the horse is not going to survive or it's never going to go back to perform like it used to," continued Dallap Schaer. "Much of the research would suggest otherwise; many

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tial outcome.

"Once colic starts, all of us play a role in the animal's prognosis," Dallap Schaer stressed.

"One of the biggest things we've seen over the years is earlier recognition of a problem, earlier intervention by veterinarians in the field, and earlier referral when horses aren't improving," remarked Woodie. "I think that, in itself,



of those horses do go back and perform as they did before, or as their cohorts would that did not have colic surgery."

"By and large, success rates for survival post-colic are very good," added Woodie. "That's in general terms, obviously. Depending on the type of problem, the prognosis is generally very good. Also, with some horses, finances are not a limiting factor in what we can do. For these horses, we can do things from a treatment standpoint that would be cost-prohibitive to most individuals."

Dallap Schaer explained large animal emergency critical care is a relatively new field focused on supporting equines through the critical care and postoperative period, ensuring they are physiologically equipped for a healthy recovery. Along these lines, Woodie noted improvement in treating horses that have additional nutritional needs post-surgery, using parenteral nutrition (nutrients administered intravenously).

Once out of the hospital, Dallap Schaer explained, horses face a roughly three-month convalescent period: one month stall rest with hand-walking, one month in a small paddock with additional hand-walking, then turnout in a larger paddock, and finally a gradual return to normal work, tailored toward the horse's occupation.

## A One-Off?

While some colic cases are the result of poor horse management, many are a fluke of the equine anatomy.

"Prevention is a tough one, because we don't always know how we got there," said Dallap Schaer.

"If you look at all the studies for risk-factors with colic—keeping your animal appropriately dewormed; making sure you include targeted deworming for animals that might be high shedders or carriers on your farm; avoiding round bales, feed changes, and poor quality forages—these eliminate spe-

cific risk-factors. To be honest, though, in many of the horses with colic we see, most people have tried to eliminate risk factors," she noted. "I think what we are often down to is straight-up accidents in the equine GI tract. We see many

However, some things you are not going to be able to eliminate based on the fact that the animal is in an occupation that requires things like shipping and feed changes. There is sort of a limit."

## Positive Findings

While veterinary researchers pour time and expertise into finding ways to reduce the incidences of colic, as well as support horses physiologically in surviving colic, retrospective studies indicate horses indeed stand a good chance at recovery and rehabilitation.

A 2013 study published in the *Journal of the American Veterinary Medical Association* compared the post-celiotomy (colic surgery) careers of 85 racing Thoroughbreds with 170 race-matched reference horses, and found the colic cases didn't exhibit a significant reduction in performance or career as compared to their peers. Likewise, a 2013 retrospective study in *Equine Veterinary Journal* reported fair-to-good recovery and rehabilitation of celiotomy cases; of 195 horses surviving post-surgery to six months, 77% returned to their intended use.

"Some recent studies have looked at return to athletic function in sport horses as well as racehorses, and that data would indicate that horses are doing a lot better at returning to function," said Woodie. "Historically, I think people felt that a horse that had colic surgery was not likely to return to athleticism, and there was certainly a lot of negativity—to only do surgery as a last-ditch effort.

That would be a self-fulfilling prophecy, meaning that if you don't take horses to surgery early in the course of the disease, waiting until later on when things have obviously progressed—then yes, those horses don't do well." **BH**

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mares post-foaling that end up having to go to colic surgery; I think that's a risk of the occupation of being a broodmare, and not something that anyone can easily change from a management standpoint.

"Having horses as close to their natural state as possible is probably going to help them from a GI standpoint—so increased turnout and ample grazing.