

# PLATINUM

## PERFORMANCE®

## THE EVOLUTION OF COLIC

### 0 to 90

### Major Milestones & Advancements in Colic Treatment

**P**rior to the late 1960s, very little was known about colic and patients that underwent colic surgery had a zero percent chance of surviving. It was at this time that veterinarians Nathaniel (Nat) White and Doug Herthel were interns at the University of California at Davis, under the mentorship of Dr. John Wheat. “When I started in veterinary medicine, colic surgery was a rarity. We didn’t expect survival,” remembers Dr. White.

“In 1968, we had our first success at UC Davis. Of 26 horses that were operated on, one horse with an intestinal stone survived,” remembers Dr. Herthel. “It was so exciting to have a horse survive that we took a ‘win’ picture with the veterinarians standing with the horse and the owner, holding the stone. It was a major event,” says Dr. Herthel.

#### Unprecedented Breakthroughs

UC Davis Veterinarians were inspired to test new tools and techniques hoping to improve outcomes for colic surgery patients. With the advent of anesthetics that could be administered in oxygen, anesthesia improved markedly, as it was much safer for the horses and allowed veterinarians to deliver much-needed oxygen and intravenous fluids during surgery. “There was still plenty of room for improvement, including gas anesthesia combined with a ventilator, monitoring direct arterial blood pressure, oximetry and better fluid support,” says Dr. Herthel. “It made anesthesia extremely safe.”

#### The Race Against Time

Even after these improvements, the prognosis was so poor that veterinarians were hesitant to immediately refer a horse for colic surgery. Dr. White remembers, “What helped improve survival rates was the realization that we were getting the horses too late. So, we worked on educating veterinarians and clients, and referrals started happening more quickly. As a result, we went from a 25% survival rate to an 85% survival rate.”

Timing remains a problem even today as treatments and drugs become more effective at making horses comfortable in the midst of a colic episode.



*Drs. Grant, Herthel, Mansmann and Terry pose with the patient and owner of the first successful colic surgery. Notice the stone that was removed from the horse during the operation. (UC Davis, 1968)*

#### Post-Operative Care

With a better understanding of colic and improved techniques, more horses were surviving the surgery. Attention then turned to improving post-operative care.

One of the primary threats was diarrhea — caused by the use of prophylactic and therapeutic antibiotics, the stress of not eating or by clostridial toxins. Progress was seen as reliance on antibiotics eased, leaving healthier gut flora and a decreased occurrence of diarrhea.

“Of course, there are instances in which horses need antibiotics, but there are ways of doing that where you can get a much lower occurrence of diarrhea,” says Dr. Herthel. “We were asking ourselves how we could doubly ensure that our patients didn’t break with diarrhea after surgery.” It was this question that led to one of the better tools in the fight against diarrhea, the advent of Bio-Sponge®.

The theory behind Bio-Sponge® is that the cation-charged surface area in Di-tri-octahedral (DTO) Smectite attracts bacterial toxins that are inside the intestinal tract, essentially adsorbing the toxins before they devastate the horse’s circulatory system. Bio-Sponge® was studied by prominent veterinarians in both clinical and university settings with powerful results.

*When Bio-Sponge® was introduced, it gave veterinarians a tool to fight diarrhea in post-operative colic patients.*



## The Influence of Diet on Colic Rates

Dr. White remains convinced that colic is preventable and influenced heavily by diet. “The research I’ve been involved with focuses on the epidemiology of colic — the problems and the risk factors that can be associated with colic,” says Dr. White. “Some of that has looked at colic on the farm,” he continues, “where we found that intake of high rates of grain are associated with a higher risk of colic. We suspect that even bran — regardless of its laxative properties — has such a high energy level that it is probably adding to the problem. We think that horses on pasture and turnout 24 hours a day are at less risk,” continues Dr. White. “And other studies have shown that’s true.” Indeed, a grazing diet of high-quality forage is complementary to how the horse was designed to eat. As natural grazers, modern feeding practices of 2-3 meals per day with grains and concentrates easily shifts the types of intestinal microbes setting the stage for intestinal malfunction. For those horses where constant grazing is unrealistic, feeding only moderate amounts of grain with a high quality forage diet and the right supplementation is the best way to decrease the risk of colic.

## The Power of Preventive Nutrition

Dr. White notes, “There are colic cases that I think we can prevent. Part of that is based on nutrition — limiting grain as much as possible, using healthy fats in the diet, practicing routine exercise and parasite control and turning a horse out as much as possible.” Dr. Herthel concurs, “by mere husbandry we were able to decrease colon torsions dramatically by not feeding high concentrate diets and allowing a horse to graze off scabrous feed all day long.”

Nutritional supplementation has proven to be a valuable source of beneficial fats in a horse’s diet, especially omega-3 fatty acids that may be lacking. Research has shown omega-3 fatty acids can directly influence inflammatory levels. In addition, choosing a supplement produced without the heat or moisture required by the pelleting process allows for significantly lower rancidity to be introduced into the horse’s system. This can be a further benefit in preventing a range of digestive disorders and occurrences of colic.

## On the Horizon: The Future of Colic

“One of the biggest things we know now is that colic is not just an intestinal disease,” says Dr. White. “It’s a systemic disease. When the



*“It’s a systemic disease. When the intestine gets injured, it affects the whole body. We’re now treating these horses for their entire system and seeing improved results.” - Dr. Nathaniel (Nat) White*

intestine gets injured, it affects the whole body. We’re now treating these horses for their entire system and seeing improved results.”

Dr. White’s research has focused heavily on prevention, encouraging the use of diet to help avoid colic. He is also interested in the role intestinal inflammation plays in colic, which he expects to be an area of improved understanding and treatment in the near future. “Diet and inflammation play a role in the vast majority of equine diseases,” says Dr. White. He is also associated with research related to Ischemia— the shutting off of blood flow that occurs when the intestine is distended or strangulated by twisting the vessels. “We know that even when we untwist the bowel, we still have a biochemical reaction that causes more damage. This is called reperfusion injury,” he says. “It’s the same thing that happens with humans when they experience a heart attack. You can remove the clot, but with new blood flow the body has a defense mechanism that goes overboard and causes more damage.”

## Full Circle

The use of both prophylactic and therapeutic nutrition in colic prevention and post-operative care will continue to expand. “Our success rate will continue to increase as we better understand the role of nutrition in prevention but also as more horses are treated with it post-operatively,” says Dr. Herthel.

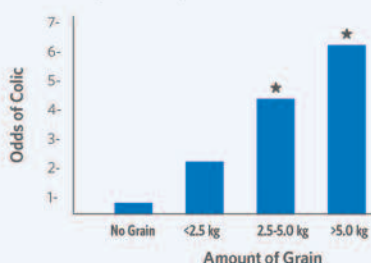
From their earliest days in veterinary school at UC Davis, Drs. Herthel and White, along with their colleagues, including Dr. Moore and Dr. Hassel among many veterinarians around the world in private practices and universities, have shared in the transformation of colic. Gone are the zero percent survival rates, replaced by 70-90% of horses returning home healthy after colic surgery. Now the stage is set for further discoveries in regenerative medicine and ways to more effectively balance the microbiome.

“In the end, it all comes back to the horse,” says Dr. Herthel. “I hope there’s a time when colic surgery is a rarity because we’ve become so good at prevention.” ♦

### Nutrition & Colic Prevention

Nutritional intervention can be a powerful tool for equine veterinarians. For instance, research has shown that low grain consumption can play a role in decreasing equine colic rates.

Odds of Colic in Horses Fed Concentrate as Part of Their Daily Diet Compared to Horses Fed No Grain



\*Significant difference ( $P < 0.05$ ) for odds of having colic compared to no grain fed (White, 2006).

Research Cited: Nathaniel A. White, Marion duPont Scott Equine Medical Center, Colic Prevalence, Risk Factors and Prevention, 2006.

*A healthy diet plays a role in preventing colic. Limiting grain and providing healthy fats is important.*

