



**EQUINE VETERINARY SERVICES  
13865 HOLLYHOCK ROAD  
COLD SPRING MN 56320**

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**A NOTE FROM NICOLE**

I don't think I've ever been so happy to see a winter come to an end! It was a rough winter for many dear old horses, and we know how hard it is to deal with their loss. We hope, as the sun warms, your healing can progress and you can enjoy the lovely spring with your family and other horses.

You will notice this newsletter is mostly devoted to insulin resistance and low-starch diets. Maybe you and I had discussions about Equine Metabolic Syndrome over the winter! At one point, it felt like we were having an "outbreak" of laminitis (founder). We all want to be kind to our horses, but please remember how horses evolved—they are meant to cover miles in search of food! Some pony breeds come from some of the harshest environments in the world. There are many unknowns about metabolic diseases in horses, but one thing we know for sure is that we are seeing **TOO MANY FAT HORSES!** Laminitis can be heart-breaking, so let's talk about body condition score when we come out for spring appointments.

We are planning a new fundraiser for Project Astride this year, and are hoping to put on a competitive trail ride. This will consist of about 5 miles of trail, with half a dozen judged obstacles, such as a water crossing. We don't have a definite date yet, but watch for further information! Also, we do plan on having our Open House this October, so if anyone has any burning ideas for topics for talks or demonstrations please let us know.

Thanks, once again, for your continued confidence in us as part of your horse's health care team. We look forward to another season of shows, competitions, educational events and the kind of fun we can only have with horses!



## DIAGNOSING INSULIN RESISTANCE

The Horse, By Kathryn Watts, BS

Over the past few years researchers have described a strong association between insulin resistance and laminitis in equines. They are working now on defining standard testing protocols and interpretations to identify horses at highest risk for laminitis. Many questions remain unanswered. How should insulin resistance be defined and diagnosed? How do researchers interpret test results? Can blood tests alone determine the risk of our horse or pony to get laminitis? Until they have more solid science to configure a standard definition of equine insulin resistance, those attempting to define it might find themselves in the same predicament as the proverbial group of blind men describing an elephant.

A study in the United States showed that laminitis affected 2% of all horses, with the incidence going up to 5% in the spring, which is when grass sugars peak. The ability to identify high risk animals before laminitis strikes is essential, as this can allow caretakers to implement appropriate management practices to prevent it. Sinking or rotation of the coffin bone requires treatment and rehabilitation regimes that can be difficult, long, expensive, and emotionally draining. Even then, the treatments of-

## DIAGNOSING INSULIN RESISTANCE, CONT...

ten fail. But how do we identify the high-risk animals? Of course any horse that has had a brush with laminitis should have tests for underlying endocrine problems, but certain physical characteristics should lead proactive owners to test for insulin resistance.

A “cresty neck” is the classic sign of insulin resistance, and researchers note a solid correlation between neck circumference and the condition. Horses that gain weight much more quickly, often described as “blowing up on grass” than their herdmates under similar management, might be candidates for testing, especially if they also exhibit signs of foot tenderness. Additional signs are rings on the hoof wall, or a stretched white line with blood specks when the foot is viewed from the bottom, both which could be indications of a previous mild case of laminitis.

Not all fat horses are insulin resistant (IR), and not all IR horses are fat. Typical body scoring parameters might not apply to some IR horses. Even horses with ribs showing might have insulin resistance. Even when they maintain proper body weight with dietary restriction, IR equines might still display subtle signs of regional adiposity, with fat pads that form behind the shoulder, around the tailhead, over the loin, or as a slight crest with a dip in front of the withers. These abnormal fat deposits might be lumpy or dimpled in appearance.

In a clinical setting, dynamic testing is considered the most accurate for diagnosis of impaired endocrine function. The combined glucose-insulin tolerance (CGIT) test measures the horse’s response to a standard dose of glucose and insulin over several hours with multiple blood draws. Insulin resistant horses maintain high glucose and insulin levels longer than normal. Compared to tests based on a single blood sample, the CGIT is not as practical in the field, is more expensive, and if the horse is stressed by being in a stall away from home, it might affect the results. Therefore, it becomes important to derive as much information as possible from diagnostic tests that can be done with a single blood draw. Baseline insulin and glucose levels can be very informative.

Although the scientific community is far from having all the answers, two leading researchers have shared their expertise and opinions about how insulin resistance should be diagnosed.

Scientists hope research under way will someday help horse owners that suspect insulin resistance to get more accurate, standardized tests that can identify and define which horses require special management to avoid laminitis. The blood levels of insulin that consistently trigger changes in the foot are unknown. The mechanism for insulin induced laminitis is unknown. Scientists need to standardize the laboratory methods to quantify equine insulin, and they need to establish databases for normal insulin levels in populations with different genetic backgrounds.

Even if a horse is diagnosed unequivocally as being IR, that does not mean it will get laminitis. While IR as a background condition predisposes an animal to laminitis, avoiding the dietary and management practices that trigger the condition can prevent it from ever happening. This is why horse owners need to know.

Eliminating grain, increasing exercise, limiting access to high sugar pasture, and finding hays that test lower in sugar and starch can prevent laminitis even in animals that are predisposed.

Even if your horse or pony is borderline IR based on current definitions subject to revision, these practices generally can’t hurt and might help a lot for a healthier future with a lot less worry.

To read full article, please go to [www.thehorse.com](http://www.thehorse.com), or call us at 320-685-8730.

## THE SKINNY ON LOW-STARCH DIETS

By Sharon Biggs Waller, For Veterinary Practice News

Specialized feeds have helped horses cope with health challenges for many years. Now, on the market are low-starch products. Here is some information to help you understand and feed these special horses.

**Specific Conditions:** Studies have shown that low-starch diets are most beneficial in horses suffering from equine metabolic syndrome, insulin resistance, Cushing's Syndrome, PSSM (polysaccharide storage myopathy) and laminitis. "Diet is key with these conditions," says Lori Warren, PhD., PAS, of the Equine Nutrition Institute of Food and Animal Ag at the University of Florida. "It's all about finding alternative sources of calories, getting away from starch as a calorie source and moving toward more highly digestible fibers. PSSM horses fed low-starch diets usually show a relatively quick improvement. Low-starch diets for the others mentioned are really more about maintenance, so the diet won't aggravate the condition"

**Formulated Diet:** Warren says there is no universally recognized definition of starch. "It varies individually by nutritionist or feed company, but typically the more traditional sweet feed, heavily based on corn and oats, is 40 to 60 % starch," she says. "It can be quite high, but for the vast majority of horses this is perfectly fine. When we get down to the midlevel range, which is usually called "controlled starch," typically that's in the 20 to 24 % range. Low-starch might be less than 12 to 13 %. And so there is a very dramatic difference." Ingredients can include chopped or pelleted timothy or alfalfa, beet pulp, soy hulls and rice bran. Fat sources such as corn and soybean can be added to increase the calories. "This is important if you have a PSSM horse that's still performing," Warren says. "You need to add calories back in." Science is behind the low-starch diet, and none has been more peer-reviewed than Purina's Well-Solve L/S. After completing six years of research and two published articles in the Journal of Equine Veterinary Science, Purina took the diet to the market in 2008. Though Purina already was selling low-starch feed, horse owners wanted something specific for "special needs" horses. "The last thing the horse world needs is more products that don't work, so I said it would have to prove it's better than low-starch diets we already have," says Purina's Gordon. "It had to be measurable, and we needed to test it in horses with conditions, laminitis, Cushings, and insulin resistance." Gordon's team evaluated digestible/fermentable fibers as energy sources, Omega-3 and Omega-6 fatty acids, protein typed and quality (amino acid profiles), antioxidants, key vitamins, minerals and feed form. She also considered how meal size and hay affected insulin and glucose response. "We were able to develop a formula with lower insulin response than Ultium and Horse Chow. So we had a product that would work."

**Hay Only?** : Michigan State's Nielsen says owners can get too wrapped up in the issue of what to feed their special needs horses. "Realistically, you can just feed your horse roughage. He probably doesn't need grain. There are many horses out there living just fine without any supplement. And horses with issues like we are discussing probably aren't doing too much work anyway." But Gordon prefers to err on the side of caution. "There's a huge variation of hay and it's difficult to get consistency," she says. "I definitely think hay should be the basis of the diet; the more quality forage the horse eats, the better the digestive health. But you need to be able to balance out that forage with something. If your hay or grass is low in protein, you're not going to be meeting the amino acid requirements.



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## Coggins and Vaccine Savings

Here's a couple ways to save on spring vaccines and coggins this year...

1. Haul in to our clinic in the month of April and receive 5% off vaccines and Coggins test with payment at time of service or credit card on file.
2. Have 10 or more horses at 1 location and receive 5% off vaccines and Coggins with payment at time of service or credit card on file.
3. Receive 10% off your dental work, to use at a later time, if you do all your spring work (vaccine and coggins) through us.



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