By Liz Cornell
Proven Equine

ANHIDROSIS

A PERPLEXING CONDITION FOR HORSE OWNERS AND PROFESSIONALS

PRESENTED BY LIZ CORNELL, EQUINE BODYWORKER

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WHAT IS ANHIDROSIS?

- **DEFINITION: The absence of an adequate amount of sweat to cool your horse's body temperature to normal in response to exercise or high ambient temperature.**
- Horse is at risk for hyperthermia or heat stroke.
- Breathing is labored while it tries to cool down the horse's body.
- Limits your horse's performance capability.
- Some horses stop sweating altogether, while for others the sweat is diminished from normal (partial anhidrosis).
- Tends to happen in hot, humid climates when the heat index is over 100.
- Believed to be more prevalent in dark colored horses.
- No predisposition for age, sex or breed.
- Horses can be in work or out of work; it doesn't matter.
- Cases are reported in the U.S., Asia, Middle East and Australia.

WHAT SIGNS TO LOOK FOR

- Limited or no sweat during exercise
- Gradual or acute onset of anhidrosis
- High respiratory rate – labored, quick breathing
- High temperature at rest
- Failure to fall below 102 degrees F after exercise
- Dull, dry, or flaky skin
- Dehydration, as detected by the "pinch test"
- Fatigued; lethargic; depressed
- Loss in body condition

Be aware of your horse's "normal" amount of sweat and follow your gut. You know your own horse better than anyone!

ACUTE VS. CHRONIC

- Acute cases should be treated as soon as possible to avoid it becoming a chronic condition occurring year after year.
- Seasonal condition-does it only happen in summer? For some it's year round.
- According to the University of Florida, the longer the condition prevails, the harder it is to reverse.
- UF also claims that after three years of anhidrosis, it has become a chronic condition that's likely irreversible.

SWEAT GLANDS UP CLOSE

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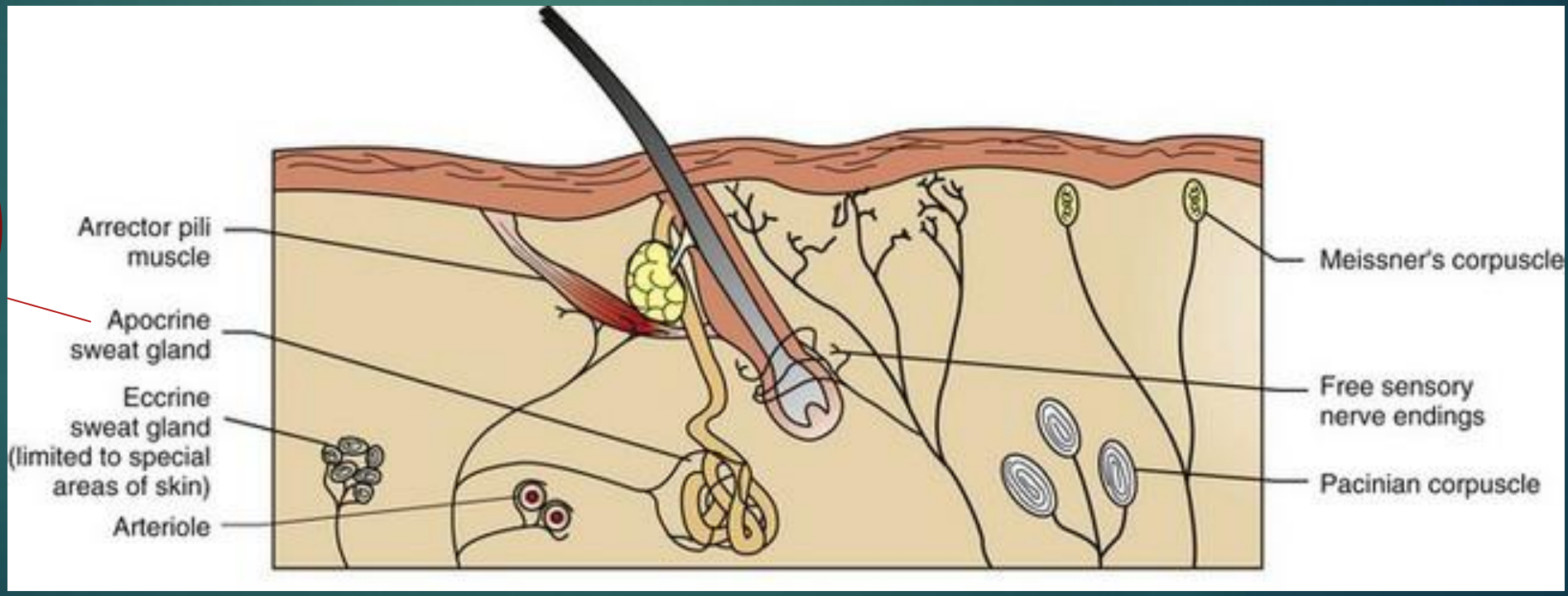
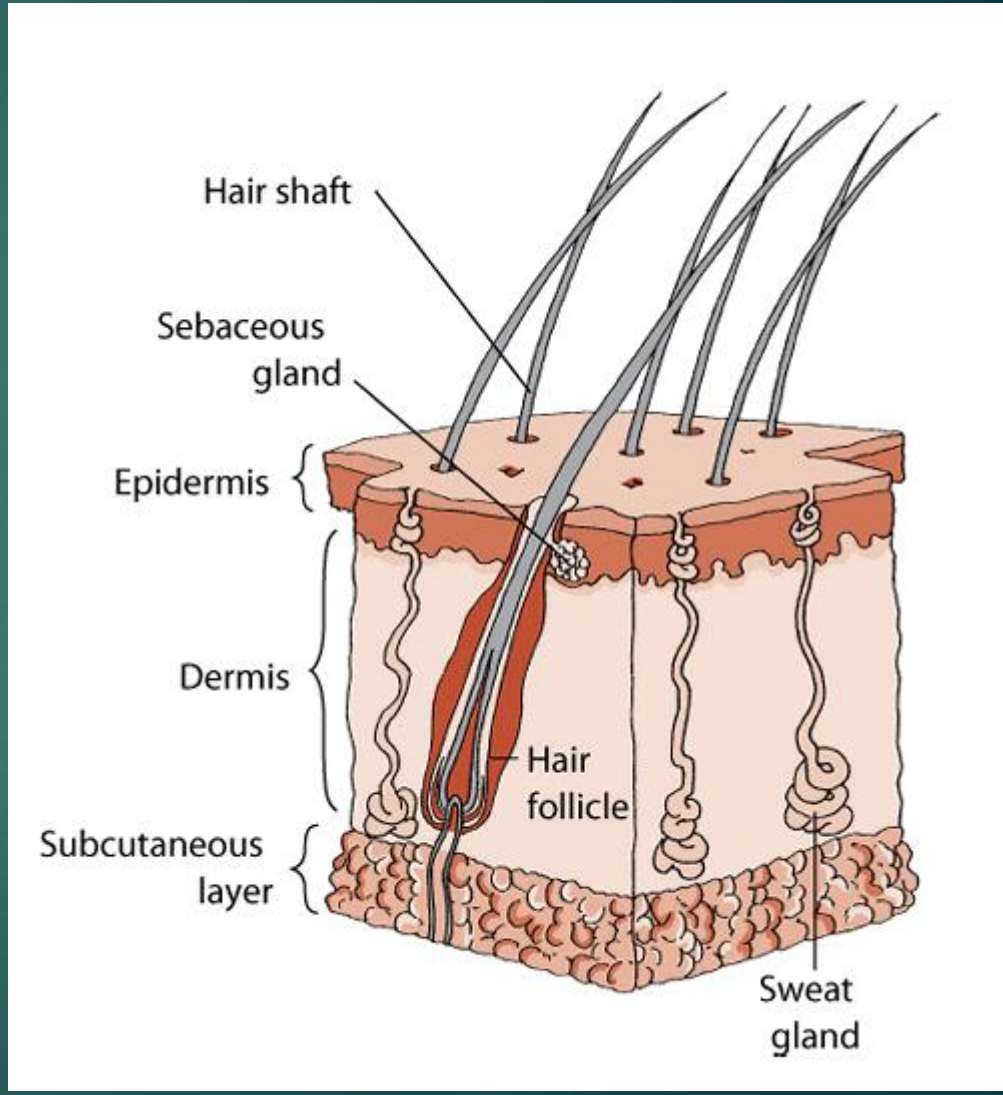
- Sweat glands are packed tightly in the horse's skin at about 810 glands per sq. cm.
- Numerous nerves are in close proximity to the glands.
- Sweat exits to the skin surface by a hair follicle

Apocrine gland is the primary sweat producer all over the horse's body.



SWEAT GLANDS UP CLOSE (cont'd)

- Glands have a blood supply.
- Sweat is made up of 99% water, and only 1% is comprised of salt, electrolytes, proteins, etc. These electrolytes include the minerals sodium, chloride, potassium, calcium, and magnesium.
- A "Lathered" sweat is white that appears with physical exertion. A "Latent" sweat is more yellowish and appears from stress, i.e., trailering, separation from a buddy, etc.



HOW A HORSE SWEATS

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The sweat glands are highly innervated and are stimulated by the sympathetic nervous system (fight or flight response). Under ordinary circumstances, sweat glands produce perspiration in horses when triggered by hormones after they are prompted by the body's adrenal glands. The sweat glands are equipped with beta 2 receptors, and when stimulated, cause the glands to react and the horse to perspire. One stimulus for the sweat glands is epinephrine (also known as adrenaline) in the bloodstream. Another form of stimulus is believed to be transmitted via the nerves.

A part of the horse's brain called the hypothalamus (which, along with many other jobs, acts as his central thermostat) senses the increase in body temperature. It sends signals rushing out to sweat glands distributed in his skin. Epinephrine is a stress hormone and neurotransmitter that stimulates the beta-2 receptors in sweat glands to release sweat. When stress levels are elevated by extreme heat and humidity, there are elevated levels of epinephrine/adrenaline in the horse's blood stream. This in turn causes a down-regulation or de-sensitization of the beta receptors on the sweat glands. They become *overstimulated* and start to shut down and reduce or cease sweat production.

HOW A HORSE SWEATS (Cont'd)

The body is a very complex system constantly working to achieve homeostasis (equilibrium), and when one element becomes out of balance it has an effect on the whole system, in this case effecting adrenal glands, endocrine glands and the neuromuscular system causing them to be overly sensitized to adrenaline.

There is a relationship between sweat and stress. A stressed horse will sweat in the same way as humans. Stress can come from the environment, incorrect diet (commercially processed), or coping mechanisms. Some believe that horses are always under some kind of stress, whether it be training, shipping, a commercial processed diet, lack of turn out, no socialization, pain from an injury, etc. The body is already in a stress-response mode and levels of epinephrine are already elevated.

So when the system is already over-stressed, the last thing it can handle? The extreme weather.

WHY ANHIDROSIS OCCURS

Sadly, veterinary science has not been able to identify one consistent cause; but many theories abound and remain conjecture:

- Abnormal epinephrine levels (adrenaline)
- Hypothyroidism
- Electrolyte imbalance – low chloride in the blood (Hypochloremia); or low sodium or potassium. (These 3 are part of the electrolytes)
- Surrounding nerves malfunction that disrupt neural inputs from the anterior hypothalamus (in the brain) to the gland.
- Unused sweat glands can eventually atrophy (with chronic cases) and can be difficult to regenerate so it's a cycle that's hard to break. (Usually goes hand in hand with poor skin and hair quality.)
- Hair follicles plugged with poor quality, dried sebum (Sebum is the natural oil on the skin that make the horse shine)
- A genetic factor where many horses are more prone to anhidrosis (per U.F. research).

NUMEROUS TREATMENTS AVAILABLE

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- Since horse owners and veterinarians don't know what the true cause is, they don't know which treatment (or combination of treatments) will work. Every horse responds differently depending on what is stressed or out of balance.
- Most owners keep trying different options until something works.
- Not all treatments will continue to work and may only bring temporary sweat.
- Long term treatments should be sought out to prevent reoccurrence year after year.
- Some people start their prior successful treatments in May to help the horse get through the summer.
- Some horses with long term anhidrosis and/or genetic factor may never be able to sweat and won't respond to any treatment.

TREATMENT OPTIONS FOR ANHIDROSIS

- ONE AC supplement
  - Specifically developed for equine anhidrosis
  - Contains L-Tyrosine (adrenaline), Choline Bitartrate (for nerves), Niacin (Vit B3), Pyrodoxine HCL (Vit B6), d-Calcium Pantothenate (Vit B5)
- Guinness Beer
  - Supplies B-vitamins and the herb "hops" for digestion
- Epinephrine (adrenaline) for abnormal epinephrine levels:
  - IV bag with a small amount of epinephrine - given by vet
  - Epinephrine injection – seek vet advice

TREATMENT OPTIONS FOR ANHIDROSIS (Cont'd)

- Other popular supplements:
  - Refresh from Platinum Performance
  - Kombat Kool (minerals and vitamins)
  - MetaSweat from Perfect Products
  - SweatWerks from HorseTech
  - Sweat Again from Animed
  - Vitamins E and/or C
  - Electrolytes
  - Animal Trace Minerals & More

TREATMENT OPTIONS FOR ANHIDROSIS (Cont'd)

- Acupuncture
  - Usually requires multiple treatments
  - Often doesn't last more than a few months
  - Stimulates specific nerves in the body -- certain acupressure points known to help the body sweat
  - U.F. conducted a clinical trial of 44 anhidrosis horses treated with just acupuncture. The success rate was 26%.
- Chinese herb New Xiang Ru San (often used in combination with acupuncture; requires vet)
- Move the horse north to a cooler climate.

TREATMENT OPTIONS FOR ANHIDROSIS (Cont'd)

- Change to a holistic diet (no commercially processed feed) along with naturally-chelated trace minerals. When switched, the horse's skin and hair will be rejuvenated, and thus revitalize the sweat glands. This is a long term solution and if/when it works, this is the diet the horse will need to remain on indefinitely so there is no reoccurrence.
- Make certain the horse's nervous system is functioning 100% using a craniosacral therapist (CST).
  - This combination of CST and the proper diet with minerals has brought very good results for non-sweaters, especially for horse owners who have tried everything else and nothing worked. The condition for these horses is serious and their bodies are completely out of balance and stressed from the processed foods that have fillers. Normally the horses will start sweating on or before 21 days when their coats are replaced with a new healthy, shiny coat. By weeks 4 and 5 they are sweating normally.
  - Since putting over 100 horses on this diet for the last 6 years, every horse that has remained on this diet has never suffered from anhidrosis.

TREATMENT OPTIONS FOR ANHIDROSIS (Cont'd)

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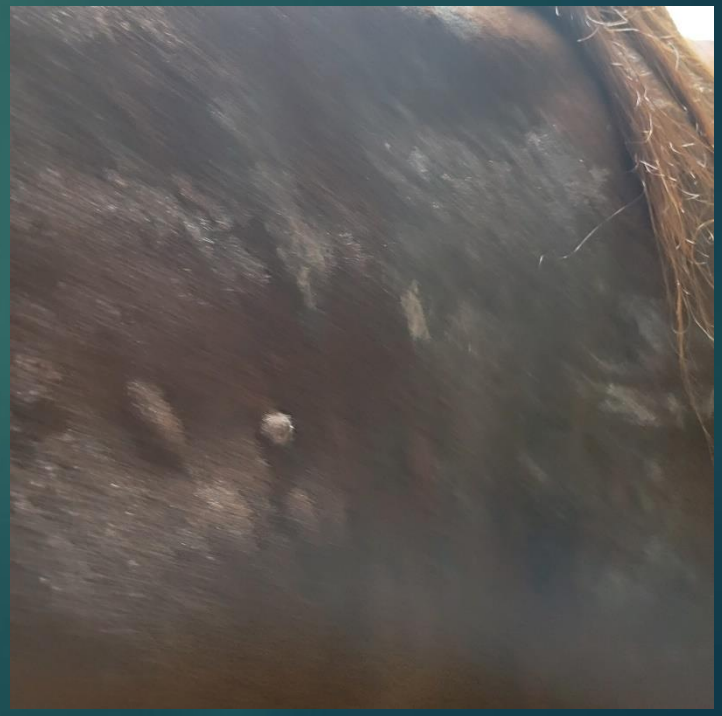
- Case #1-- QH mare (age 16) with poor skin, dull coat suffering from bug reactions, breathing heavily; basically in very rough shape.
  - Holistic diet change with Animal Trace Minerals and CST was performed by Liz Cornell, certified equine bodyworker.
  - On day 20 some of her skin was sloughing off. The following week she started to sweat heavier. Owner has thanked me a dozen times!!



TREATMENT OPTIONS FOR ANHIDROSIS (Cont'd)

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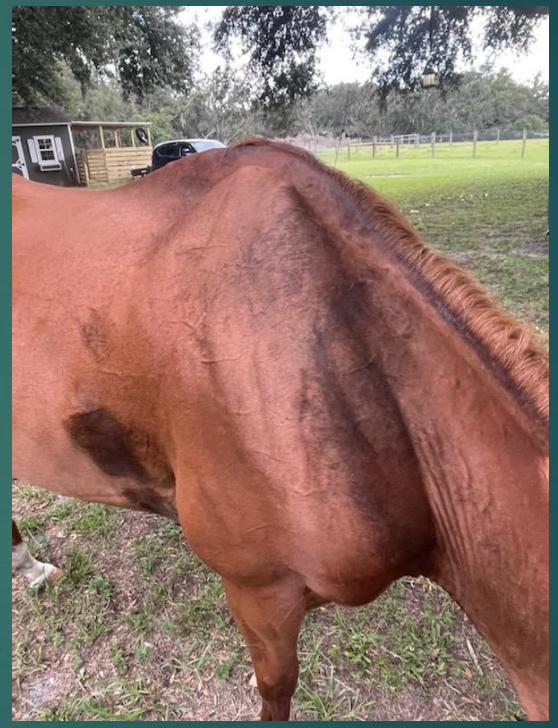
- Case #2-- TB mare (age 9). Had been a broodmare. Was rescued the prior winter. 10 yo girl was riding her and starting her with barrels. Family didn't know if anhidrosis was acute or not.
  - Her body index was poor: skin and coat dull and dry; very ribby, and no muscle, and eating 24 lbs of grain a day! This horse was unable to absorb and process her diet. Her body was completely out of balance.
  - Besides supplements, the family had already tried 3 rounds of acupuncture with no luck.
  - Solution: Holistic diet change with Animal Trace Minerals and CST was performed by Liz Cornell, certified equine bodyworker.
  - The mare started to sweat in her 3rd week. By week five they reported she was sweating heavily and they are thrilled! (And her weight was returning—she was finally processing her food.)



End of 3rd week; new shiny coat and sweat started.

TREATMENT OPTIONS FOR ANHIDROSIS (Cont'd)

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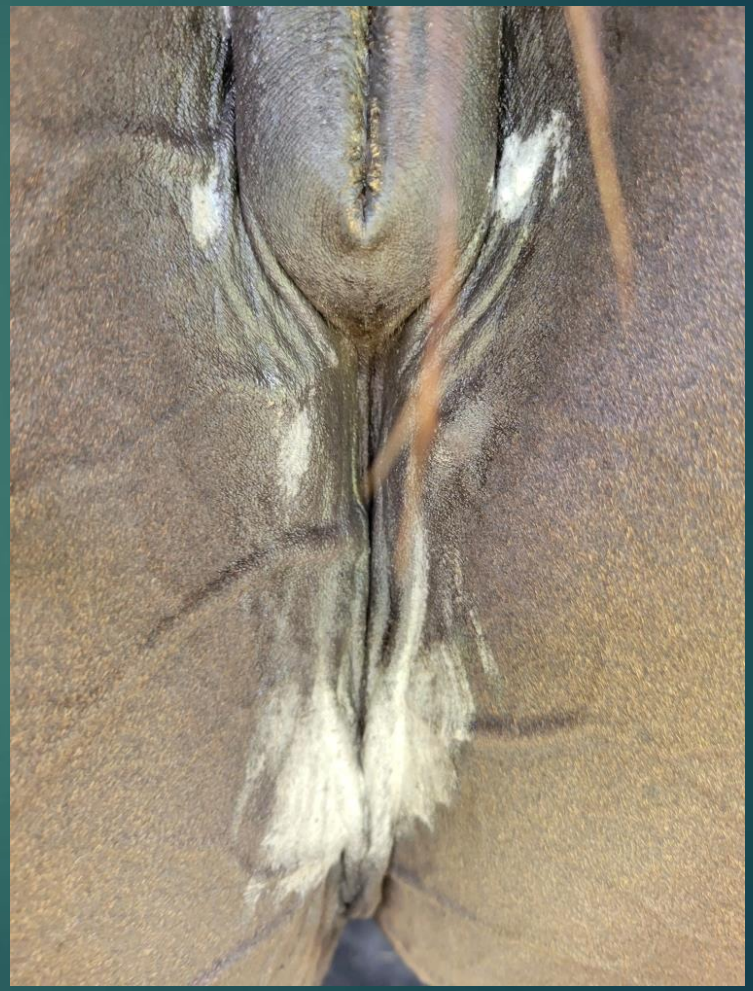
- Case #3--WB mare (age 13), 3rd level dressage horse. Acute condition that started 3 weeks before.
  - Owner tried 4 different supplements to no avail. Her skin and coat were just a little dull.
  - Holistic diet change with Animal Trace Minerals and CST was performed by Liz Cornell, certified equine bodyworker.
  - By week three she was sweating in odd places on her body, and she sent this picture after a light workout. ☺



TREATMENT OPTIONS FOR ANHIDROSIS (Cont'd)

- Case #4—QH gelding (age 22), trail horse. Rusty's coat was a little dull. RUSTY HADN'T SWEAT IN OVER 14 YEARS. His owner never rides in the summers.
  - Added Animal Trace Minerals to diet and CST was performed by Liz Cornell, certified equine bodyworker. He was already on a holistic diet but minerals were missing.
  - By week five she reported his coat was damp! First time ever. This case was severe and took longer than most and we didn't hold a lot of hope. But now we are expecting him to continue to improve. ☺

CONCLUSIONS

- Since it appears the condition of anhidrosis has multiple causes due to many potential imbalances, it explains why some treatments work, while others don't. Every horse is an individual.
- Science has a long way to go to find one common cure to anhidrosis.
- The horse's body reacts to stress, and when overstressed, functions can 'shut down' such as sweating.
- Many people throw multiple solutions at a horse at once, and don't take the time to see which solution is the one that truly works. It's best to try one thing at a time and be patient.
- If your horse has a dull coat or skin issues, chances are higher that he may stop sweating in extreme heat conditions. And chances are high that a diet change sparking a new coat will fix the anhidrosis.
- Both the nervous system and the diet play an important role in keeping the body in balance so that it can deal with the stresses that come along in a horse's life. Forage only diets, removing all sugars, starches, fillers, etc., are becoming more and more popular. Including the proper minerals is also critical for your horse's well-being and ability to maintain homeostasis long term. The initial positive results can take longer depending on how severe the anhidrosis. A copy of the holistic diet may be downloaded here: https://provenequine.com/files/FEEDING_YOUR_HORSE_holistically.pdf.

Questions or comments about this presentation? Contact Liz at liz@provenequine.com or 352-653-5597 or on FB: https://www.facebook.com/liz.cornell.54