

A Guide to Gut Sounds and Recovery

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The frequency, intensity and type of gut sounds have become an additional criteria by which evaluate the relative degree of stress and fitness of a horse to continue on a ride and to pass the final vet check at completion.

Since the start of competitive endurance riding, the degree of physical stress, dehydration and fatigue has been evaluated by the TPR readings and clinical appearance. The monitoring of gut sounds can be useful to assess intestinal movement, heat retention, digestive function and fluid and energy balance relative to the degree of physical stress and exhaustion during a ride.

The presence of normal or abnormal gut sounds, when evaluated in conjunction with the overall physical state of a horse, can provide a more accurate evaluation of the physical stress developing in an exercising horse.

Types of Gut Sounds

The small and large intestines (hindgut) are the primary areas for digestion of the food mass, with the voluminous hindgut providing a reserve of up to 60 litres of water trapped in the fibrous bulk as a fluid replenishment store to offset dehydration during exercise. The large intestine is also a valuable “heat sink” during and following exercise to store excess heat diverted from the muscle mass via the blood to prevent muscle damage in horses as they generate large amounts of heat during exercise.

If a horse is becoming dehydrated and depleted in electrolytes and is unable to maintain adequate and effective cooling by sweat loss and evaporation from the body surface or exchange of heat from the lung surface during respiration, excess heat is stored in the ‘heat sink’ in the 50-60 litres of water held for efficient fermentation and a reserve against dehydration in the fibrous “sponge” in the hindgut.

The drying out of hindgut water reserves causes a loss of normal gut motility and movement as well as depleted energy reserves, are reflected as a reduction in frequency and intensity of gut sounds.

During exercise, blood flow is diverted from the gut to the exercising muscles and digestive activity reduces to 10-20% of its normal function. The combination of **energy depletion** required to maintain gut motility, **loss of hind gut fluid reserves** due to **developing dehydration** and **retention of additional heat** from exercise as a result of reduced efficiency of heat loss, can also influence the intensity and frequency of gut sounds.

Fast, high exertion or intense exercise, such as a gallop up a hill to a check area, will cause an increase in heat production in the muscles and heat transfer to the gut “heat sink”. This could act to reduce gut sounds in the large intestine for up to 15-20 minutes until the heat is redistributed and lost from the skin as sweat or lung surface and blood flow to the gut for digestion is reinstated.

A horse, on the other hand, with diarrhoea caused by excess administration of an oral paste or tubed electrolytes with an inadequate water or fluid intake, will exhibit increased gut sounds. The presence of higher concentration of electrolytes in the small intestine relative to fluid (a “hypertonic” fluid) will result in flow of water from the blood back into the intestines, termed “reverse osmosis”, creating a local hypermotility effect with diarrhoea, and increasing the concentration of the blood and resulting in dehydration from the fluid lost in diarrhoea.

There are four basic types of gut sounds that are audible by a stethoscope positioned over the right flank or lower abdominal area. (See attached table)

Gut Sounds can be classified as:

- A. Normal gut sounds in a grazing horse at rest
- B. Normal gut sounds with reduced gut movement in a horse being ridden for 20-30 minutes or longer, representing an acceptable level of dehydration.
- C. Slower gut sounds indicating energy and fluid depletion
- D. Loss of gut sounds due to fluid and energy depletion and developing fatigue

It should be noted that ‘B’ gut sounds are normal for any horse which is being exercised as blood is diverted from the digestive system to the working muscles and should not be considered abnormal unless other signs of stress or fatigue are present or heart rate recovery is slow or near the limit.

HANDY HINT **1**

Offering a Drink After Exercise.

Recent studies have indicated that rapid uptake of fluids (rehydration) can be achieved by offering a drink of lukewarm water (cold with a little hot water added until it feels just warm to your hand) containing 10 grams plain, fine salt per 1 litre (2 teaspoonsful per litre or 2 ½ tablespoonsful per 5 litres). Offer the warm ‘salty’ drink in a wide bucket or bowl when the horse is hot after work. Most horses initially will sip it and then look for it every day after training or on a ride! It’s also a great way to rehydrate a horse at a check point or after a ride before the trip home.

Normal and Abnormal Gut Sounds

The gut sounds include normal intestine movement sounds, fluid movement sounds and gas movement sounds.

Position of Stethoscope	Type of 'Gut' Sound	Origin of Sound	Probable Underlying Cause	Suggested Remedy
Front, midline lower belly area and lower left side	High pitched, variable rumbling, fluid movement or 'straining' sound	Small intestine	<u>Normal gut sound</u> Fluid, food mass moves through at up to 30cms/min.	Normal gut sound indicating adequate fluid and food content. More fluid sounds after a drink.
	'splashing' sounds	Large intestine	Normal sounds	
	Lower intensity loss of fluid and movement sound	Small intestine	<u>Abnormal gut sound</u> Slower movement of dried out food mass – intestinal stasis. Excess physical stress, fatigue.	Developing dehydration Correct by administering electrolytes (calcium and magnesium) in fluid, hay or feed mix.
		Large intestine		
	Increased intensity, continuing rumbling and fluid movement	Small intestine	<u>Abnormal gut sound</u> Excess water content due to high electrolyte concentration, inflammation and irritation.	Developing Diarrhoea - monitor - avoid excess electrolyte administration in low water volume. - seek veterinary advice.
		Large Intestine		
Upper right flank behind ribs	High pitched, "flushing" and splashing sound (like a toilet flushing) at 2-3 movements per minute.	Rhythmic opening and closing of the Ileo-caecal valve muscles.	<u>Normal gut sound</u> Sound produced as food and fluid mixture enters the caecum from the small intestine and exits (unloads) into the large intestine.	Normal gut sound indicating adequate fluid and food content during normal digestive function.
	Low pitched, muffled sound, frequency less than 1-2 per minute.	Ileo-caecal valve (lower frequency)	<u>Abnormal gut sound</u> Dehydration due to loss of fluid content in digestive mass, severe physical exertion	In an exercising horse, developing dehydration - correct by administering electrolytes and fluid - moistened hay - rest and recovery
	Continuous rumbling, machinery like noise, muffled frequent flushing sounds	Ileo-caecal valve (high frequency)	<u>Abnormal gut sound</u> Excess fluid content due to electrolyte/and fluid overload. Diarrhoea 3-6 movements/min	In an exercising horse - monitor every 10-15 minutes - Avoid strong (hypertonic) electrolyte administration.
Lower flank and hind Belly area on right and left sides	Muffled splashing sounds, or occasional "tinkling" and bubbling sound (termed borborygmi)	Caecum (right side flank). Large colon (left side and rear midline) Right dorsal colon (right and left sides)	<u>Normal gut sound</u> Fluid and food movement, gas production from fermentation percolating through fluid contents to exit at anus.	Normal gut sound, indicates adequate fluid content, with controlled, steady, fermentation in hindgut (caecum and large intestine) as gas moves through hindgut chambers.
	Low intensity movement, fluid or gas sounds.	Caecum and large colon (hindgut)	<u>Abnormal gut sound</u> Dehydration due to loss of fluid, physical exertion and fatigue, energy depletion, excess heat retention and constipation.	In exercising horse – monitor every 10-15 min Developing dehydration. Correct by administering fluids – takes 10-15 minutes to return to normal and rest.
	Frequent "rumblings" with increased fluid and gas movement.	Caecum, Ileo-caecal valve, small Intestine, large colon (hindgut)	<u>Abnormal gut sound</u> Excess fluid content or developing diarrhoea	In exercising horse – monitor every 10-15 minutes. Avoid strong electrolyte (hypertonic) administration. Seek veterinary advice.

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