

# Equine Metabolic Syndrome



Equine Metabolic Syndrome (EMS) is a condition which has only become recognised in recent years. EMS is usually seen in overweight horses and ponies. Fat which is laid down around the body becomes hormonally active and excretes hormone-like chemicals which interfere with normal sugar and fat metabolism. The result is an individual that continues to put on weight and will, eventually, show signs of laminitis. It has similarities to Type 2 diabetes in humans. EMS in natural living, wild, native ponies is normal. It allows them to put on weight in the summer and then use these fat reserves in the winter months when food is in shorter supply. Our domestication of horse and ponies – rugging up and liberal feeding all year round – interferes with this natural mechanism.

## CLINICAL SIGNS:

- overweight
- firm and sensitive fat on neck crest
- stilted gait
- heat in feet
- increased digital pulses.

## How does EMS cause laminitis?

It is not fully understood exactly how EMS leads to laminitis. One of the features of EMS is insulin resistance. This shifts the metabolism away from sugar breakdown and uptake into cells. Instead, the metabolism becomes physiologically “stressed” and relies on cortisol levels to drive breakdown of fat into fatty acids. A side-effect of the high cortisol levels is thought to be an alteration in the blood flow to the feet, in turn, leading to laminitis.

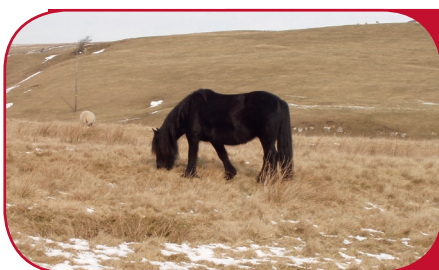
## DIAGNOSIS

As well as the clinical signs, laboratory tests can be helpful in confirming a diagnosis. A raised resting blood glucose and/or insulin level may be an indicator of EMS.

A more sensitive test is the glucose tolerance test, which mimics the horse’s response to eating a sugary feedstuff (e.g. grass). The patient is starved for 6 – 8 hours overnight, then given a fibre-based feed (e.g. chaff) with a measured amount of glucose added, or alternatively can be given corn syrup by syringe into the mouth. A blood sample is taken at a fixed interval afterwards. An excessively raised glucose/insulin level in this sample gives a very strong indication of insulin resistance and EMS.

## KEY POINTS:

- EMS can affect all ages of horse / pony and mares / geldings / stallions;
- affected individuals are usually overweight;
- affected individuals are more susceptible to laminitis;
- laboratory tests are needed for accurate diagnosis;
- EMS can be successfully managed.



**EMS IN NATURAL LIVING NATIVE PONIES IS A MECHANISM TO COPE WITH FOOD SCARCITY IN THE WINTER MONTHS**

## Treatment & Prevention

As with management of type 2 diabetes in humans, the key to controlling EMS is dietary control and exercise. The diet must be reduced so that the individual is being fed a fibre based diet of the correct amount. It is very useful to have weigh scales to measure the amount of hay / haylage being fed. A weigh tape or access to weigh scales can be extremely useful in monitoring the horse/pony and allow fine tuning of the diet if required.

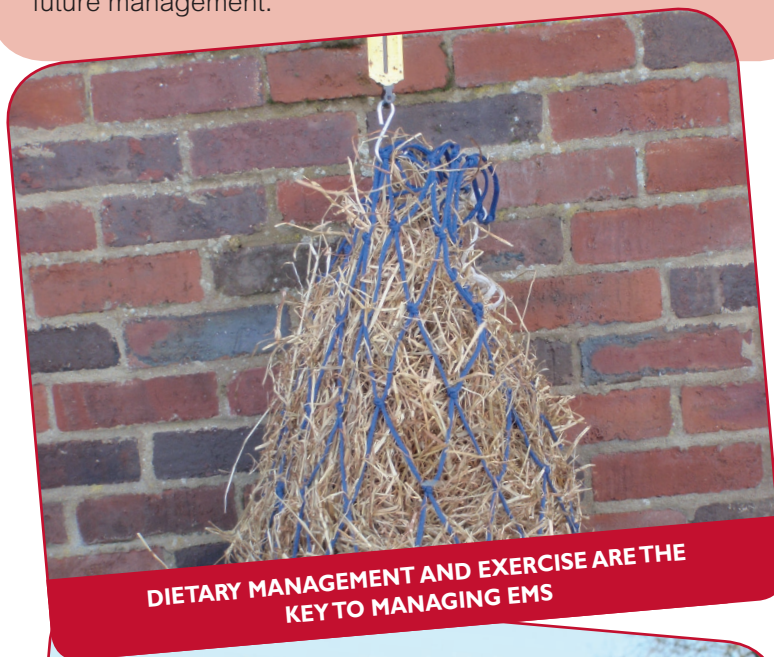
Exercise is very beneficial, as it improves the body's sensitivity to insulin. It can be difficult to implement exercise initially if the individual is suffering from laminitis. In these cases, exercise should not be forced, since the complications of a worsening laminitis are much more detrimental to the patient.

Opinions vary on the usefulness of metformin as a medication to aid in the control of EMS. It is given as tablets orally, in feed, and the exact mechanism of action is unclear. It is thought the metformin may reduce absorption of glucose from the gut. In many cases, metformin is only used when exercise is not an option due to laminitis.

As with those humans suffering type 2 diabetes, horse / ponies with EMS should not be given sweet sugary feeds or tit-bits as these will result in an insulin surge which is undesirable.

Our knowledge of laminitis prevention and control has improved following the discovery of EMS. This has led us to understand that it is not the grass that causes the laminitis, but more the individual's hormonal / metabolic response to eating the grass that causes the problem.

For those that suffer / have suffered EMS, dietary restriction and exercise should be a permanent feature in their future management.



**DIETARY MANAGEMENT AND EXERCISE ARE THE KEY TO MANAGING EMS**



**REGULAR WEIGHT MONITORING IS IMPORTANT**



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