

EQUINE METABOLIC SYNDROME



WHAT IS "EQUINE METABOLIC SYNDROME"?

Equine Metabolic Syndrome (EMS) is a condition in adult horses (typically over 5 years of age) characterised by a collection of risk factors associated with **endocrinopathic laminitis**. A key feature of EMS is **insulin dysregulation (ID)**, which is considered its hallmark. Horses commonly described as **"easy keepers"** are at increased risk, as they tend to maintain body condition easily and may be prone to obesity. Certain breeds appear **more predisposed**, including ponies, Arabians, Morgans, Saddlebreds, Paso Finos, Spanish Mustangs, and Warmbloods. EMS affects **both sexes equally** with no clear sex predilection. Studies have shown that insulin abnormalities are relatively common in at-risk populations; for example, one Australian study found that approximately **27% of ponies** were hyperinsulinemic, highlighting the prevalence of insulin dysregulation within susceptible groups.

WHY DOES IT HAPPEN?

It happens due to an inappropriately large insulin response to a meal. Risk factors like Insulin dysregulation, obesity, weight loss resistance, lack of exercise, high sugar diet, dyslipidaemia and/or altered hormone profile

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CLINICAL PRESENTATION

Clinical signs of Equine Metabolic Syndrome (EMS) are mainly related to obesity and insulin dysregulation and may include:

- **Obesity** or **regional adiposity** (fat deposits in areas such as the neck crest, tail head, shoulders, and above the eyes)
- **Easy weight gain / difficulty losing weight** despite normal feeding
- **Cresty neck** (firm, thickened fat along the neck)
- **Lethargy** or reduced performance
- **Recurrent or chronic laminitis** (often the most serious clinical consequence)
- **Increased risk** of laminitic episodes, especially after access to lush pasture or high-sugar feeds
- **Infertility**

Some horses may appear outwardly healthy but still have underlying insulin dysregulation, **so clinical signs are not always obvious until laminitis develops.**

BODY CONDITION SCORE

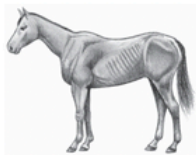
Body Condition Score Chart

Areas of emphasis for body condition scoring: thickening of the neck, fat covering the withers, fat deposits along backbone, fat deposits on flanks, fat deposits on inner thighs, fat deposits around tailhead, fat deposits behind shoulders, fat covering ribs, shoulder blends into neck



1 Poor

Animal extremely emaciated; spine, ribs, tailhead, points of hip and buttock projecting prominently; bone structure of withers, shoulders, and neck easily noticeable; no fatty tissue can be felt.



2 Very Thin

Animal emaciated; slight fat covering over base of spine; ribs, tailhead, points of hip and buttock prominent; withers, shoulders, and neck structure faintly discernable.



3 Thin

Fat buildup about halfway on spine; slight fat cover over ribs; spine and ribs easily discernable; tailhead prominent, but individual vertebrae cannot be identified visually; points of hip appear rounded but easily discernable; points of buttock not distinguishable; withers, shoulders, and neck accentuated.



4 Moderately Thin

Slight ridge along back; faint outline of ribs discernable; tailhead prominence depends on conformation, fat can be felt around it; points of hip not discernable; withers, shoulders, and neck not obviously thin.



5 Moderate

Back is flat (no crease or ridge); ribs not visually distinguishable but easily felt; fat around tailhead beginning to feel spongy; withers appear rounded over spine; shoulders and neck blend smoothly into body.



6 Moderately Fleshy

May have slight crease down back; fat over ribs fleshy/spongy; fat around tailhead soft; fat beginning to be deposited along sides of withers, behind shoulders, and along sides of neck.



7 Fleshy

May have crease down back; individual ribs can be felt, but noticeable filling between ribs with fat; fat around tailhead soft; fat deposited along withers, behind shoulders, and along neck.



8 Fat

Crease down back; difficult to feel ribs; fat around tailhead very soft; area along withers filled with fat; area behind shoulders filled with fat; noticeable thickening of neck; fat deposited along inner thighs.

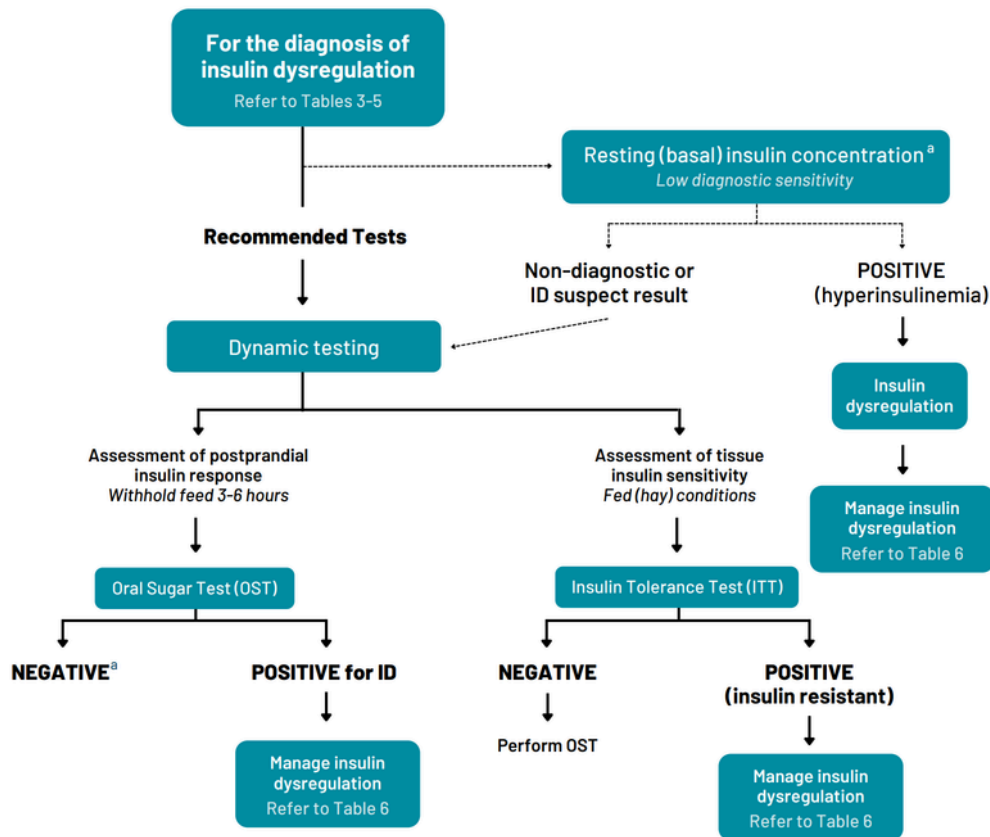


9 Extremely Fat

Obvious crease down back; patchy fat appearing.

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DIAGNOSIS OF EMS



• **Clinical Assessment**

- Often associated with a history of recurrent/unexplained laminitis, along with obesity or regional fat deposits such as a cresty neck, Affected horses are typically “easy keepers.”

• **Resting (Basal) Insulin testing:**

- Measures the horse’s resting (fasting) insulin level through a blood sample to assess how the body regulates glucose at baseline. High basal insulin levels suggest the horse may be producing too much insulin at rest.

• **Dynamic Testing:**

- Involves taking a baseline blood sample, then feeding or administering a glucose source, followed by repeat blood sampling after a set period to assess the horse’s insulin response. This helps evaluate how the body handles a sugar challenge rather than just resting insulin levels

• **Exclude other conditions:**

- Important to rule out other diseases like Pituitary Pars Intermedia Dysfunction (PPID), especially in older horses. Insulin dysregulation may be associated with either PPID or EMS. Some debate about whether EMS may predispose to PPID, or whether the two conditions are unrelated

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PRACTICAL AT-HOME MANAGEMENT

Exercise (based on lamellar stability):

- Tailor exercise to hoof health to minimise laminitis risk
- **Non-laminitic horses:** Low-moderate intensity exercise for >30 minutes, ~5 times per week
- **Previously laminitic horses:** Restrict to low-intensity exercise for >30 minutes, >3 times per week

Diet & forage management:

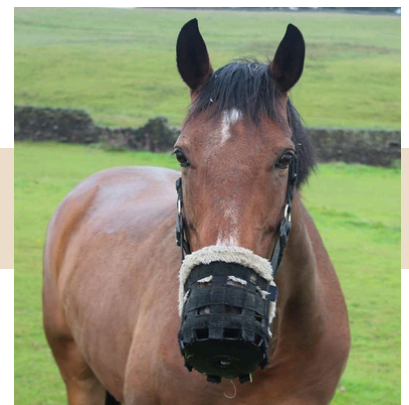
- Provide forage low in non-structural carbohydrates (**NSC <10%**) to reduce insulin spikes
- **Soak hay** when necessary to further lower sugar content
- Feed approximately **1.4–1.7% of body weight** as forage daily to balance gut health and weight control

Grazing management:

- Avoid grazing completely until insulin dysregulation (ID) is well controlled
- Once controlled, gradually reintroduce restricted grazing
- **Limit grazing to 10–60 minutes** in the early morning when pasture sugars are lower
- Avoid grazing **after hard frost**, as sugar levels in pasture may be elevated

General management considerations:

- Leave the horse **unrugged if temperatures are above 5°C** to encourage natural energy expenditure
- Aim to support **weight loss** and improve metabolic control through consistent management strategies



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MEDICAL MANAGEMENT

Ertuglifozin

- Reduces blood glucose by decreasing glucose resorption at the kidneys

Metformin

- Impairs glucose absorption and reduces hyperinsulinemia in response to glucose ingestion
- Poor bioavailability and therapeutic levels

Levothyroxine

- Increases insulin sensitivity and calorie burn
- Short term treatment option only (3-6 months)
- Reserved for refractory cases of EMS



TREATMENT GOALS

Management of Equine Metabolic Syndrome (EMS) focuses on **reducing circulating insulin levels**, with repeat insulin testing recommended **4–8 weeks** after diagnosis and then as needed based on clinical assessment. Achieving **gradual weight loss** is also essential, with an ideal target of **0.5–1% of body mass per week** to improve metabolic health. These strategies aim to **reduce the risk of laminitis** while also improving the horse's comfort and overall wellbeing.

BEFORE



AFTER



If you have any questions or concerns please contact us on
0412 619 740.