

EQUINE ENDOCRINE DISORDERS

EMS Equine metabolic syndrome occurs when endocrine and metabolic abnormalities combine, often resulting in laminitis. The condition affects blood concentrations of the hormone insulin, which the pancreas releases in response to a meal and functions in a normal horse to signal body cells to take up and store blood sugar for later use.

PPID With PPID, the pituitary gland becomes enlarged, releasing excessive amounts of adrenocorticotropic hormone (ACTH) and other pituitary hormones that can signal the adrenal glands in some horses to produce cortisol (the “stress” hormone) and can also induce diverse responses in other body tissues that result in the condition’s characteristic signs.

ID Increased insulin release, decreased insulin clearance, and insulin resistance, collectively known as insulin dysregulation, contribute to excessively high blood insulin concentrations (hyperinsulinemia).

How are these conditions intertwined?

Insulin dysregulation is a key component of EMS that also occurs in some, but not all, PPID cases. Middle-aged horses can have both disorders simultaneously, and researchers believe PPID further exacerbates ID in equids that already suffer from EMS and increased blood insulin levels. Many researchers also believe chronically high insulin concentrations can cause laminitis.



	EMS	PPID	ID
Breed	Can be any breed; however, pony breeds, domesticated Spanish mustangs, Peruvian Pasos, Paso Finos, Andalusians, European Warmbloods, American Saddlebreds, Morgans, Tennessee Walking Horses, Arabians, donkeys, and mules are more prone to developing EMS than others	Any breed	Same breeds as those at risk of developing EMS, equids that are overweight/obese, and those receiving corticosteroids to treat medical or orthopedic conditions
Age	Tends to occur in adult horses younger than 15 years	Typically an older horse problem with an average onset > 15 years	Equids of any age, depending on the cause
Classic Clinical Signs	Insulin dysregulation, history of or active laminitis, and increased adiposity or fat depositions in regions such as the neck crest, at the base of tail, and over the ribs	A long and curly hair coat, loss of muscle mass, pot-bellied appearance, laminitis, infections, and polyuria/polydipsia (excessive urination/thirst)	Often obese
Diagnosis	Oral sugar test, basal and fasting insulin levels, intravenous insulin tolerance test, and ruling out PPID	Basal/endogenous ACTH levels (using seasonal reference ranges), thyrotropin-releasing hormone stimulation test (November to July only), overnight dexamethasone suppression test, and testing for ID	Oral sugar test, basal and fasting insulin levels, intravenous insulin tolerance test, and ruling out PPID
Treatment	Dietary modification (i.e., reducing caloric intake, avoiding diets high in nonstructural carbohydrates), exercise if possible, medical therapy with levothyroxine and/or metformin	Pergolide	Same dietary, exercise, and medical modifications and therapies as EMS horses