

American College of Veterinary Nutrition



NUTRITION COMPETENCIES OF EQUINE VETERINARIANS

Equine Veterinarians should be able to perform the following functions competently upon graduation.

ASSESS THE HORSE

1. Estimate body weight either using a weight tape calibrated for horses or with morphometric measurements. Describe the limitations of both methods.
2. Know where to find appropriate growth rates for foals of different breeds.
3. Assign a body condition score (BCS) using a 5-point scale (Carroll and Huntington 1988 *Eq Vet J* 20[1]:41-45) or 9-point scale (Henneke *et al.* 1983 *Eq Vet J* 15[4]: 371-372). Recognize thin vs. ideal vs. overweight and how it may vary based on use.
4. Recognize how the physiological state of the horse or herd alters nutritional requirements (i.e. adult maintenance, working/athletes, geriatric, gestation, lactation, and growth). Contrast key nutritional factors of various physiological states.
5. Recognize that breed differences exist relative to feed efficiency and risk of specific metabolic diseases. Determine if the horse or herd has a nutritionally-responsive condition (Table 1).
6. Recognize classic clinical signs of common nutrient deficiencies or toxicities and select appropriate diagnostic tests (Table 2).
7. Describe risk factors for and clinical signs of common feed-related toxicoses/contaminants (Table 3).

ASSESS THE FEEDS

1. Obtain accurate details about what the horse(s) is/are fed, including any relevant changes that may affect the health of the horse or herd.
2. Visually distinguish grass vs. legume forage; contrast the general nutrient profile of these two classes of forages.
3. Visually distinguish pasture forage vs. hay vs. haylage vs straw; contrast the general dry matter content and nutrient differences between these forms of forage.
4. Make a general estimate of forage quality using visual, olfactory and tactile senses. Describe how plant maturity at time of harvest influences forage quality.
5. Describe how to obtain representative water and feed samples for quality and nutrient analysis.
6. Describe how to identify an appropriate feed analysis laboratory.
7. Conduct an assessment of forage from a forage nutrient analysis with an emphasis on digestible energy, crude protein (CP), acid detergent fiber (ADF), neutral detergent fiber (NDF), water soluble carbohydrates (WSC), ethanol soluble carbohydrate (ESC), starch, and minerals.
8. Describe methods of detection of common feed-related toxicoses/contaminants (Table 3).
9. Understand feed labels; differentiate marketing claims from information pertinent to the patient.
10. Evaluate the current diet/ration, including forage, concentrates, and supplements. Compare estimated nutrient needs (per National Research Council [NRC] or Kentucky Equine Research [KER]) to what is provided by the diet/ration. Ability to use NRC or similar software for dietary evaluation. Recognize deficiencies, excesses, toxicities, and/or redundancies.
11. Describe the energy density and relative digestibility of commonly fed grains (corn, oats, and barley). Contrast energy density and non-structural carbohydrate content of commonly fed grains.

12. Describe how food processing (i.e. pelleting, extruding, crimping) influences nutrient availability of feeds.

ASSESS THE FEEDING MANAGEMENT

1. Obtain accurate details on how water and feeds are presented (i.e. volume/weight per meal, number of meals per day, and feeding system[s]), including any pertinent changes in the last 3 months.
2. Determine environmental factors that may impact nutrient requirements and water and feed accessibility.
3. Determine an appropriate total daily dry matter intake as a percent of body weight. Describe acceptable ranges, on a percent body weight basis, for forages and concentrates.
4. Describe the principles of good pasture management for grazing including stocking density, grazing muzzles, and rotational grazing.
5. Generally describe diurnal variation in pasture forage non-structural carbohydrates (NSC) and identify general daytimes and circumstances when NSC could be high and low.
6. Describe adequate and inadequate feed management practices, including volume/weight per meal, number of meals per day, and feeding system(s) to clients.
7. Describe how to transition a horse or herd to a new ingredient or ration.
8. Outline management plan for foals from birth to weaning, including recommendations for creep feeding, time of weaning, and weaning strategy.
9. Describe a weaning plan for mares.
10. Describe strategies that can be used to improve appetite in the sick and inappetent horse.
11. Describe appropriate storage of feeds relative to the local environment.

RECOMMENDATIONS & MONITORING

1. Describe how to evaluate label claims of commercial products.
2. Formulate a nutritional plan/ration for the physiological state of the horse(s), including water, forages, commercial feeds/concentrates, vitamin-mineral products, and/or milk replacer.
3. Recognize indications for and routes of assisted feeding in the sick horse.
4. Describe a monitoring plan to determine an individual horse or herd's response to nutritional management.
5. Describe an alternative ration should the recommended ration not provide the results you expect.
6. Describe appropriate resources for equine nutrition recommendations.

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Table 1: Diseases/Conditions of importance to equine nutrition

<u>Diseases/Conditions</u>
Anhydrosis
Choke
Chronic starvation and weight loss
Colitis & Diarrhea
Dental disease
Developmental orthopedic diseases (DOD): osteochondrosis, physitis, acquired angular limb deformities, cervical compressive myelopathy
Enterolithiasis
Failure of Passive Transfer
Gas colic
Gastric ulcers (non-glandular vs. glandular)
Grain overload/hindgut acidosis/founder/laminitis syndrome
Heat stroke
Hepatic disease
Malnutrition/Starvation syndrome
Hyperinsulinemia/Insulin Resistance/Reduced Insulin Sensitivity
Hyperkalemic periodic paralysis (HYPP)
Hyperlipemia
Hypocalcemic tetany
Intestinal malabsorption
Intestinal obstruction (impaction, torsion, strangulation, intussusception)
Intestinal resection
Laminitis (chronic & acute)
Large colon displacement
Obesity
Orphan foal
Pelvic flexure impaction
Pituitary Pars Intermedia Dysfunction (PPID)
Polysaccharide storage myopathy (PSSM)
Proximal enteritis
Recurrent airway obstruction (RAO)
Exertional rhabdomyolysis
Renal disease
Right dorsal colitis
Sand impaction
Severe burns
Severe trauma
Urolithiasis

Table 2: Common nutrient deficiencies/excess/toxicoses of importance to equine nutrition

Energy/Protein deficiency relative to needs – malnutrition/starvation
Energy excess and obesity
Calcium deficiency/excess
Copper deficiency
Heavy metal toxicosis
Inverse calcium:phosphorus ratio
Iodine deficiency/excess
Iron deficiency/excess
Potassium excess (with respect to HYPP)
Phosphorus deficiency/excess
Selenium deficiency/excess
Vitamin A toxicosis
Vitamin D toxicosis
Vitamin E deficiency (i.e. Equine Degenerative Myelopathy and Equine Lower Motor Neuron Disease)

Table 3: Toxicoses/contaminants of importance to equine nutrition

Alsike clover (<i>Trifolium hybridum</i>)
Botulism
Cantharidin enteritis/blister beetles
Carboxylic ionophores
Garlic, onions (<i>Allium</i> spp.)
Gossypol
Leucoencephalomalacia (<i>Fusariummoniliforme</i> monilifonnin toxin)
Menadione
Moldy hay
Nitrates
Oleander (<i>Nerium oleander</i>)
Perennial rye grass (<i>Lolium perenne</i>)
Pyrrolizidine alkaloids (i.e. Tansy Ragwort [<i>Senecio jacobaea</i>])
Red clover (<i>Trifolium pratense</i>) Slaframine
Red maple (<i>Acer rubrum</i>)
Ryegrass
Slaframine
Sorghum/Sudan cystitis
St. John's wort (<i>Hypericum perforatum</i>)
Toxic endophyte-infected tall fescue (<i>Festuca arundinacea</i>)
Yellow star thistle (<i>Centaurea solstitialis</i>)
For a complete list, visit https://www.aspc.org/pet-care/animal-poison-control/horse-plant-list