Editorial

Prioritizing nutrition in veterinary medicine

We are pleased to serve as guest editors for this JAVMA special supplement on nutrition covering a variety of topics relevant to both small and large animal veterinary medicine. We have recruited a combination of groundbreaking original research as well as narrative reviews on topics that emphasize the importance of nutrition to veterinary medicine. We hope that you enjoy reading these articles as much as we did and learn something new that enhances your clinical practice!

Small Animal

Dogs and cats frequently present to their veterinarians for evaluation of vomiting and diarrhea. Here we present several manuscripts to aid in diagnosis and management of various facets of gastrointestinal (GI) health and disease. Tolbert et al\(^1\) characterized GI transit times and pH of the entire length of the GI tract, from esophagus to colon, in Beagle dogs.

What happens when the ileocolic junction is removed from dogs and cats? Stecyk et al\(^2\) report on what nutritional monitoring should be performed and what potential treatments may be necessary.

Acute diarrhea is extremely frustrating for pet owners and veterinarians alike! Rudinsky et al\(^3\) provide results from a randomized controlled clinical trial comparing how dietary management versus antimicrobial therapy affected time to resolution of clinical signs and the dysbiosis index in dogs with acute colitis. Next, Moreno et al\(^4\) present a comprehensive review about how fiber can aid in management of acute and chronic diarrhea, constipation, and hairball management.

Feeding home-prepared diets is becoming more popular amongst pet owners. Boothby et al\(^5\) present why it is necessary that pet owners who wish to feed their pets home-cooked diets weigh the ingredients during preparation. For pet owners motivated to home cook to save money, it may not be that simple! Kratzer et al\(^6\) reveal how costs compare between veterinary therapeutic commercial diets and nutritionally comparable home-cooked diets for dogs with chronic enteropathies.

Next we’ll switch gears to pay attention to the most common heart disease diagnosed in dogs—myxomatous mitral valve disease (MMVD). Laflamme\(^7\) presents a review of what is known about nutritional management of MMVD in dogs and where future research is headed. Wesselowski et al\(^8\) explore taurine concentrations in a large cohort (n = 200) of Cavalier King Charles Spaniels to determine how taurine concentrations correlate with MMVD stage and diet.

Lastly, Shiomitsu et al\(^9\) investigate how different markers of muscle metabolism relate to body condition score and age in Alaskan sled dogs. Read on to find out how serum myostatin and growth and differentiation factor 15 are affected before, during, and after a 350-mile race.

Large Animal

The large animal manuscripts shared here continue this issue’s emphasis on the significant influence of nutrition on the development, diagnosis, and treatment of disease in all veterinary species. One facet of large animal practice about which relatively little is known regarding the influence of nutrition is neonatology. In humans and experimental animal models, nutritional influences on growth, development, and future disease risk (sometimes decades later) begin in utero. Often referred to as metabolic programming, this concept is well established in human medicine; nutritional influences during early life are suspected to also be predictors of important equine health outcomes, but relatively little comprehensive investigation of this subject has been published to date. In this issue, Kinsella et al\(^10\) provide a narrative review of nutrition and energy homeostasis in the equine neonate, including relationships between endocrine and nutritional variables that affect clinical and laboratory data, response to therapies, and prognosis in critically ill foals. Equine metabolic syndrome (EMS) is one of the most important endocrine diseases of equids, the most common cause of laminitis in these species, and a condition principally treated through nutritional interventions, at least initially. An extensive body of literature has been published on the influence of pasture, preserved forage, and various concentrate feeds on systemic insulin and glucose dynamics in horses and ponies, but relatively little empiric study of the influence of nutritional supplements and treats on the management of this condition has been reported. In this issue, Sibthorpe et al\(^11\) share the findings of their study of the effects of a bread-based treat on intestinal absorptive capacity and the incretin response to feeding in normal and insulin-dysregulated ponies. These outcomes are important to the diagnosis and management of equine insulin dysregulation; this study shows that they can be influenced by a relatively short period of treat feeding, suggesting that these products should be carefully accounted for and included sparingly in the diets of horses and ponies with EMS.

Equine gastric ulcer syndrome (EGUS) is another common condition, encountered almost daily in equine veterinary practice; while effective pharmaceuticals have been available for some time to treat it, management factors also figure prominently in effective treatment and...
prevention. Some of these management factors, such as continuous pasture access, are thought to be protective against EGUS, so much so that pastured equine populations have historically been assumed to have a low incidence of the disease. However, work by Luthersson et al in Icelandic horses\textsuperscript{12} suggests that this assumption may not be valid, as their results reveal both a relatively high incidence of EGUS in pastured horses and a potential role for preserved forage when those horses are subsequently stabled in management of the disease. Since the involvement of the glandular mucosa in equine gastric disease has been reported to decrease the likelihood of resolution following treatment with conventional therapies, additional information regarding risk factors and pathophysiology of this form of EGUS is needed to guide more effective treatment. To this end, Paul et al\textsuperscript{13} provide a report of their work describing the relationship between the equine glandular mucosal microbiota and various common feeding and management practices in a population of horses involved in athletic performance. This research group identified significant associations between several management factors (such as forage availability, forage type, turnout practices, and concentrate feeding, among others) and indicators of microbial diversity within the glandular mucosa. This information is a necessary first step toward leveraging these practices effectively to optimize treatment of horses with gastric glandular disease. Finally, nutritional interventions that can mitigate the severity of EGUS lesions in horses that are maintained under permissive conditions, such as race training, are needed given the prevalence of this disease in athletic performance horses. The manuscript by Pagan et al\textsuperscript{14} in this issue describes results suggesting that long-chain polyunsaturated fatty acid supplementation reduces severe squamous mucosal lesions in fit Thoroughbreds maintained in race training over the course of the supplementation period; this approach may be incorporated safely into a multimodal plan for management of EGUS in performance horses moving forward.

Animal nutrition, veterinary disease prevention, and comparative one-health concerns are synthesized in the discussion of antimicrobial drugs included in livestock feed. While this has been a common production practice for over 60 years, recent initiatives to address the critical concern of antimicrobial resistance in human and veterinary medicine have resulted in changes to federal regulations and recommendations governing the use of antimicrobial drugs in food animals. Dewell et al\textsuperscript{15} provide a narrative review of this important topic for this issue to summarize the most common uses of antimicrobial medications in livestock feed, as well as to clarify recent regulatory changes regarding the Veterinary Feed Directive for practitioners.

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References