C/E for the one who doesn't have time for C/E

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AT A GLANCE

Changing insulins

In dogs receiving NPH insulin, this author typically switches to Vetsulin, and in dogs receiving Vetsulin, it is recommended to switch to ProZinc if financially feasible for the owners. In cats, the author will typically recommend switching from glargine to ProZinc or vice versa. If this is not successful, the author is now considering the use of a new, more concentrated formulation of glargine: Toujeo (glargine U-300; Sanofi- Aventis). As a 300-U/ml suspension, Toujeo is a super-concentrated form of glargine that generates a greater tissue reaction that results in even slower absorption. Because of that tissue reaction, some of the glargine being given is going to be degraded before reaching the systemic circulation. Toujeo's duration of action and time to peak activity are longer than with detemir, so this also leads to having to give a larger amount—but you should have a smoother glucose curve. As such, Toujeo may be ***helpful for difficult to control cats*** in which you're struggling to get optimal control. Several clinical trials of Toujeo are currently in process at other institutions, and the author has received anecdotal reports suggesting that several refractory diabetic cats have been successfully managed with this insulin.

Daniel K. Langlois, DVM, DACVIM
DVM News Magazine, Nov 2019

Cannabis-derived products

"I've been told that it's legal to prescribe and sell cannabis-derived products because they are 'animal supplements' and therefore not regulated by FDA. Is that true?" No. Unfortunately, some manufacturers are using surrogates (e.g., "animal supplement") in the marketplace to suggest to veterinarians that such products are beyond the reach of FDA, even when used for the purpose of treating disease, and that's not the case. For humans, the Dietary Supplement and Health Education Act (DSHEA) of 1994 exempts substances from regulation as food additives or drugs if the product meets the definition of a dietary supplement. ***DSHEA does not apply to animals***. Therefore, products marketed as dietary supplements for animals don't fall under DSHEA, and FDA doesn't recognize them as a special category. However, the absence of a 'dietary supplement' regulatory classification for animals under DSHEA *does not* equate to these products not being regulated nor are they exempted from regulation, by FDA. Rather, the agency classifies animal products as either "food' for animals or animal 'drugs', depending on their intended use, and regulates them accordingly. Again, there have been no cannabis (hemp or marijuana)-containing products that have been approved for animal use, as either food or drug, by the FDA.

MN VMA Newsletter, Nov/Dec 2019

Don't rush to judgement

When evaluating the risk of various cancers with relation to spaying or neutering, the veterinarian will need to look at every patient as an individual and determine with the owner the risks and benefits of the procedure. Currently there is data suggesting that spaying and neutering may carry an increased risk of cancer in some breeds, but the data is ***inherently weak*** because it is retrospective and because there is a great deal of selection bias that cannot be corrected for. A knee-jerk response to hold off on spaying and neutering will likely lead to an increase of reproductive tract tumors and other health and social problems related to having a pet population that is largely intact. Increased surveillance of at-risk breeds that have been spayed or neutered for the cancers that they are predisposed to may be a more moderate approach to managing this information. There is currently a Morris Animal Foundation study that is following 3000 golden

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retrievers over their lifetime; www.canineife-timehealth.org Because this study is prospective, it may help shed some light on these important questions. We cannot assess neuter status in isolation with respect to the risk of developing cancer because it is only one factor in many that lead to the development of cancer.

J. Brad Case, DVM, MS, DACVS, et al.
VMX, 01:19

Anesthetic deaths in cats

As with dogs, older cats carry a higher anesthetic risk - cats older than 12 years are twice as likely to die compared to cats aged 6 months to 5 years. One reason for the higher risk in healthy cats may be the presence of sub-clinical cardiac disease. In "overtly" or "apparently" healthy cats, the incidence of cardiomyopathy may be as high as 15%-18%. Thus cats may be misclassified, but since cats with cardiac disease can appear clinically healthy and not all have murmurs it is difficult to detect these patients without echocardiography. A surprising finding was that the use of intravenous fluids increased the risks in both healthy and sick cats. The blood volume of cats is lower than dogs (4%-6% versus 8%-9%), therefore ***lower fluid rates should be used in cats during anesthesia***. The American Animal Hospital Association and the American Feline Practitioners Fluid Therapy Guidelines suggest using 3 ml/kg/hour for cats during elective procedures. Another reason may be inaccurate administration and fluid overload, therefore the use of infusion or syringe pumps or a Buretrol is advised in cats to ensure accurate volume delivery. With the knowledge that apparently healthy cats may have underlying cardiac disease, it is possible that fluid overload potentially contributes to mortality.

Sheilah A. Robertson, BVMS, PhD, DACVAA, DECVAA
VMX, 02:18

Using Cerenia preoperatively

Some practices have now instituted the practice of including an injection of Cerenia administered routinely in the pre-operative period—this author is a strong proponent. Reasons for doing this include: * Help prevent post-op vomiting and nausea and decrease chances of aspiration. * Adjunctive visceral analgesia. * Improved patient comfort in the post-op period. * Earlier return to eating, with improved appetite and volume of food consumption. In this setting, Cerenia can be administered anytime in the pre-op period. If morphine or hydromorphone are going to be given as part of the pre-anesthesia sedation and preemptive analgesia plan, and the clinician desires to *prevent* vomiting secondary to these emetogenic drugs, Cerenia is administered 45 minutes prior to the emetogenic drugs. The author has seen excellent post anesthesia recovery periods in dogs that have undergone a variety of procedures, including OVH/neuter, as well as prolonged anesthesia for dental procedures, major abdominal procedures, etc. The author also is using Cerenia more routinely prior to performing endoscopic procedures. The uniform response is that most patients recover more smoothly, more quietly and are presumably more comfortable overall.

Todd R. Tams, DVM, DACVIM
MO VMA Conf, 01:19

Lyme disease

Situation: The dog has a positive 4-Dx Plus and the owner desires treatment. Treatment of non-clinical seropositive dogs is controversial due to lack of ACVIM consensus on the topic. This author deals with these cases on a case-by-case basis by explaining what is known in the literature and the side effects of antibiotic treatment. If the owner desires treatment, they will not be denied. Four of 6 contributors to the ACVIM Consensus Statement recommend no treatment in clinically normal, non-proteinuric, seropositive dogs. However, 2 of 6 do routinely treat non-clinical seropositives and cite a growing number of studies where joint lesions are present in "sub-clinical" seropositives. Given our inability to predict development of clinical signs, and whether "sub-clinical" joint lesions are of importance for quality of life, the author feels that is reasonable to treat these dogs once. In order to justify treatment, we feel it is imperative to immediately institute a tick prevention protocol (tick checks and preventive), check a urinalysis and if negative for protein, vaccinate the dog, and then conduct a QC6 to determine the pre-treatment titer. Re-testing is recommend in 6 months to assess the efficacy of treatment and ensure the tick prevention protocol has worked.

Scott Stevenson, DVM, MSc
VMX, 01:19

Long-term aging study in dogs

This November, the nation's dog owners can nominate their canine companions to participate in an ambitious, long-term study investigating healthy aging in dogs. The Dog Aging Project aims to enroll 10,000 dogs in a longitudinal study, funded by the National Institute on Aging, to identify the genetic and environmental factors that influence healthy aging. A small number of these dogs will be chosen for a clinical trial of rapamycin, an immunomodulatory agent and cancer chemotherapeutic drug used in human medicine. Low doses of the drug have been shown to extend the lifespan of mice along with conferring other age-related benefits. Owners can begin the nomination process by completing a short survey at **DogAgingProject.org** when the site goes live in mid-November.

JAVMA, Oct 15, 2019

Sedating a ….

8-year-year-old male intact Mastiff: suspected atrial fibrillation based on cardiac auscultation. This patient has been presented to investigate the cause of recently experienced collapsing episodes and is extremely aggressive. Based on the patient's size and demeanor,

this dog requires moderate sedation. The author has experience using a single bolus of alfaxalone (1-2 mg/kg) followed by intermittent boluses as need to maintain sedation. Alfaxalone is a central neuroactive steroid molecule which provides moderate to severe sedation, and this can also be used for anesthetic induction. When used as a sedative, little cardiovascular side effects have been observed. This sedation allows for extended (10-30 minutes) time to work safely with a patient like the one described here.

Randolph L. Winter, DVM, DACVIM
VMX, 02:18

Management of bite wounds

Wounds should be left to heal by secondary intention when there has been significant loss of tissue or the risk of infection is high. Closure of an infected wound can lead to more complications and failure to heal. A variety of topical antimicrobial therapies have been evaluated in order to prevent infection. Topical therapies evaluated in human medicine have included zinc oxide dressings, honey, and iodine. Strong evidence that many topical therapies improve outcome is lacking. Data do not support the use of powders or antimicrobial-soaked dressings in wound management. ***Honey*** has been associated with a more rapid rate of healing of infected post-operative wounds than antiseptics and gauze. Local delivery of antimicrobials using absorbable vancomycin or aminoglycoside-impregnated beads (e.g. Osteoset) may also be effective. These elute high concentrations of antimicrobials for several weeks.

Jane E. Sykes, BVSc, PhD, DACVIM
VMX, 02:18

Lyme consensus statement

It was agreed that screening is indicated for all dogs in areas where Lyme disease is present. However, the presence of antibodies against *Borrelia burgdorferi* is indicative of exposure to the bacterium and not necessarily that it causes—or will ever cause—disease. Treatment (i.e., doxycycline [10 mg/kg, PO, q24h, for 4 weeks]) is indicated in seropositive dogs with arthritis not attributable to another cause. Similarly, seropositive dogs with protein-losing nephropathy (PLN) should also be treated. Although testing all dogs in endemic areas and treating dogs with clinical Lyme disease was clearly supported, there was less agreement on the approach to clinically normal seropositive dogs. Screening of seropositive dogs for proteinuria is recommended; however, in the absence of clinical signs of Lyme disease or PLN, the majority of panelists did not recommend treatment of seropositive dogs, which has been one of the most controversial aspects of Lyme disease management in dogs. ***Tick preventive use*** is the cornerstone of Lyme disease prevention, and it was agreed that dogs in endemic areas should receive year-round tick control, preferably with a product that prevents attachment of ticks and/or kills ticks early in the feeding process. There was no consensus regarding the indication for vaccination.

M.P. Littman et al.
Clinician's Brief, 04:19

Amputation myth

Myth: The pain associated with amputation is excessive and a pet animal will suffer severely in the immediate postoperative period. Fact: Amputation performed without pain management in the postoperative period would certainly be painful. However, with appropriate pain management, patients can be kept very comfortable. Recently, this author has changed perioperative pain management for amputation to include ***liposome encapsulated bupivacaine***. This medication is infiltrated in the tissues during closure. This author has noted a significant decrease in the need for post-operative continuous rate infusion with opioids and adjuvant pain medication. Other adjuncts for pain management in the immediate postoperative period would include preemptive analgesia with fentanyl transdermal patches and opioids in the preanesthetic medications, continuous rate intravenous infusion of opioids with or without the addition of ketamine postoperatively, the use of epidural analgesia, etc. These techniques are very effective and can be continued for 48 hours or more. The addition of nonsteroidal antiinflammatory agents such as carprofen in the postoperative period is often sufficient after the second postoperative day.

Nicole Ehrhart, VMD, MS, DACVS
VMX, 01:19

Pseudomonas otitis

One very important key to successful treatment of *Pseudomonas* otitis is the concurrent use of glucocorticoids. Glucocorticoids may be delivered systemically or topically; however, the effectiveness of topical delivery may be reduced by reluctance of the pet to allow placement of topical medications in a painful ear. Glucocorticoids reduce the pain that is associated with this condition and thus will make application of topical medications easier and more effective. In addition, glucocorticoids reduce the inflammation, which also reduces the discomfort and swelling that accompanies this condition. The recommended dose of prednisone in dogs is: 1-2 mg/kg, PO, once daily for 5-7 days, and then every other day for 5 doses, then half of the dose every other day for 5 additional doses. Naturally, any allergy testing should be done *prior* to initiation of glucocorticoid therapy. Patients with *Pseudomonas* infections tend to get other secondary infections, most often yeast infections, immediately after the *Pseudomonas* is cleared. Therefore, this author often initiates prophylactic anti-yeast therapy as part of our maintenance therapy as soon as the bacterial component of the otitis is controlled.

James O. Noxon, DVM, DACVIM
Music City Vet Conf, 02:8

Treatment of hypothyroidism

Luckily, oral supplementation with synthetic thyroxine

is extremely effective at reversing the clinical signs of hypothyroidism. However, the speed of response will vary based on the clinical sign. Activity levels are noted to increase within 1 week of treatment. However, dermatologic manifestations can take 2-4 months to resolve completely. Oral supplementation should be started at 0.02 mg/kg, once or twice daily. Since intestinal absorption can be affected by the presence of food, owners should be informed to be consistent with how they give the medication. For dogs with concurrent heart disease (DCM, Stage C mitral valve disease...), some recommend slowly introducing thyroxin supplementation, starting with a ***50% reduction in dosage*** and gradually increasing over 1 month. For monitoring, peak blood levels should be measured between 4-6 hours post-pill. The goal should be to have a value located in the upper 1/4 of the reference range.

Jean-Sebastien Palerme, DVM, MSc, DACVIM
127th SD VMA Conf, 08:18

Heartworm, heat treatment of serum

Heat treatment of serum samples prior to antigen testing can improve testing accuracy when antigen blocking produces false-negative results on in-clinic heartworm tests. While acknowledging that this added step has value when active clinical disease is suspected in the absence of a positive antigen test, the AHS does not recommend this step for routine in-clinic screening. Why not? The available heartworm tests are highly sensitive and accurate. Heat treatment of samples is contrary to label instructions for in-house tests and may interfere with the accuracy of both heartworm tests and combination tests designed to detect antibodies of other infectious agents. Suspected serum samples should be sent to a veterinary reference lab or a college of veterinary medicine's parasitology department.

Christopher Rehm, DVM
DVM News Magazine, 04:19

Tips for diagnosing Addison's

Don't just think about the sodium-potassium ratio—there's a lot more to Addison's disease than just the classical presentation. It's important to remember that there are lots of other presentations: Some dogs have gastrointestinal signs, some look like they have protein-losing enteropathy, and some come in with just megaesophagus. Be screening for Addison's, even if your index of suspicion is not very high. You can skip ACTH stimulation testing at first and measure a baseline cortisol concentration, which is relatively quick, inexpensive and readily available. If the baseline cortisol concentration is high or high normal, it's very unlikely the dog has Addison's disease. If the concentration is low, then do an ACTH stimulation test. You will do a lot less ACTH stimulation tests in dogs that do not have Addison's by running baseline cortisols. And you will do a lot more ACTH stimulations in dogs that do have Addison's if you run baseline cortisol.

Chen Gilor, DVM, PhD, DACVIM
Vetted, Sep 2019

Reducing phosphorus in CKD

Orally administered aluminum hydroxide is used to reduce phosphorus levels in patients with renal failure when dietary phosphorus restriction fails to maintain serum phosphorus concentrations in the normal range. Adverse reactions - constipation; aluminum neurotoxicity unlikely in domestic animals. Dose – 50-100 mg/kg, PO, divided daily, titrate to effect. Aluminum Hydroxide Concentrated Gel Liquid: 600 mg/5 mL; Alternagel, generic; (OTC). Aluminum Hydroxide Gel, Dried Powder, tasteless bulk powder to mix in food is available from a variety of sources including many compounding pharmacies, (www.thrivingpets.com).

G.P. Oswald, DVM, DACVIM
88th FL VMSA Conf, 04:17

Pimobendan treatment trial

Based on the data from this landmark study (EPIC), it appears that Pimobendan dosed at 0.2-0.3 mg/kg, PO, BID should be utilized in the treatment of patients with advanced stage B2 degenerative mitral valve disease prior to the onset of heart failure. Treatment is not recommended until a complete physical examination, blood profiles, blood pressures, chest radiographs and thorough echocardiographic studies are performed to confirm that significant enough disease is present to warrant treatment. The EPIC data supports the use of Pimobendan once signs of significant left atrial and left ventricular dilation are present, but not when the heart size is normal or even mildly enlarged. The EPIC trial was a well-designed study and will change the way we treat patients with degenerative valve disease.

Bill Tyrrell, DVM, DACVIM
VMX, 02:18

Pulmonary fungal infection

Corticosteroids are usually avoided in patients with fungal infections. They inhibit cell-mediated immunity which is essential in protecting from and clearing infection. However, inflammation from rapid and massive die-off during initiation of treatment can negatively impact pulmonary or neurological function, or vision. In people with pulmonary fungal infections, however, low dose methylprednisone has conveyed a survival benefit. Corticosteroids (prednisone, 1 mg/ kg/d x 1-2 weeks) during initiation of antifungal treatment of the patient with moderate to severe pulmonary blastomycosis may prevent pulmonary failure requiring mechanical ventilation or leading to death. In a recent review, no difference in outcome was found in treatment of dogs with pulmonary blastomycosis using itraconazole with non-steroidal anti-inflammatory agents, corticosteroids or no anti-inflammatory agents. They did report that the need for oxygen supplementation was a negative prognostic indicator for survival. Oxygen supplementation, fluid support, and close monitoring are recommended when initiating antifungal treatment in moderate to severe cases suspected of having pulmonary blastomycosis. Deterioration in oxygenation, ventilation, or work of breathing may require mechanical ventilation.

Elke Rudloff, DVM, DACVECC
VMX, 01:19

Value of PCR testing for FeLV

The polymerase chain reaction (PCR) is a methodology used to detect minute amounts of viral protein in a sample. In a study performed at the University of Florida, blood samples from 205 cats were evaluated with both ELISA and a PCR test for FeLV antigen. The PCR test was unsuccessful in amplifying the sample in 39 cases and these were not evaluated. Both ELISA and PCR tests for FeLV antigen were positive in 17 cats (100% correlation). One hundred forty-nine samples were ELISA negative and 148 of these were PCR negative (99.33% correlation). One sample was ELISA negative and PCR positive. It was suggested that this may represent a latently infected cat. Alternatively, this may represent a false positive PCR test. In this study, PCR FeLV results correlated nearly 100% with ELISA results. There seems to be no diagnostic advantage to using PCR as a screening test; it cannot be performed in-house, and is more than twice as expensive as ELISA testing. In addition, PCR could not be successfully performed on 20% of the samples submitted in this study. PCR testing may have an advantage in a symptomatic FeLV suspect that is repeatedly negative on routine FeLV testing (ELISA, IFA). If PCR can truly detect latent virus (which we don't know for sure), it may be possible to confirm infection in such a patient. Bone marrow would be a better target tissue than peripheral blood for attempting to identify latent infection in these cats.

Alice M. Wolf, DVM, DACVIM, DABVP
Music City Vet Conf, 02:17

Transdermal phenobarbital for feline epilepsy

Once recognized as an uncommon cause of seizures in cats, idiopathic epilepsy has become more commonly identified as the cause of recurrent seizures in 25%-50% of cats. Once a diagnosis of idiopathic epilepsy has been made, chronic antiepileptic therapy should be recommended if seizures occur more frequently than once every 12-16 weeks, cluster seizures (>1 seizure in a 24-hour period) occur, status epilepticus occurs, or seizure frequency increases. Phenobarbital is the recommended antiepileptic drug to treat cats with idiopathic epilepsy. However, oral administration may be associated with adverse effects, poor pet owner compliance, and, in some patients, administration difficulties. Transdermal administration may be easier for some owners to perform, particularly those with non-compliant cats. Due to differences in absorption, it is recommended that transdermal phenobarbital be administered at a dose 3 times greater than the recommended dose of oral phenobarbital. Monitoring of serum phenobarbital concentrations after 14 days of transdermal therapy is highly recommended to ensure the patient has obtained a therapeutic concentration, as serum concentration does not correlate with the transdermal phenobarbital dose. Patients experiencing adverse effects (e.g., sedation, ataxia) should have serum phenobarbital concentrations evaluated, as concentrations in these patients often exceed the therapeutic window. Dose reduction is recommended in these patients.

J.D. Foster, VMD, DACVIM
Clinician's Brief, Aug 2019

Correcting dehydration

Dehydration is calculated by multiplying the estimated deficit by the body weight in kilograms. An hourly rate is determined by dividing the dehydration deficit by the number of hours over which the clinician wishes to correct it, typically 12-24 hours. If fluid boluses are given, these are typically subtracted from the initial dehydration deficit as most of that fluid will eventually end up in the interstitium. ***To simplify the math***, doubling the calculated maintenance fluid therapy rate will correct 5% dehydration over 24 hours. Tripling the rate will correct 5% dehydration over 12 hours or 10% dehydration over 24 hours.

Marc Seitz, DVM, DABVP
Music City, Vet Conf, 02:17

Using a Wood's lamp

A Wood's lamp is a hand-held device that emits longwave (between 320 and 400 nm) ultraviolet radiation through a nickel or cobalt glass filter. Electric (plug-in) Wood's Lamps are generally more consistent than the battery powered ones and this author prefers the brand Burton's, which has two rows of light bulbs with magnifying lens in the center. The magnifying lens allows the clinician to see if individual hairs fluoresce near the base of each hair, which is important in differentiation between positive ringworm fluorescence and false positive from crusts or topical medications. *Microsporum canis* fluorescence is bright apple green and infected hairs glow from the bulb to the tip. Wood's lamp is only a screening tool for *Microsporum canis* infections, because not all ringworm strains will fluoresce: negative fluorescence does not rule out dermatophytosis. Wood's lamp examination is cheap and easy to perform and it is helpful for examining known positive animals *(Microsporum canis)* or animals where *Microsporum canis* is likely. Fungal culture and/or fungal PCR is important to confirm infection. Wood's lamp examination can also help monitor response to treatment. With antifungal therapy, there should be fewer Wood's lamp-positive hairs and the location of fluorescence should progress from the base of the hair to the tip as the hair grows out, moving the infected section of hair upwards.

Anthea Schick, DVM, DACVD
CVC Kansas City, 08:17