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AT A GLANCE

Anesthetizing the older cat

The most important age-related changes in cardiac function are decreased ventricular compliance and cardiac reserve. This renders older cats less tolerant of acute changes in intravascular volume – both fluid loss and fluid overload. Cardiac output is usually decreased, and circulation times increased; therefore, intravenous anesthetic drugs must be given slowly and not repeated until sufficient time has elapsed for them to reach their site of action (the brain). Blood volume decreases with age therefore intravenous drugs are injected into a contracted "compartment", which would lead to higher than expected plasma concentrations unless doses are adjusted. Older patients have a decreased respiratory reserve. Vital capacity is reduced, the chest wall and lungs are less compliant and the anatomic dead space and work of breathing increase. Older cats are more susceptible to hypoxemia and hypercapnia. With a decrease in respiratory reserve, older animals may rapidly desaturate in the immediate postinduction period before they can be intubated and administered oxygen. For this reason, ***pre-oxygenation*** (3 minutes by mask or "flow-by") ***is recommended***.

Sheilah Robertson, BVMS (Hons), PhD, DACVAA, DECVAA
Amer Ass'n of Feline Practitioners Conf, Sep 2018

Behavior myth

Vaccinations are more important than early socialization. Socialization of puppies and even kittens is extremely important for a behaviorally healthy animal. Behavior problems are a factor in almost every case of rehoming or relinquishment, and 16 weeks of age is past the critical socialization period, so it's a mistake to limit a young pet to environmental stimuli until all core vaccines have been completed. Recent studies have shown that puppies from diverse areas that received one or two rounds of vaccines and attended puppy socialization classes were no more likely to contract infectious diseases than those that didn't attend a class. Of course, it's important to ensure that other animals in the area have been properly vaccinated and that the facility is using proper biosafety standards. For this reason, reputable private facilities (including veterinary clinics!) are the best choice for socialization classes, and public dog spaces should be avoided.

Julia Albright, MA, DVM, DACVB
DVM News Magazine, Jan 2019

Preventing toxicant absorption using dilution

Dilution with milk, water, or liquid from water-packed tuna fish is recommended in cases of ingestion of corrosive or irritant products, exposure to toad secretions, or taste reactions due to topically applied products (e.g. "foaming kitties" following flea spray application). Dilution with milk may also aid in relief of oral discomfort secondary to chewing on plants that contain insoluble calcium oxalates in their leaves (e.g. Philodendron spp.). For birds and reptiles, juicy fruits and vegetables can be fed to accomplish dilution.

Tina Wismer, DVM, MS, DABVT, DABT
NE VMA Conf, Jan 2019

Myofascial Pain Syndrome (MPS)

MPS in OA is a complex disease involving those muscles responsible for relieving weight and stress from painful joints. A complete explanation of MPS can fill volumes, but suffice it to say wherever there is a painful limb or joint, the constant contraction necessary to protect that joint causes a permanent contraction of some muscle fibers within the

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entire muscle. This is painful in and of itself, but the contracted fibers also mean a shortened muscle and subsequent dysfunction of the joint as the already arthritic joint is further damaged by narrowing the joint space width. Only through relaxation of these shortened fibers, or taut bands, can the pain of MPS be relieved and the joint be returned to a more normal state. Massage can certainly help that, but the preferred method is by the insertion of acupuncture needles into the taut band, causing a spinal reflex that relaxes the taut band. Relief is temporary unless the underlying cause, in this case OA, is adequately treated. Both treatments are two different sides of the same coin and the successful treatment of any case of OA must include the possible existence of MPS and its subsequent treatment. For help in learning how to treat MPS visit myopainseminars.com and look for the Canine tab.

Michael C. Petty, DVM
VMX Conf, Feb, 2018

Finding cheaper pimobendan

The cost of pimobendan is challenging for many owners, but the efficacy of compounded pimobendan is uncertain and therefore compounding is only recommended in extenuating circumstances. However, many of the other medications that are used in animals with heart failure are available from human pharmacies as part of their prescription plans. It is important to remember these options and encourage owners to price shop (and even consider switching to lower cost drugs within the same class if necessary). Goodrx.com is an online resource for price shopping.

Meg Sleeper VMD, DACVIM
AVMA Conf, 7:18

A home-made surgical prep spray

The self-made spray is like a liquid version of Avaguard or Sterillium hand sanitizers that the author uses for final surgical patient prep in most surgeries and it looks like a bottle of Windex. Instead of a sterile scrub with povidone-iodine, chlorhexidine, etc., this author uses a spray that is made by combining ethyl alcohol 99% with chlorhexidine (2% or 4%), using a 3-to-1 ratio. The idea is to keep the alcohol concentration well above 66%, while the chlorhexidine provides long-lasting residual antibiotic activity. The concentrations are very similar to what's in commercially available Avaguard. To use, the author does the rough prep, and then once the patient's ready, the area intended for surgery is sprayed and let to dry. The spray does have a few issues worth noting— all of which are normal concerns when using alcohol. You don't want to get it on your cautery plate because you'll ignite your patient, you don't want to use it on a mucous membrane due to irritation, and you don't want to use it on tiny patients because the alcohol can make them cold.

DVM News Magazine, Jul 2018
Jennifer Wardlaw, DVM, MS, DACVS

Obtaining a diet history

A thorough diet history is critically important for diagnosis and effective management of adverse food reaction (AFR). While it requires time to obtain this information, it is well worth the investment. A detailed diet history provides clues about the underlying cause of the patient's clinical signs, including those consistent with a diagnosis of AFR or others such as seasonal pruritus due to environmental allergies or frequent dietary indiscretion or excessive use of treats and human foods associated with episodes of gastrointestinal signs. The diet history is made easier by using a ***standardized template*** such as the Short Diet History Form available at www.wsava.org/Guidelines/Global-Nutrition-Guidelines (scroll down to section on Resources and Statements).

S. Dru Forrester, DVM, MS, DACVIM
65th HI VMA Conf, Nov 2018

Barium-impreg. polyethylene spheres for GI studies

Traditionally, veterinarians have relied on barium liquid as the contrast agent of choice for gastrointestinal studies. However, recognized limitations of barium liquid have led to the development of barium-impregnated solid radiopaque markers (BIPS) for the diagnosis of motility disorders and bowel obstructions. Barium liquid contrast studies are of limited value in detecting hypomotility. Radiopaque markers can be used to investigate a number of common gastroenteric problems. These spheres have been specifically validated for use in dogs and cats and are the only radiopaque markers with which there is extensive clinical experience in veterinary medicine. BIPS are manufactured in New Zealand and are now available in many countries. Information on availability of this product, including instructions on use and interpretation of radiographic studies, can be found at (www.medid.com; 800-262-2399).

Todd R. Tams, DVM, DACVIM
127th MO VMA Conf, Jan 2019

Tail docking in Rottweilers

This procedure severs coccygeal nerves, vessels and sacrocaudal muscles of the tail in the neonatal patient and removes an important component of the dog's counterbalance measures, potentially increasing torque on the pelvic limb. **HYPOTHESIS:** Rottweilers with docked tails have a higher prevalence and severity of spondylosis deformans than Rottweilers with tails (e.g. in Australia), and higher prevalence and severity of the disease is associated with higher prevalence of cranial cruciate ligament (CCL) insufficiency. The AKC states "Tail docking is performed shortly after birth, when the puppy's nervous system is not fully developed. As a result, the puppy feels little to no pain, and there are no lasting negative health issues." In fact, there have been no studies on the long-term health consequences of this practice. In addition, tail docking is a painful procedure that can negatively affect pain responses and possibly produce phantom pain for the life of dog. Spondylosis deformans is a non-inflammatory, degenerative condition thought

to result from hypertrophic changes to the vertebral end plate secondary to increased motion from chronic disc degeneration. Although mild cases are not considered a painful condition, the disease can limit spine flexibility, decrease range of motion, and change gait patterns which may increase the mechanical factors that lead to direct overload or abnormal wear of the cranial cruciate ligament. The author's study aims to determine if docking increases prevalence and severity of spondylosis deformans as well as CCL insufficiency in Rottweilers.

Amber Ihrke, DVM
VMX Conf, 02:18

Cognitive dysfunction syndrome and gonadectomy

Cognitive dysfunction syndrome is a neurodegenerative disorder of senior dogs, which is characterized by both cognitive changes and neurophysiological pathologies. Memory impairment, poor problem solving skills, social disconnect, confusion, and day-night reversal may occur as the condition progresses. Gonadectomy significantly increases the development and progression of cognitive dysfunction syndrome in dogs. Increases in luteinizing hormone are associated with declines in cognitive performance. In addition, elevated LH concentrations increase beta amyloid plaque formation and are implicated in the development of Alzheimer's syndrome in humans. Therefore, it is possible that LH and its receptor are important in the development of cognitive dysfunction syndrome in gonadectomized dogs.

Michelle A. Kutzler, DVM, PhD, DACT
AVMA Conf, 07:17

Post-clipping alopecia

This condition is characterized by a failure of hair to regrow following its removal by shaving or clipping. Affected patients may have been clipped before without issue. Anecdotally, long-furred or plush coated dogs may be predisposed, but short-haired dogs may also be affected. The etiology of this condition is poorly understood, and much of the available information is anecdotal or speculative. It must also be kept in mind that failure to promptly regrow hair does not necessarily reflect a pathologic condition, as a large proportion of dog hairs are in telogen (the resting phase) at any given time. This is particularly true in plush-coated dogs, which have been demonstrated to have particularly prolonged telogen phases. No therapy has been demonstrated to consistently accelerate hair regrowth in these patients. Most dogs eventually regrow their hair within a year. ***Anecdotal treatments*** include melatonin at 3–12 mg, BID-TID or administration of thyroid supplementation in an attempt to "force" hair follicles into anagen. However, it may be difficult to distinguish response to treatment from spontaneous resolution.

Cherie M. Pucheu-Haston, DVM, PhD, DACV
SW Vet Symp, 09:18

Stopping the bleeding in acute trauma

The results of this study showed that administration of tranexamic acid to adult trauma patients with, or at risk of, significant hemorrhage, within 8 hours of injury, significantly reduced all-cause mortality with no apparent increase in pathologic thrombosis. With the publication of this trial, tranexamic acid has been incorporated into human trauma treatment protocols worldwide. Studies in veterinary patients are ongoing. In the meantime, the author is using Aminocaproic acid: Choose one of three protocols. 1) 50 mg/kg diluted 1:10 in 0.9% saline, IV over 30 minutes. 2) 50-100 mg/kg, IV. loading dose (over 1 hour); (dilute in 0.9% saline, LRS or D5W to 20-25 mg/ml); 15 mg/kg, CRI, or q8hr or until bleeding controlled (dilute in 0.9% saline, LRS or D5W to 2O-25 mg/ml). 3) 15-40 mg/kg, IV bolus, then 500-100 mg, PO, q8hr.

Tim B. Hackett DVM, MS, DACVECC
65th HI VMA Conf, Nov 2018

Benefit of using left-lateral view first

The results of this study showed that dogs first placed in left-lateral recumbency were significantly more likely to have duodenal gas on the subsequent ventrodorsal and right-lateral radiographic projections compared to dogs first placed in right-lateral recumbency. This study emphasizes the ***benefit of using initial left-lateral abdominal projections*** prior to other views for subsequent evaluation of the duodenum.

Dr. Daniel VanderHart and Dr. Clifford Berry
DVM News Magazine, Dec 2018

Fluid therapy in the feline obstructed patient

In the FUO patient, aggressive IV fluid therapy is indicated as many patients often have a profound post-obstructive diuresis (i.e., >2 ml/kg/hour) and may present dehydrated and azotemic. An initial fluid bolus with a balanced, buffered isotonic crystalloid (e.g., Norm-R, LRS, Plasmalyte, etc.) at 20-30 ml/kg can be administered over the first hour to help increase perfusion and aid in correction of azotemia and electrolyte abnormalities. This can be initiated during the sedation and unblocking process, and ***does not need to "wait" until the unblocking has been performed***. Following alleviation of the urinary obstruction, fluids should be maintained at 2.5-5X maintenance. The author typically uses 50-60 ml/cat/hour for the FUO patient until the patient is hydrated and the urine is clear. The patient should be assessed carefully to ensure that volume overload does not occur, particularly in patients with cardiopulmonary disease (e.g., gallop, murmur, etc.). Fluid therapy should be continued until azotemia and clinical signs resolve (typically 2-4 days); IV fluids should then be slowly tapered to ensure that the azotemia and polyuria has resolved and the patient can maintain hydration. Due to the severe post-obstructive diuresis that occurs in these cats, fluid therapy should be carefully matched by monitoring ins and outs.

Justine Lee, DVM, DACVECC, DABT
Fetch San Diego, Dec 2018

Cognitive dysfunction syndrome in cats

Selegiline, (Anipryl) is the only FDA approved treatment for cognitive dysfunction syndrome, however, it is not approved for use in cats. Selegiline is a monoamine oxidase-B inhibitor (MAOI-B) with action in the central nervous system to increase phenylethylamine and to slow metabolism of dopamine (and other monoamine neurotransmitters). Selegiline may also decrease free-radical production and enhance free-radical scavenging. Use in cats has been described, despite the lack of controlled clinical trials. It is dosed (extra-label) at 0.5-1 mg/kg, once daily and is given in the morning. A primary goal of selegiline use is to decrease signs associated with altered sleep-wake cycle. Other medications can be used to address anxiety. Often, low doses of benzodiazepines without active metabolites (such as lorazepam) may be used. However, these come with the precautions that accompany the use of oral benzodiazepines in cats.

Margaret Gruen, DVM, MVPH, PhD, DACV
Amer Ass'n of Feline Practitioners Conf, 09:18

Brachycephalic airway syndrome

Postoperative complications rates are reported to be 26%–44%. These patients typically die postoperatively from respiratory distress, either due to upper airway obstruction (UAO) or aspiration pneumonia secondary to vomiting or regurgitation. Therefore, perioperative management strategies should be aimed at these two life-threatening complications. Preoperative management: Fasting times are controversial with some authors advocating for long (24 hours) fasting times prior to upper airway surgery in brachycephalic dogs. In humans, it has been found that there is no correlation between the volume of gastric contents (GC) and the incidence of gastroesophageal reflux (GER) and prolonged fasting does not guarantee a decrease in GC volume. In fact, a small breakfast 2–3 hours before surgery does not alter the volume or pH of GC. In dogs, it has been reported that increasing the duration of preoperative fasting is associated with increased gastric acidity and an increased incidence of GER. None (0/30) of the dogs fed 2–4 hours prior to anesthesia had GER, whereas GER was observed in 14.8% (4/27) and 26.9% (8/26) of dogs when food had been withheld for 12–18 hours and at least 24 hours, respectively. A recent study found that feeding canned food at half the daily rate 3 hours before anesthesia did not significantly increase GC volume and the GC pH was significantly higher than dogs fasted for 10 hours. The authors concluded that ***feeding a small amount of canned food 3 hours before induction of anesthesia may be of benefit*** in reduction of the incidence of GER during anesthesia in dogs.

Bonnie L. Hay Kraus, DVM, DACVS, DACVAA
SW Vet Symp, 09:18

Care of CHF patient at home

Consider compounding pharmacies. Although there are certainly issues that arise from time to time with compounding pharmacies, for some they offer a service that will significantly improve the quality of life for the pet and owner. Absorption of cardiac medications is questionable with transdermals and cannot be easily monitored as can transdermal methimazole. However, for the elderly owner that has trouble remembering multiple pills to administer or the pet that is difficult to pill, ***combining multiple drugs into one compounded liquid or tablet*** can have a significant impact. Because of uncertain absorption this author uses transdermal cardiac medications as a last resort.

Meg M. Sleeper, VMD, DACVIM
Atlantic Coast Conf, 10:16

Another pet food myth

Myth—"Dogs and cats do not require carbohydrates, so they should consume foods low in carbohydrates and grains." **FACT:** While adult, non-reproducing dogs and cats do not require a dietary source of carbohydrates, they DO require carbohydrates at a cellular level (glucose). To assure that cells have a constant supply of carbohydrate, mammals have evolved numerous mechanisms, including hormonal controls (e.g. insulin and glucagon), and synthetic and release systems (e.g., gluconeogenesis and glycolysis) to produce and control glucose. Thus, dogs and cats can survive without a dietary source of carbohydrates because they can make carbohydrate from amino acids and the glycerol backbone of triglycerides. However, if they consume adequate carbohydrates in their diet, the need to produce carbohydrate *in vivo* is reduced. This allows dietary proteins to be used to support protein synthesis rather than being diverted to gluconeogenesis. Normal dogs and cats are both well able to digest and utilize dietary carbohydrates from properly processed or cooked sources, such as grains.

Callie Harris, DVM
Emerald Coast Vet conf, 06:18

Behavior and benzodiazepines

Generally speaking, benzodiazepines have a rapid onset of action with effects that can last for a few to several hours. At low doses benzodiazepines have a calming, anti-anxiety affect and at higher doses they may be sedating. Paradoxical excitation seems to be a relatively common problem noted with the benzodiazepines so pet owners should always be instructed to give a "test dose" when they can be home to observe the pet but before the pet is likely to experience exposure to what it fears. For example, when dealing with a thunderstorm phobic patient, the "test dose" should be given on a day when NO thunderstorms are expected. Always keep in mind that when we give any anxiolytic drug to an animal with a history of aggression, we must be prepared for the possibility that with ***anxiolysis we will disinhibit aggression*** and help the animal feel more confident about using aggression. Clients should always be warned that they should not be any more relaxed or careless with their aggressive dog when it is on medication than they would be without medication. Conversely, benzodiazepines can also lead to increased affiliative behavior.

Valarie V. Tynes, DVM, DACVB
NE VMA Conf, 01:19

NSAIDs and liver disease

Liver injury is a common complication of critical illness, and many affected small animals have elevations of one or more liver enzymes, and we are often told to avoid NSAID drugs in animals with liver disease. ***Contrary to commonly held concern***, there is no evidence that pre-existing liver disease is a risk factor for the idiosyncratic hepatopathy reported with all NSAID drugs. Only two NSAIDs - aspirin and acetaminophen - pose significant risk of dose-dependent hepatic injury. Although all approved NSAIDs depend on hepatic metabolism for excretion, the vast majority of dogs and cats with elevated liver enzymes do not have measurable compromise of liver function (as measured by serum bilirubin, albumin, BUN, and ammonia concentrations) and are unlikely to have impaired ability to eliminate the drugs. The same holds for opioids and other agents that depend on hepatic metabolism.

Bernie Hansen, DVM, MS, DACVECC, DACVIM
23rd Int Vet Emerg & Critical Care Symp, 09:17

How many radiographic views for acute abdomen?

Abdominal radiography plays a critical role in the diagnostic assessment of small animals presented with acute abdominal signs. Historically, abdominal radiographic series consist of one lateral view and one ventrodorsal view; however, there is also evidence supporting that obtaining both a left and right lateral abdominal view, in addition to an orthogonal view, can increase diagnostic accuracy. The goal of this study was to determine if having a third view of the abdomen in dogs with signs of abdominal disease resulted in improved confidence and/or accuracy of diagnosis, particularly regarding the need for surgical intervention. As compared with 2 views, evaluation of a third abdominal view ***did not show any significant improvement*** in accuracy of radiographic diagnosis in this patient population. Results did not support that an additional view was necessary or beneficial in making a diagnosis; thus, it is reasonable for practitioners to continue to recommend 2-view abdominal radiographic series to make routine diagnoses for acute abdominal disease.

M.V. Mavromatis et al.
Clinician's Brief, Feb 2019

Using Vetsulin correctly

Vetsulin, now manufactured by Merck, has a tortured history because no one knew it had to be shaken when it was first introduced. Vetsulin, a porcine-derived intermediate-acting insulin, actually contains two products in the same bottle, resulting in a bimodal onset of action: one to prevent postprandial hyperglycemia and one to provide long-term glycemic control. The ***bottle must be shaken vigorously***—until the product foams—before injection in order to provide the appropriate effect in the body. This insulin is only available at a concentration of 40 IU/ml (U-40), and appropriate syringes are hard to find at a human pharmacy. So make sure to provide plenty of U-40 insulin syringes to the owner.

David Bruyette, DVM, ACVIM
DVM News Magazine, Dec 2018

Kitten immunization

Kittens from regularly vaccinated queens or from those having experienced natural infections are protected against the respective infections by maternally derived antibodies during the first few weeks of life. At the same time, the presence of maternally derive antibodies hampers the ability of the kittens' immune system to raise a protective immunity after vaccination. Maternally derived antibodies usually will have waned, when the kitten is 8-12 weeks of age to a level that allows active immunization by vaccination. However, the timespan of persistence of the maternally derived antibodies varies largely between individual kittens and some kittens may be vulnerable to infection and capable of responding to vaccination at an earlier age, while in others this process may take until about 16 weeks of age. No single primary vaccination policy will therefore cover all possible situations. In view of these facts, a ***first vaccination is recommended no later than at about eight weeks*** of age, followed by a second immunization 3-4 weeks later, and by a third vaccination between 14 to 16 weeks of age. Currently, also an additional vaccination at 20 weeks of age is under discussion. If necessary, e.g. in kittens at special risk of infection and disease, the first vaccination can also be given earlier than eight weeks, but vaccination of kittens younger than four weeks of age should be avoided to avoid a potential risk of disease induction when using live attenuated vaccine organisms.

Regina Hofmann-Lehmann, Dr. med. vet.
Fred Scott Feline Symp, 07:18

Trilostane dosing recommendations

The manufacturer recommends starting trilostane therapy at a dose of 2.2 - 6.7 mg/kg (1-3 mg/lb), once daily. (Vetoryl package insert). The most common starting dose in the author's hospital is 1 - 2 mg/kg (0.5 - 1 mg/lb), every 12 hours. Some authors have recommended administering this dose once daily, but in the author's experience once daily administration in this dosage range does not provide adequate cortisol suppression and clinical control in most cases. Dosing frequency continues to be a topic of debate. While once daily administration may improve compliance and reduce the cost of treatment, it is this author's experience that twice daily (divided daily dose) administration results in ***superior clinical control*** and reduces the risk of complications associated with excessive cortisol suppression. The commercially available capsule sizes (5 mg, 10 mg, 30 mg, 60 mg, 120 mg) allow the targeted dose to be easily administered to most dogs. If an additional size is needed, the commercially available product should be reformulated into the appropriate capsule size by a compounding pharmacy.

Jon M. Fletcher, DVM, DACVIM
103 WI VMA Conf, 10:18