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

"Pearls" of Veterinary Medicine

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AT A GLANCE

Apoquel, dosage options; P 1
Avoiding hypoglycemia in diabetics; P 2
Corn in pet food, the truth; P 4
Determining fetal viability; P 3
Diuretics in feline heart failure; P 2
IBD, ruling out; P 2
Neutering dogs, risks/benefits; P 4
NSAIDs in the geriatric; P 1
Nutraceuticals, prescribing; P 4
Opioid-induced hyperalgesia; P 2
Over-due vaccinatins, recommendations; P 5
Pain management for the geriatric; P 3
Pre-anesthesia fasting, revisited; P 4
Protein in the diet; P 3
Psychogenic alopecia, over-diagnosed; P 3
Response to obese pet's client; P 3
Sarcomas, when referral is not possible; P 3
Secrets of cats revealed; P 5
Silver dressings; P 5
Weaning patient off of phenobarbital; P 2

NSAIDs in the geriatric

In the author's experience, less is more for these old guys! Be judicious in your choice of medication, however, never be afraid of treating pain just because they are old. Whenever possible, use NSAIDs as we have the greatest evidence in veterinary medicine for their use, efficacy and safety compared to any of the other pain medications we currently have available. Studies have shown ***improved efficacy*** and lower incidence of side effects when NSAIDs are ***used chronically*** versus intermittently. Also, take the time to learn the pharmacokinetics of the drugs you choose. For example, the mean half-life of carprofen in the dog is 8 hours versus meloxicam is 24 hours. Therefore, the author frequently doses every other day with meloxicam, but feels very comfortable with daily dosing of carprofen. Preferred dosing for carprofen is 2 mg/kg, PO, BID and meloxicam 0.1 mg/kg, PO, every other day. In order to avoid or minimize gastrointestinal side effects (which can be more common in geriatrics) give an antacid (omeprazole 0.5-1 mg/kg, PO, SID-BID or famotidine 0.5 mg/kg, PO, BID) plus a probiotic for 5 days prior to starting NSAIDs.

Leilani Alvarez, DVM, DACVS, CVA, CCRT
N Amer Vet Conf, 02:17

Dosage options for Apoquel

Response to therapy is often very prompt...within hours to 1-2 days. Similarly, escape from control is also noted very quickly after stopping the drug (often within 1-2 days). With the shift to once daily therapy, it is not uncommon to see a worsening of pruritus. If this is encountered, improved pruritus control is often noted to slowly improve over 2-4 weeks in many of these individuals. However, less than ideal control of pruritus may be noted to persist in 20%-30% of patients. Options to consider when this occurs include: 1) If the anti-pruritic effect tends to wane during the latter part of the day, you can change the time of administration (giving it in the evening instead of the morning). 2) Increasing the dose to the highest end of the recommended dosage range - i.e. 0.6 mg/kg/day. Only a subtle increase in dose is sometimes noted to benefit patients very significantly. 3) Add an antihistamine or even two antihistamines to the treatment regimen. Even if these antihistamines had been tried in the past and failed to be of benefit, they may have some affect when used with oclacitinib. 4) Consider dividing the daily recommended dose (0.6 mg) in to two smaller, equal dosages. More frequent dosing over a 24-hour period may potentially be associated with a higher incidence of immunosuppression (e.g. demodicosis) or bone marrow suppression (e.g. leukopenia), but these appear to be rare.

Rod A.W. Rosychuk DVM, DACVIM
78th Annual Vet Conf, Co St U

Weaning a patient off phenobarbital

There are several reasons to decrease the phenobarbital dose or wean a patient off phenobarbital: 1) Patient is seizure-free for one year. 2) Side effects of phenobarbital are affecting patient's quality of life (polyuria, polydipsia, polyphagia, ataxia). 3) Patient develops liver disease. 4) Patient develops an idiosyncratic blood cell dyscrasia. 5) Patient is being switched from phenobarbital to another anticonvulsant. How do you wean a patient off phenobarbital? There is no set rule for how to wean a patient off phenobarbital. The key is to *slowly wean them off* rather than stopping it abruptly. Stopping phenobarbital abruptly could result in rebound (withdrawal) seizures. Most patients can be safely weaned off phenobarbital over a 3- to 6-month period by decreasing the dose 10%-20% every 2 weeks. Ideally, serum phenobarbital concentrations should be checked every month after weaning starts. Phenobarbital can be safely stopped once the serum concentration

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reaches 10 µg/mL. The phenobarbital dose can be decreased more rapidly in patients that develop severe hepatotoxicity from phenobarbital. In this situation, the dose can be reduced by as much as 25% a week, or in rare instances stopped abruptly.

Andrew Isaacs, DVM, DACVIM
83rd AAHA Conf, 04:16

A rule-out for IBD

Rule out a food-responsive enteropathy (FRE) by instituting a dietary modification trial. The author prefers using a novel protein diet over a hydrolyzed diet. If possible a low-fat diet is prescribed because of fat's ability to cause osmotic diarrhea if it is unabsorbed from the lumen. More than 60% of cats with chronic enteropathy signs show improvement with diet modification, and don't need corticosteroids. Dogs with classical FRE tend to be younger, large-breed dogs and can respond well to diet modification therapy. Even though the author prefers diet trials to last 4-6 weeks, if there is no improvement after two weeks, it is likely the animal will not respond. If the patient isn't responding to a hydrolyzed diet, it is still possible to have an FRE that is reactive to the underlying protein source in the hydrolyzed diet, and a novel protein source must be chosen. At this point, if the owner is tired of the diarrhea, it is appropriate to continue the diet trial.

Craig Ruaux, BVSc (Hons), PhD, MACVSc, DACVIM
DVM News Mag Supp, Dec 2017

Diuretics in feline heart disease

There is expert consensus in humans, dogs and cats that loop diuretics are efficacious therapy for fluid retention accompanying heart failure. ***Furosemide*** is always ***indicated for any cat*** with suspected or ***confirmed heart failure***. Doses range from 1-4 mg/kg, IV, q1-8h for acute, life-threatening heart failure and 1-4 mg/kg, PO, q8-24h for chronic, at-home treatment. For cats with heart failure that is refractory to furosemide therapy, spironolactone and hydrochlorothiazide can be beneficial when given in addition to furosemide, typically at doses of 0.5-2 mg/kg, PO, q12-24h. Another option is to replace furosemide with torasemide, which is also a loop diuretic, but with additional actions. Torasemide is typically started at a dose of 1/10th to 1/13th the total daily dose of furosemide that the cat is already receiving, and given once daily. Loop diuretics are also appropriate to treat mild pleural (or abdominal) effusions. Thoracocentesis (and where appropriate abdominocentesis) should be considered concurrently for severe effusions.

Simon Dennis, BVetMed, MVM, DECVIM
2017 Atl Coast Conf, Oct 2017

Opioid induced hyperalgesia

Opioid induced hyperalgesia (OIH) is described in research models of pain and in human patients, but is poorly understood and rarely discussed in the veterinary literature. OIH is a ***paradoxical response to opioid agonists*** where the perception of pain increases rather than decreases. It should be suspected when increasing doses of an opioid either fail to relieve the patient's pain or make it worse. This author has observed this phenomenon when fentanyl infusions have been the only analgesic used for prolonged periods of time (>24 hours). It is rarely seen with methadone (which has NMDA receptor antagonist activity) or when ketamine is coadministered.

Sheilah Robertson, BVMS (Hons), DACVAA, DACAW, CVA
Penn Veterinary Conf, 2017

Avoiding hypoglycemia in diabetics

The dose of insulin prescribed for a newly diagnosed diabetic patient should be conservative (<2 U per cat, BID and <0.5 U/kg for dogs). One large survey found that the majority of dogs presented for hypoglycemia were receiving insulin injections of greater than 1.5 U/kg. Overdosing, double-dosing, and persistent dosing in the face of anorexia or reduced food intake are common iatrogenic causes of hypoglycemia. To avoid hypoglycemia in diabetic patients, both written and verbal instructions should be given the owner. Common early warning signs of hypoglycemia, such as nervousness and hyperexcitability in dogs, should be communicated to the owner. The home remedy for a hypoglycemic crisis involves the application of glucose (i.e., Karo syrup) to the animal's mucous membranes; however, there is ***no evidence*** to suggest that this ***raises blood glucose concentrations significantly***. If possible, the animal should be fed and transported to a veterinary facility for more aggressive intravenous glucose therapy. Prevention of hypoglycemia via client education is the best therapy.

Debra S. Greco, DVM, PhD, DACVIM
Emerald Coast Vet Conf, 07:17

Psychogenic alopecia—over-diagnosed

Overgrooming is one of the most frustrating feline skin disorders we see. For many years, cats which plucked out their own hair were considered neurotic and were given a diagnosis of psychogenic alopecia. These cats were treated with a variety of psychoactive drugs, which either failed to stop the overgrooming or worked only temporarily. Steve Waisglass, a veterinary dermatologist, partnered with Gary Landsberg, a veterinary behaviorist, to study cats with self-induced alopecia Out of 21 cats, only 2 (10%) were found to have true psychogenic alopecia with no associated medical condition. The other 19 cats had flea allergy, food allergy, atopy, or infectious inflammatory skin diseases. Interestingly, 6/21 cats had no significant histologic findings, but 4 out those 6 still had food allergy and/or atopy. This paper was very instructive because it documented the fact that ***psychogenic alopecia was not as common as previously thought***. It also documented the fact that cats can have allergic skin disease without having obvious inflammation in their biopsies. A diagnosis of psychogenic alopecia should therefore only be made after inflammatory and/or pruritic skin conditions are ruled out.

Valerie A. Fadok, DVM, PhD, DACVD
Atl Coast Vet Conf, 10:16

Pain management in the geriatric

In older pets, this author frequently prescribes a steroid (dexamethasone has mildly fewer side effects than prednisone or prednisolone) and progress with shortened "washouts" to a NSAID or other modality (low level light therapy, acetaminophen in dogs only (toxic in cats), and attempt to get the patient to lowest frequency/dose necessary to control clinical signs within a reasonable time period. Prednisone or dexamethasone administered at ***lower than standard published doses*** avoids much of the "steroid pu/pp/pd side effects and can have amazing effects in chronic pain and inflammation from appetite excitation, to anti-nausea effects, to euphoria and finally to relieving inflammation without the downfalls of non-steroidal cox and lox inhibition.

Andrea L. Looney, DVM, DACVAA, DACVSMR
N Amer Vet Conf, 02:17

Sarcomas, when referral is not possible

Soft tissue sarcomas are common tumors of the extremities of dogs. Unfortunately, the location, size and invasive behavior of these tumors makes complete surgical excision difficult to impossible. Most tumors are low to intermediate grade with a low chance of metastasis. With local control, dogs can survive this cancer. Unfortunately, local control is difficult and often requires radiation therapy or amputation to achieve long term control or a cure. These options should always be discussed first as they are the standard of care. However, when radiation or amputation are not possible, metronomic oral chemotherapy can be used to help delay the local recurrence of the mass. Using a combination of an NSAID, doxycycline and alkylating agent the recurrence rate was extended from 250 days to 400 days. Currently the author recommends an NSAID of your choice at the standard chronic dose for arthritis management, doxycycline at 5 mg/kg, PO once daily, and chlorambucil at 4 mg/m^2, once daily. Monitor a CBC/Chemistry panel and physical exam monthly for 3 months and then once every 3 months indefinitely. Continue this therapy indefinitely or until disease recurrence.

Kathryn Taylor, DVM, MS, DACVIM
S.E. Vet Conf, 06:16

Response to obese patient's owner

"Eh. I don't really care if he's fat. He's happy." Here's how the author replies to this comment: Yes, there might be more of him to love, but you'll have less time to love him. A landmark lifetime study of Labrador Retrievers showed that dogs live almost two years less if they're overweight. In addition, tell pet owners that overweight dogs get disease earlier than thin dogs, which costs them more in vet bills and causes unnecessary pain and suffering. This line really hits home; they don't want to see their pets suffer, and they don't want expensive veterinary visits. A caveat: If a client is not ready to address the pet's weight problem, don't push it. You can actually compound the problem or lose the client's trust completely. Just give the client the information and let it be.

Deborah Linder, DVM, MS, DACVN
DVM News Mag, Mar 2018

Determining fetal viability

Diagnostic imaging is often useful to aid in determination of fetal age if the owner is unaware of the breeding or due dates. A fetus should be considered full term when the caudal vertebrae, fibula, calcaneus, bones of the feet are visible radiographically. Visible teeth are the final radiographic sign of a full term fetus and are present at approximately day 61 of gestation. Beyond estimating fetal age, radiography can be used to evaluate fetal viability. Signs of fetal death include gas present in the fetus or placenta, collapse of the spinal column, overlapping of skull bones or loss of fetal flexion. Orthogonal radiographs should be evaluated for potential causes of dystocia including bony pelvic anatomy and fetal positioning. Fetal viability may be more reliably evaluated with ultrasonography. Lack of a visible heartbeat in a full term fetus is an indication of fetal death. Other ultrasound findings consistent with fetal death include: decreased placental fluid volume, increased fetal echogenicity and increased gas in the fetal stomach. Once viability is determined each fetus should be evaluated for evidence of distress. Normal fetal heart rates are greater than 180 bpm while rates between 150-170 indicate moderate distress and less than 150 bpm indicate severe distress. If a low fetal heart rate is identified it should be monitored for 30-60 seconds as fetal heart rates will be transiently depressed during uterine contraction.

Nathan Peterson, DVM, DACVECC
CVC San Diego, 12:16

Considering protein in the diet

Specific essential amino acids (not dietary protein) are required by each species to support growth, maintenance, gestation, and lactation and to avoid disease. After consumption and digestion of dietary proteins, animals use the essential amino acids and synthesize nonessential amino acids for serum proteins, muscles, and other necessary nitrogenous compounds the body requires. The crude protein number on the pet food label does not provide any information regarding concentration, ratio, or digestibility of the essential amino acids in the product. The nutritional adequacy of a product (and its protein) can be evaluated through standardized animal feeding trials, which measure protein bioavailability. The Association of American Feed Control Officials (AAFCO) is often cited for its published feeding protocols. A food fed for 6 months as the sole diet to adult dogs (and with certain biologic criteria met) is allowed the claim of "***nutritionally complete and balanced*** as substantiated by feeding studies." Identifying this statement on a product label should provide pet owners additional assurances regarding overall product quality, as it verifies through standardized testing that the amino acid content was bioavailable and adequate for a healthy pet outcome. None of these assurances can be

made through the crude protein number.

Rebecca Remillard, PhD, DVM and Michelle Evason, DVM, BSc
NAVC Clin Brf, Feb 2018

Prescribing nutraceuticals

Investing in an annual subscription (approx. $35/year) to the web-based business ConsumerLab.com can be useful for those who want to be sure that the dietary supplements they are prescribing actually contain what's claimed on the label. In addition to multi-page reports that examine dozens of products (most for humans but some for animals, too), this independent, third-party organization provides weekly warnings about different dietary supplements that the FDA is monitoring (or has recalled). The bottom-line with using nutraceuticals is not just one of caution, but also preparation and documentation. For any given supplement, one could claim that the 'jury is out' on whether it works in veterinary patients; we simply need more prospective, randomized, controlled trials with larger numbers of subjects. Although many veterinarians who are using (and selling) nutraceuticals claim that they are generally safe, we don't have the same assurances with supplements that we do with labeled commercial pet food that has been through a feeding trial.

Sarah K. Abood, DVM, PhD
AAHA Conf, 04:17

The truth about corn in pet foods

Corn has been used in pet foods for decades, but recently some consumers have come to believe that corn is an undesirable and inferior ingredient—corn Is a filler and Is poorly digestible. Unfortunately, most consumers do not understand what the definition of a filler is. A filler is something put into food that has no nutritional or beneficial value, and corn definitely does not fit that definition. Corn is a source of linoleic acid, which is an essential fatty acid required in the diet of both dogs and cats. It is also a source of vitamin E, which is an essential fat-soluble vitamin and is also an antioxidant. Corn is also a good source of essential amino acids required in the diet of both dogs and cats. It is limiting in lysine and does not contain taurine, so it could not be the sole source of protein in the diet of dogs and cats, but it provides many of the essential amino acids that both these species require. When corn is properly processed (ground and cooked), it is very digestible in both dogs and cats. In fact, in one study, corn gluten meal was shown to be more digestible than either fresh poultry or fresh beef.

Sherry Lynn Sanderson, BS, DVM, PhD, DACVIM, DACVN
N Amer Vet Conf, 01:16

Risks/rewards of neutering male dogs

Benefits—1) Eliminates the small risk (probably <1%) of mortality associated with testicular cancer. 2) Reduces the risk of non-cancerous prostate disorders (benign prostatic hypertrophy and prostatitis). 3) Reduces the risk of perianal fistulas. 4) May reduce the risk of diabetes (data inconclusive). Risks—1) If done before 1 year of age, significantly increases the risk of osteosarcoma by 1.3 to 2.0 times; this is a common cancer in medium/large and larger breeds with substantial morbidity. 2) Increases the risk of splenic hemangiosarcoma; risk numbers vary depending on the study but ranges from no increased risk to 5.0 increased risk for males neutered >12 months of age. 3) Increases the risk of lymphoma - Golden Retrievers were at 3.0 times increased risk when neutered <12 months age. 4) Triples the risk of hypothyroidism. 5) May increase the risk of progressive geriatric cognitive impairment. 6) Triples the risk of obesity, a common health problem in dogs with many associated health problems. 7) Increases the small risk (<0.6%) of prostate cancer by 2.4 to 4.3 times. 8) Doubles the small risk (<1%) of urinary tract cancers. 9) Increases the risk of orthopedic disorders: CCL rupture is more prevalent in neutered males. 10) Increases the risk of adverse reactions to vaccinations.

Bess J. Pierce, DVM, DACVIM, DACVSMR
Emerald Coast Vet Conf, 07:17

Pre-anesthesia fasting revisited

The overnight, or *nil per os* after midnight, standard is commonly used to determine the duration of withholding food for presurgical procedures; however, evidence supporting this standard is lacking. This randomized, prospective study used 120 healthy dogs undergoing elective surgery. Half received their last meal 10 hours before premedication for anesthesia; the other half received their meal 3 hours before surgery. An esophageal pH electrode was used to assess for gastroesophageal reflux (GER) during the surgery. Results showed a 20% rate of GER with the 10-hour fast and a 5% rate with the 3-hourfast. In >80% of all cases, GER occurred within the first 30 minutes of anesthesia and lasted a mean of 37 minutes. GER can lead to clinically significant esophagitis with subsequent regurgitation in addition to potential esophageal stricture formation. The authors of this study previously showed that the longer 10-hour fast resulted in a lower, more acidic stomach content pH and did not change the volume of stomach contents at the time of anesthesia. A lower gastric pH is known to decrease the lower esophageal sphincter pressure to allow more reflux, thus a shortened fasting time seems prudent. A shortened fasting time may lead to lower risk for postoperative regurgitation and esophageal stricture.

I. Savvas et al.
NAVC Clin Brf, 15:3

Four things you should know before you go

*Improved efficacy when NSAIDs given chronically
*Furosemide always indicated in feline heart failure
*Karo syrup does not raise blood sugar significantly
*We are 37 years old now

Secrets of cats revealed

Secret #1: Cats generally resist restraint; and therefore, the less restraint is generally the best restraint. When cats close their eyes (or we close them), they instantly become invisible. ***Secret #2:*** Cats are made of steel. Indeed, unlike what many veterinarians are taught, cats generally do extraordinarily well in adversity and generally do well with cancer therapy. When comparing dogs and cats that are treated with chemotherapy and radiation therapy, cats generally do far better than dogs. ***Secret #3:*** Evil cats live forever. This is subjectively true, as the meanest cats tend to be those that are more aggressive, and therefore more willing to fight to stay alive, regardless of the threat in front of them. ***Secret #4:*** Clients are not truthful if they say they give all the medications. Indeed, the fewer medications the client is to give, the more likely they are to administer it. Therefore, prescribing medications with the least number of administrations per day will result in the highest compliance rate. Studies have shown that only 30% of all the medications given to cats are given as prescribed. ***Secret #5:*** Cats with metastasis rarely cough until the end-stage of the disease, whereas cats with reactive airway disease frequently cough very early on in the course of the disease. ***Secret #6:*** Size of the feline mammary tumors is prognostic. ***Secret #7:*** A dyspneic cat is a cat with severe intrathoracic or upper airway pathology. ***Secret #8:*** Chest radiographs are often the best tool for diagnosing respiratory abnormalities. However, because cats present late in the course of their disease, extreme caution should be taken when taking chest radiographs in the cat. ***Secret #9:*** A cat with severe dyspnea plus normal chest radiographs almost always is associated with a functional airway disease, such as asthma, thromboemboli, etc. Feline asthma is frequently associated with radiographic "doughnuts." ***Secret #10:*** Collapse of the right middle lung lobe is a common sequela to chronic lung disease and often results in the inability to obtain a normal-looking chest radiograph on a VD because the heart shifts towards the side of the collapsed lung lobe.

Greg Ogilvie, DVM, DACVIM, ECVIM
3rd Fel World Vet Conf, 10:15

Renewed interest in silver dressings

Silver dressings have been used with increasing frequency in both human and veterinary medicine. The proposed benefits of silver-impregnated dressings are: 1) Reduced costs associated with frequent bandage changes. 2) Improved patient comfort as a consequence of fewer dressing changes. 3) Reduced requirement for sedation or anesthesia for dressing change. 4) Improved patient nutrition. 5) Lack of development of antimicrobial resistance. Ionic silver exerts its antimicrobial effects by limiting the production of cellular energy by direct interference with electron transport system of the micro-organism. Although silver has been in use in wound management (e.g. silver sulfadiazine) for hundreds of years, it has not been until recently that the nanocrystalline form has been used. The major advantage of the nanocrystalline silver-impregnated dressings is their ability to maintain a slower, more gradual release of silver ions, which are responsible for the bactericidal properties. Currently there is a lack of primary literature on the use of nanocrystalline silver as a primary wound dressing in dogs but there are many publications on its use in human medicine, especially in burn victims. This author has used the aforementioned wound dressing in a number of dogs and has found the ***dressing to be effective and useful*** in regards to limiting the frequency of bandage changes and in providing adequate antimicrobial control during the early phases of wound healing. A number of silver-impregnated dressings are available in the veterinary market. One example is Acticoat (www.smith-nephew.com), which is available in two main forms, 3- and 7-day. As the names suggest, the 3-day version maintains antimicrobial efficacy for 3 days and the 7-day version, for 7 days.

J. Brad Case, DVM, MS, DACVS
N Amer Vet Conf, 02:17

What to do about over-due vaccinations

Studies focused on dogs that are overdue for routine vaccination have not been published. The following recommendations represent expert opinion and are intended to provide a practical approach to immunizing dogs when conventional vaccination guidelines have not been followed: **Overdue during the initial vaccine series:** While most practices administer the initial core vaccine series to young dogs at intervals of 3 to 4 weeks, dogs exceeding a 6-week interval between any of the initial doses should receive 2 additional doses, 3 to 4 weeks apart. The same is true during the initial 2-dose series recommended for dogs receiving non-core vaccines. If the interval between doses exceeds 6 weeks, 2 additional doses, 3 to 4 weeks apart should be administered. **Overdue for CORE vaccine booster:** administer a single dose of a combination core vaccine *regardless of the number of years that have lapsed.* **Overdue for RABIES booster:** Many states follow recommendations published in the *2016 Rabies Compendium* that states: administer a single dose, after which the dog will be considered *immediately* immunized. NOTE: The *Rabies Compendium,* as published by the Natl Assoc, of State Public Health Veterinarians, Inc, is NOT a legal document. Veterinarians must be familiar with rabies immunization requirements and laws within the state, local jurisdiction, or Province in which they practice. **Overdue for Leptospirosis, Lyme and/or parenteral Bordetella booster:** dogs that are within 2 years of a previous dose may receive a single dose. Dogs exceeding a 2-year interval should re-start the initial 2-dose series. **Overdue for intranasal or intraoral Bordetella booster:** administer a single dose *regardless of the number of years that have lapsed.* **Overdue for Canine Influenza Virus booster:** dogs that are within 3 years of a previous dose may receive a single dose. Dogs exceeding a 3-year interval should re-start the initial 2-dose series.

Richard B. ford, DVM, MS, DACVIM
125th SD VMA Conf, 08:16