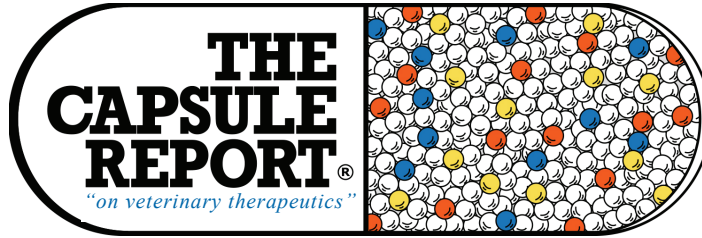


“Pearls”  
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### Rational administration of gastroprotectants

Concerns have been raised that, as in human patients, **acid suppressants are being overprescribed and misused** in canine and feline patients. Along with worries that gastric acid suppressants can cause changes in drug absorption and malabsorption of certain nutrients, there is some evidence that they can result in an increased risk of enteric infections, such as with *Salmonella* and *Campylobacter*, because of acid suppression removing an important physiologic barrier to these organisms. There is increasing evidence that these drugs are not benign. A panel of five veterinarians published a consensus statement on rational administration of gastroprotectants. It is hoped that this statement will facilitate improved stewardship in the use of gastric protectants in our profession and will also help veterinarians recognize the optimal methods for administering these drugs to maximize their benefit while minimizing adverse effects. According to the consensus statement, proton pump inhibitors should be considered the standard of care for medical treatment of gastroduodenal ulceration in dogs and cats.

Dr. Peter H. Kook et al.  
JAVMA, Jun 15, 2019

### Flank alopecia

Treatment is usually not required, as the condition is cosmetic only and frequently resolves on its own within a few months. However, some dogs may fail to regrow some or all of their hair. Melatonin (3–12 mg, BID-TID) may speed resolution in some cases, although response may be difficult to distinguish from spontaneous resolution. If recurrence occurs on a predictable basis, “**pre-treatment**” of the dog with melatonin 4–6 weeks prior to the expected onset may prevent or minimize subsequent episodes.

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

### Ace-Inhibitors and CKD

Indications for the use of Ace-Inhibitors (ACEI) in dogs and cats with CKD include hypertension and/or proteinuria. The initial recommended dose for ACEI is: 0.5 mg/kg, PO, once daily. Treatment goals are an indirect blood pressure <160 mm Hg and/or >50% reduction in baseline UP/C. The initial ACEI dose can be doubled if the desired outcome is not achieved. Doses greater than 0.5 mg/kg, twice daily may result in further reductions in proteinuria; however there are no controlled studies proving these higher doses are beneficial. Questions often arise regarding the use of Benazepril vs. Enalapril. Most of the canine studies have been accomplished with enalapril whereas most of the feline studies have used benazepril. There are differences in excretion; enalaprilat (the active metabolite of enalapril) is excreted via the kidney whereas there is hepatic metabolism of benazeprilat. Use of ACEI is likely associated with reduced efficacy and increased risk of adverse drug events as azotemia increases. Increased monitoring should be employed in dogs and cats with serum creatinine concentrations greater than 3.0 mg/dl. Use of ACEI in dogs and cats with serum creatinine concentrations greater than 5.0 mg/dl is usually not recommended. In addition, use of renal diets with reduced quantity/high quality protein may have an additive effect on proteinuria when used with ACEI

Gregory F. Grauer, DVM, MS, DACVIM  
90<sup>th</sup> FL VMA Conf, May 2019

### Treatment of acute Lyme disease

This is a very common question, or set of questions. Do you treat all Lyme positive dogs? Lyme positive dogs

# The Capsule Report.

with symptoms only? Lyme positive dogs of a certain signalment regardless? This author's treatment thoughts are as follows: \* treat Lyme-positive dogs with clinical signs. \* does not (commonly) treat Lyme-positive ELISA dogs that are asymptomatic.

For these patients, consider a C6 Peptide test, and potentially treat with a high titer value. If a patient warrants therapy, what to treat them with? Amoxicillin and doxycycline are both reasonable options. The author chooses doxycycline based on personal experience – 10 mg/kg, PO, SID (or 5 mg/kg, PO, BID) for 4 to 6 weeks. Doxycycline will also likely be better at treating co-infections.

*Garret Pachtinger, DVM, DACVECC  
Fetch San Diego, 12:17*

## Degenerative valve disease in the dog

Stage B dogs by definition have a cardiac murmur. For staging purposes, thoracic radiographs, systemic blood pressure and a minimum database (creatinine, urine SG, PCV/TS) is recommended. If the heart size is normal on thoracic radiographs, the dog is considered to be in stage B1 (no cardiac remodeling). No cardiac medications have been shown to alter the progression of disease at this stage of disease. However, regular monitoring for cardiac enlargement with thoracic radiographs is recommended every 12 months. If heart enlargement is detected, the dog is considered to be in stage B2. The EPIC trial results demonstrated that **pimobendan therapy resulted in delayed development of congestive heart failure** when B2 dogs were started on pimobendan. Based on that trial, B2 criteria included an LA/AO of >1.6 and an LVIDD normalized to body weight >1.7. Additional ancillary recommendations for B2 dogs include: supplementation with an N-3 fatty acid supplement and counseling the owner to keep a log of the dog's resting or sleeping respiratory rate.

*Meg M. Sleeper VMD, DACVIM  
AVMA Conf, 07:18*

## Acepromazine myths

1) Acepromazine causes seizures. This myth has been proven wrong by several sources. Acepromazine does not cause seizures and may even be protective against seizures. 2) Acepromazine causes hypotension. Acepromazine causes vasodilation and can cause hypotension if used at high dosages or used in patients that are already prone to hypotension (e.g., septic or dehydrated patients), but it does not cause hypotension when used at clinically appropriate dosages in clinically appropriate patients. 3) Acepromazine should never be used in patients with heart disease. Actually, low-dose acepromazine can decrease afterload through vasodilation, which decreases the amount of cardiac work needed to eject blood. So, a light dose of ace might be a good choice – unless the patient is hypotensive.

*Tamara Grubb, DVM, PhD, DACVAA  
Atlantic Coast Vet Conf, 10:17*

## Mammary tumors in the cat

Surgery is the treatment of choice. **Complete unilateral mastectomy** is recommended, as it increases disease free interval. However, it does not increase survival time and there is some controversy about the benefit of this large surgery. With tumors on both chains, bilateral complete mastectomy (staged 2 weeks apart) is recommended. In addition, an argument can be made for bilateral complete mastectomy for unilateral masses due to the cross-over of lymphatic drainage. Simultaneous complete bilateral mastectomy can be performed but may be associated with increased complication risk. If the cat is intact, ovariohysterectomy hasn't been shown to decrease risk of mammary tumors in the future. Chemotherapy is recommended given a high risk of recurrence or metastases, but there is little published data showing efficacy. Doxorubicin is currently the treatment of choice.

*Laura Selmic, BVetMed, MPH, DACVS  
90<sup>th</sup> FL VMA Conf, May 2019*

## Management of congestive heart failure (CHF)

The **cornerstones of the management** of acute CHF in dogs can be remembered with the mnemonic, "Someone Please Obtain Furosemide" where S = sedation, typically butorphanol 0.1-0.4 mg/kg, IM/IV, as needed; P = pimobendan 0.25-0.3 mg/kg, PO, q8-h12 (the author prefers q8h dosing while hospitalized); O = oxygen, provide supplemental oxygen; and F = furosemide 2-4 mg/kg, IV initially. Some clinicians may also utilize transdermal nitroglycerin ointment (1/4-1 inch, depending on the size of the dog, applied to the inside of the ear pinna/unhaired skin) as a venodilator to help reduce preload/congestion. Efficacy data of nitroglycerin is lacking but it appears to be well tolerated. It should be considered ideal to administer furosemide intravenously if possible due to addition benefits with this route (quicker onset of action and adjunct vasodilatory properties). Following this initial therapy, dogs should be permitted to rest in an oxygen-enriched environment, which allows time for the aforementioned drugs especially furosemide to take effect. Respiratory rate and effort should be monitored closely (e.g., every 30-60 min) and throughout the duration of hospitalization, and furosemide (typically 2 mg/kg, IV) can be re-administered every hour until breathing improves. Once breathing rate and effort begins to improve, the frequency of furosemide administration should be reduced to, for example, every 4-8 hours with a "rescue" 2 mg/kg IV bolus given as needed.

*Lance C. Visser, DVM, MS, DACVIM  
Int VECCS Conf, Sep, 2018*

## Using a Wood's lamp correctly

An electric plug in lamp with built in magnification should be used. When the author compared this lamp to other plug in lamps and battery-operated lamps, the battery-operated lamps were inferior and did not produce a strong beam of light and there were more false positives. In an instructional setting, students identified

# The Capsule Report®

all positive samples when a plug in lamp with magnification was used. A key comment in the older human and veterinary literature is to hold the lamp very close to the skin to minimize fluorescence of dust, etc. Move the lamp slowly over the cat and examine the entire cat but concentrate on areas that have lesions and areas where infection often starts first (face, ears, etc.). Discussions with the manufacturer has revealed that the lamp does not need to warm up before use; humans need to light adapt to the dark. It is very helpful to use a 'positive' control for reference and for training. This can be made using clear sticky tape. Press the tape over an area of strong fluorescence and then mount it on a glass slide. The edges can be sealed with clear finger nail polish. Fluorescence will last for years; the author has one 18-year-old specimen.

*Karen Moriello, DVM, DACVD  
AAFP Fall Conf, 10:17*

## Effects of long-term phenylpropanolamine (PPA)

The dog in this report was treated with PPA for almost 8.5 years. To the authors' knowledge, the present report was the first to describe severe cardiac structural changes (myocardial hypertrophy) and arrhythmias associated with chronic PPA administration in a dog. Given the authors' experience with this dog, they recommend that, for patients receiving PPA on a long-term basis, the dosing schedule should be reviewed and blood pressure should be monitored frequently. Such patients should also undergo periodic echocardiographic evaluation to monitor for myocardial hypertrophy. The use of other adrenergic agonists should also be avoided for patients receiving PPA.

*Kayla R. Hanson, DVM and Wendy A. Ware, DVM  
JAVMA, 253:11*

## Addison's disease

Findings on examination are variable and tend to be much more dramatic in dogs with classic HOC, but most dogs are obviously unwell and depressed. Dehydration may be severe in dogs with aldosterone deficiency and dogs may present with overt signs of ineffective circulating volume, such as prolonged capillary refill time, weak pulses and cold extremities. Unlike the textbook 'shock' patient, dogs with HOC may be bradycardic, due to hyperkalemia. The heart rate is often irregular also. Any time a patient is clearly systemically ill with an irregular bradycardia, we should assume it is hyperkalemic and start immediate efforts to address this. **Severely hyperkalemic animals may die within minutes of presentation** and time cannot be wasted if this is suggested on examination. It is reasonable to start fluid therapy and other strategies to address hyperkalemia before laboratory confirmation, as there is limited time before the heart stops.

*Audrey K. Cook, BVM&S, MRCVS, DACVIM, DECVIM  
North American Vet Conf, 02:17*

## A tool kit for feline diabetes

To help veterinary professionals make the best

diagnostic and treatment decisions for their feline patients, the American Association of Feline Practitioners (AAFP) has released a Diabetes Educational Toolkit. This digital resource is intended to help veterinary professionals access and gather information quickly from clients, according to an AAFP release. The toolkit focuses on diagnosis, treatment, remission strategy, troubleshooting and frequently asked questions. Each section of the toolkit can be downloaded and printed for easy accessibility in the practice. Access the toolkit at [catvets.com/diabetes-toolkit](http://catvets.com/diabetes-toolkit).

*DVM News Magazine, Jul 2019*

## Chronic nasal discharge in the cat

Symptomatic therapy may also be an important management component of idiopathic chronic rhinitis. Most techniques are designed to facilitate nasal mucociliary clearance. Commercially available pediatric saline drops can be directly instilled in the nasal cavity to keep nasal secretions fluid and enhance clearance to the nasopharynx. Owners can instill 1 drop in each nostril once daily, using a dropper or syringe. Topical decongestants are vasoconstrictors that act on the capacitance vessels in the turbinates. These can shrink the nasal mucosa, open the ostia to the frontal sinuses, and facilitate sinus and nasal cavity drainage. Phenylephrine (0.125%) or oxymetazoline (diluted to 0.025%) can be administered at a rate of 1 drop in each nostril once daily. Topical decongestants should not be used for more than three consecutive days, as this can cause a rebound vasodilation and nasal congestion.

*Stephan A. Carey, DVM, PhD, DACVIM  
MI Vet conf, 01:18*

## IBD and probiotics

Probiotics and prebiotics may benefit dogs and cats with gastrointestinal disease, including IBD. Probiotics are live bacterial cultures (e.g., Lactobacilli, Bifidobacteria spp) that confer health benefits to the host. Multiple mechanisms of action have been suggested to explain the protective effects of probiotics in intestinal inflammation, including (1) inhibition of pathogenic enteric bacteria, (2) improved epithelial/mucosal barrier function, and (3) altered immunoregulation via down-regulated pro-inflammatory cytokine secretion. These products **must be administered continuously** for their effects to be realized. Prebiotics are complex carbohydrates, such as fructo-oligosaccharides (FOS), that promote the growth of beneficial bacterial species. Prebiotics promote the establishment of beneficial bacteria (probiotics). Probiotic + prebiotic = symbiotic. Pro/prebiotic trials for treatment of canine or feline IBD are sparse.

*Albert E. Jergens, DVM, PhD, DACVIM  
NY St VMA Conf, 05:18*

## Calcitriol in CKD

Calcitriol is a drug that is recommended frequently in

renal patients. It's primary indication for use is following diagnosis of renal secondary hyperparathyroidism. In these cases, the use of calcitriol, with regulated serum phosphorus levels, may benefit the patient in the short and long term. Low-dose calcitriol supplementation is recommended by some experts as a means of **improving quality of life**, however, more detailed studies on the benefits and risk of this approach are warranted.

*Kelly St. Denis, DVM, DABVP  
CVC Kansas city, 08:17*

### Exotic companion mammals (ECM), ER situations

In dogs and cats, rarely is anorexia and diarrhea given priority status in terms of ER cases; however for herbivore ECMs these are considered more serious clinical cases. ECMs such as rabbits, guinea pigs, etc., require a specialized high-fiber herbivore diet of predominately grass/hay to ensure their digestive tract maintains homeostasis. Any disruptions in their diet consumption, sudden diet changes, low-fiber or high-carbohydrate food stuffs or any underlying disease process, especially if associated with stress or pain, rapidly impacts the normal motility of the GI tract of these species. **Diarrhea is considered a medical emergency** in these species and requires aggressive stabilization and management. Even anorexia of 12-24 hours can lead to relatively quick decompensation in many herbivore ECMs. Any abnormalities in fecal output in terms of changes in size, shape, color, consistency or frequency should be documented and ECM pet owners encouraged to have their pet evaluated urgently on ER. Herbivore species such as rabbits, in health, produce two very different types of feces, with their typical feces appearing very round and green (essentially having the appearance of hay marbles) and their specialized feces, that they ingest on a daily basis, known as cecotrophs, having a more elliptical, shiny appearance (due to their mucus coating). Uneaten cecotrophs frequently become adhered to the perineal region in anorectic rabbits and are often mistaken for diarrhea, given their soft, brown, sticky appearance.

*Juliet Gladden, DVM, DACVECC  
23<sup>rd</sup> Int VECCS Conf, 09:17*

### Assessing tooth vitality

Dental radiography can be used to evaluate tooth structure anomalies and root pathology and to assess pulp canal size. Assessment of pulp canal size can be particularly useful for diagnosing nonvital teeth. A **common misconception** is that after a tooth dies, the canal becomes uniformly wider. In reality, the canal appears wider as compared with other canals because it stopped producing dentin at the time it became nonvital. Vital teeth with intact pulp have odontoblasts that will continue to produce secondary dentin, causing the pulp chamber to continue to narrow. Presence of periapical lucencies and root resorption on dental radiographs are other indicators that a tooth is nonvital. If the insult to the tooth happened recently, the pulp chamber size will be the same as the contralateral tooth. Repeat radiographs in 6 months may

show that the pulp chambers of vital teeth will continue to narrow and the nonvital tooth pulp chamber will appear larger. Of note, it can be difficult to evaluate subtle changes in canal size in mature dogs with narrow canals.

*Kendall Taney, DVM, DAVDC, FAVD  
Clinician's Brief, Jul 2019*

### Dangers of home-prepared diets

The veterinary literature contains numerous examples of adverse health outcomes associated with improperly formulated home-prepared diets, and pet owners are advised to scrutinize the formulators of home-prepared diets and commercial pet foods with the same standards. Thus, it is recommended that all dogs fed a home-prepared diet, regardless of ingredients, be **considered high-risk patients** and be examined by a veterinarian at least bi-annually to monitor health and wellness. Veterinarians can quickly assess the suitability of a home-prepared diet using resources such as checklists to identify likely nutritional inadequacies. When it appears that a diet is unlikely to meet the nutritional requirements of the pet to which it is being fed, veterinarians are encouraged to advise pet owners to transition their pets to a suitable commercial diet, which may be determined by use of World Small Animal Veterinary Association recommendations. Alternatively, pet owners may be referred to a veterinarian who is board certified in veterinary nutrition for evaluation of the diet.

*Sara A.S. Dodd, BVSc, MSc et al.  
JAVMA, 253:11*

### Using dental radiographs to protect yourself

Dental radiographs are important when it comes to any cases of client complaints, medical board intervention, PLIT, malpractice, etc. This author resents the word malpractice as motivation for anything as everyone is simply doing the best they can with good intentions. However, as the level of care and accessibility of great equipment has risen, so have local veterinary medical review boards expectations. The several cases where this author has been involved (to help local practitioners to regain their license or remove restrictions after having to defend a complaint to the board) have all stemmed from one common problem... **retained root tips**. With dental radiographs, you will catch your own mistakes and hopefully prevent them from snowballing into a larger concern. Even if you know you may cause more trauma than good when retrieving a retained root (and they all should be retrieved), at least you can document their presence and can make recommendations to have them removed at a later date or with a veterinary dentist.

*Donnell Hansen, DVM, DACVD  
127<sup>th</sup> SD VMA Conf, 08:18*

### Vitamin C and sepsis

While vitamin C appears to be a "silver bullet" in cases of human sepsis, the utility for the treatment of our canine patients with sepsis remains unknown, and further studies are certainly needed. Vitamin C has no known side effects, and so **empiric use appears to pose no harm**.

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As such, in the author's opinion, administration to critically ill patients may be utilized as an adjunctive therapy, especially when all other reasonable treatment options have been utilized to no effect.

*Jennifer Mahon, DVM, DACVECC  
24<sup>th</sup> Int VECCS, 09:18*

### Keep the noise down in the OR

The operating room (OR) can be loud, with noise arising from sources such as power tools, monitoring equipment, forced air blankets, music, human traffic, and conversation. Nonporous surfaces necessary for hygiene in OR environments can prolong noises generated from other sources because sound waves are reflected. Increased noise in the OR has been associated with detrimental effects on communication, surgeon focus, veterinary staff stress, and incidence of complications and infections. The World Health Organization has noted that consistent recognition of speech in relaxed conversation is possible at noise levels of 45 dBA and subsequently recommends that workplace noise levels do not exceed 55 dBA. High background noise can be stressful and has been correlated with higher endogenous cortisol levels in surgeons. These results demonstrated decibel levels that substantially exceeded World Health Organization recommendations. To avoid risking miscommunication, verbal communication in this environment would need to exceed normal speaking volume. Although this study did not evaluate effects of high noise levels on outcomes such as complication rates or stress levels, the decibel levels measured were high enough to affect veterinary staff stress, based on results of a previous study. In addition, music was associated with significantly higher noise levels, representing a controllable, if controversial, source of noise.

*Laura L. Nelson, DVM, MS, DACVS  
Clinician's Brief, Jun 2019*

### Feline injection site sarcoma (FISS)

Despite extensive research, there is no definitive proof of the pathogenesis of FISS. The most widely accepted hypothesis suggests that a chronic inflammatory reaction at the site of an injection acts as a trigger for subsequent malignant transformation. In this context, adjuvanted vaccines can be a concern, since the adjuvant is added to enhance the immune reaction and with that the inflammation at the injection site. It has been shown that the temperature of the vaccine made a significant difference, with cold vaccines being associated with a higher risk of FISS development than vaccines at room temperature. To reduce the risk of FISS, cats should only receive vaccinations and injections of irritable substances when deemed necessary. Vaccines should be taken out of the refrigerator about 15 minutes prior to injection, but not much longer to avoid reduction in efficacy. Moreover, injections in cats should always be given at sites at which surgery would

likely lead to a complete removal of the tumor with the least complicated surgical procedure.

*Regina Hofmann-Lehmann, Dr. med. vet.  
Fed Scott Feline Sym, 07:18*

### Alternative to Clavamox drops

There are two possible options. But before we get to those, remember that amoxicillin, with or without clavulanic acid, shouldn't be used to treat gram-negative infections unless they're located in the urinary tract. For option one, if *Staphylococcus* species aren't being treated, you may not need the clavulanate, and amoxicillin will work on its own. For option two, one probably could use generic amoxicillin-clavulanate. Instead. The author says probably because without bioavailability studies in dogs or cats, we can't know for sure that it's absorbed the same way Clavamox is. The author wouldn't use the slow-release human Clavamox preparations, however, as they are more likely to be absorbed differently. This author doesn't consider fluoroquinolone antibiotics to be an amoxicillin-clavulanate substitute for several reasons. The author thinks of the fluoroquinolones as a higher tier class of antimicrobials. If therapy fails, you leave behind a population of high-level multidrug-resistant microbes. Moreover, their gram-negative spectrum is much better than that of amoxicillin and can include *Pseudomonas* species (depending on the isolate). The author thus likes to protect them and recommend reserving their use based on culture and susceptibility results when possible

*Dawn Merton Boothe, DVM, MS, PhD, DACVIM, DACVCP  
DVM News Magazine, May 2019*

### Incising the intestine

Occasionally when the segment of intestine to be removed is amputated mucosa 'everts' from the cut edge of the intestinal wall making it difficult to visualize the cut edge of the serosa. If this occurs it is highly recommended to **excise the everted mucosa** to enable the surgeon to easily visualize the cut edge of the intestinal serosa. It is vital that the surgeon engage at least 3-4 mm of intestinal wall with each suture to guarantee adequate bites in the collagen laden submucosa.

*Howard B. Seim III, DVM, DACVS  
88<sup>th</sup> FL VMA Conf 04:17*

### Co-management of patients beneficial

So many times the primary care practitioner thinks that referring is just sending dollars elsewhere. But this study showed that for some chronic conditions, co-managed care resulted in more money at the primary care practice, contrary to popular belief. The group's 2016 retrospective study showed that small dogs with congestive heart failure that were co-managed by a veterinary cardiologist and a primary care veterinarian lived 74% longer and generated 22% more revenue at the primary care practice than those managed by a primary care veterinarian alone.

*Marilyn Iturri  
So Cal VMA Pulse, Jul 2019*