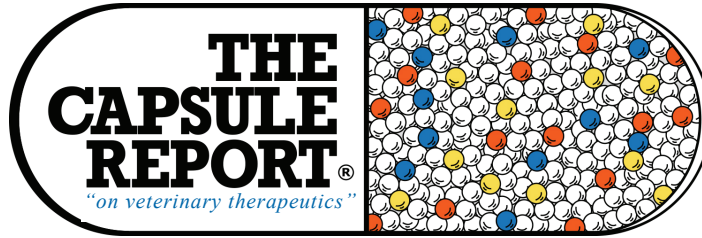


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### Tylosin-responsive diarrhea

Tylosin-responsive diarrhea (TRD) refers to a specific diarrheal syndrome in dogs which responds to tylosin therapy within a few days. In TRD, the stool remains normal as long as treatment continues but diarrhea may reappear several weeks after discontinuing the antibiotic. Most affected dogs are young to middle-aged and are medium-sized to giant breeds. The etiology of the diarrhea remains unknown. Dogs with TRD usually have large bowel diarrhea characterized by increased frequency of defecation, mucus, and fresh blood in the feces. Physical findings are unremarkable. Diagnosis of TRD is made on rapid resolution of GI signs following the administration of tylosin. Tylosin administered at 25 mg/kg, once daily for 7 days has proven effective in one study. Intermittent drug therapy may be required in some dogs having recurring GI signs.

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

### Practical short-term relief for FLUTD

Short-term relief can be used for 2-5 days during acute flare-ups to minimize discomfort and shorten the hematuric phase. Signs will **resolve spontaneously** in approximately 85% of affected cats within a few days. *Analgesics*. For acute flare-ups of lower urinary tract signs, short-term analgesic treatments may be useful to reduce the discomfort associated with bladder and urethral inflammation. Butorphanol (0.5-1.25 mg/cat, PO, q4-6h) has been recommended; longer acting buprenorphine (0.01-0.02 mg/kg, q6-12h, IM, SQ) can be considered as well. Both agents can be given as subcutaneous injections (alternatively, fentanyl patches can be used). Opioids also have some anti-inflammatory effects that may be beneficial in this setting.

*India Lane, DVM, MS, DACVIM  
 Fetch, San Diego, 12:07*

### Heartworms in cats, a real thing

Results of this author's own study. Nine (9.7%) indoor-only cats tested positive on one or more of the tests. Nearly a fourth of the indoor-outdoor cats (23.5%) tested positive. Although astonishing to us, the results must be taken in geographic context. San Antonio, Texas, is endemic for mosquitoes. The climate is mild enough that the mosquito season is year-round. Conclusions & Implications: Three things are notable. Of the nine indoor-only cats that tested positive, only one had a positive antigen test result. Of the two cats that were antigen positive, one was positive with heat-treated serum and not with normal antigen testing. None of the cats was positive on both the antibody test and either of the antigen tests. The implications of this study for cats in heartworm-endemic locations are fourfold: • First, indoor-only cats have sufficient mosquito exposure to justify the use of heartworm prevention on a year-round basis in locations with a year-round mosquito season. • Second, any cat, indoor-only or not, should be tested for heartworms if it is showing respiratory or cardiovascular signs. • Third, antigen testing is very insensitive, so heartworm testing should be performed with an antibody test or, preferably, both antibody and antigen tests. • Fourth, using a flea control product that does not contain a heartworm prevention product is leaving the cat in potential danger of developing heartworms. If the cat needs flea control and a non-heartworm product is used, a second product that offers heartworm prevention should

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be used simultaneously.

Gary D. Norsworthy, DVM, DABVP  
Western Vet Conf, Feb 2019

## The Glasgow pain scale

The Glasgow Composite Measures Pain Scale is a validated tool for use in dogs and the short-

form version is **user-friendly** and can be downloaded in several different languages at: [www.newmetrica.com](http://www.newmetrica.com). The categories for assessment include: vocalization, attention to the wound or painful area, posture and movement, response to palpation, and overall demeanor. Behaviors within each category or domain are assigned a number. If all categories are completed the maximum number is 24. In some patients (e.g. spinal cord injury) assessing mobility is not possible but the other domains in this scale are still valid for those cases; without this category the maximum score is 20. This tool suggests an intervention score of =6/24 or =5/20.

Sheilah Robertson, BVMS (Hons), DACVAA, DACAW, CVA  
Penn Vet Conf, 09:17

## The obesity paradox

The finding that overweight or obesity may be protective in regards to mortality in a variety of disease conditions is termed the obesity paradox. While overweight, obesity, and abdominal adiposity are associated with increased risk of heart failure (CHF) in people, overweight/obesity are associated with lower all-cause and cardiovascular mortality in people with congestive heart failure. While the protective mechanism of the obesity paradox is not clear and likely multifactorial, increased reserve of lean body mass (LBM) with obesity and lack of cachexia likely plays a major role. In a recent study, cats below a median body weight of 4.2 kg at the time of diagnosis for chronic kidney disease (CKD) had a significantly shorter survival time compared to cats with a body weight >4.2kgs. Underweight dogs with CKD (BCS 1-3/9) had a significantly shorter median survival time compared to moderate (BCS 4-6/9) and overweight dogs (BCS 7-9/9) with no difference between moderate and overweight. A study of survival in dogs with CHF failed to demonstrate a significant association with BCS, however weight change was significantly associated with survival with dogs gaining weight surviving the longest. A similar study in cats with CHF found a U- shaped relationship between body weight and survival with reduced survival times in cats with the lowest and highest body weights. Given the available literature, maintenance of a BCS of 6-7/9 in patients with chronic diseases such as CHF or CKD is a reasonable recommendation to preserve LBM and prevent cachexia.

Martha G. Cline, DVM, DACVN  
Emerald Coast Vet Conf, 07:17

## Feline arterial thromboembolism (FATE)

Clopidogrel (**Plavix**) has replaced aspirin as the standard of care for antiplatelet therapy in cats. Clopidogrel is a platelet ADP receptor antagonist; it irreversibly antagonizes platelet membrane ADP receptors, inhibiting

activation and aggregation for the lifetime of the platelet. In cats, clopidogrel's antiplatelet actions are more potent than aspirin, both in vitro and in vivo. A double-blind randomized controlled trial in 75 cats demonstrated that clopidogrel was superior to aspirin for secondary prevention of FATE and resulted in longer survival times post-FATE. The recommended oral dose is 18.75 mg/cat (1/4 of the standard 75 mg tablet), once daily; maximal antiplatelet effects occur within 72 hours and disappear about 7 days after drug discontinuation. A loading dose of 75 mg/cat given as soon as possible after an acute FATE event may also confer vasomodulating effects that improve collateral blood flow. Clopidogrel causes less gastrointestinal side effects than aspirin, although vomiting does occur in some cats, and the tablets taste very bitter. This may be ameliorated by giving the drug with food or in a gelatin capsule.

Jessica Ward, DVM, DACVIM  
VMX Conf, Jan 2019

## Sedation of the Older, Cardiovascularly Compromised Dog

Cardiovascularly Compromised Dog or a Dog with Significant Organ Dysfunction: Butorphanol (0.2-0.3 mg/kg, IV) ± midazolam (0.1-0.3 mg/kg, IV). Fentanyl (0.002-0.005 mg/kg, IV), hydromorphone (0.02-0.05 mg/kg IV), or methadone (0.1-0.2 mg/kg, IV) maybe substituted for butorphanol. These medications may also be administered IM or SC at higher doses. Opioid-induced bradycardia may be treated with atropine (0.01-0.02 mg/kg) or glycopyrrolate (0.005-0.010 mg/kg, IV). Occasionally, an animal might become excited or dysphoric. Respiratory depression is likely with IV administration of these drug combinations, especially in debilitated patients. Panting may also be observed and may complicate certain procedures (e.g., ultrasound-guided aspiration of the spleen). Slow IV titration of an appropriate injectable anesthetic (e.g., propofol, alfaxalone) may mitigate these complications; however, because apnea is also possible, intubation supplies should be readily available. Reversal: Naloxone (up to 0.01 mg/kg, IM, SQ, or IV to effect. Flumazenil at 0.01 mg/kg has been suggested; however, in the author's experience, lower amounts (0.05-0.10 mg, titrated IV) are sufficient for reversal of benzodiazepine effects.

Khursheed, Mama, DVM, DACVAA  
Clinician's Brief, Mar, 2019

## The many effects of obesity

There is a lack of recognition of obesity amongst pet owners and the veterinary health care team. Despite obesity being easily recognizable and the most common nutritional disease, it is often a difficult conversation with owners. Obesity is spreading like an **epidemic** - we need to remove emotion and focus on the health risks. Obesity compromises mobility, compounds arthritis, and contributes to pain. More importantly, it affects quality and quantity of life which impacts the human-animal bond. **Obesity in companion animals is a human**

**disease** - often a combination of overfeeding and lack of exercise. Weight loss is the single most important factor to assist with reducing pain in overweight and arthritic patients. Achieving ideal body weight is also critical for maintaining joint health and slowing down the progression of arthritis.

*Tara Edwards, DVM, DACVSMR, CCRT, CVPP, CVMA  
Fetch San Diego, 12:17*

## Opioid abuse by clients

Individuals seeking opioids could view the veterinary route as the “path of least resistance” to facilitate their addiction. Given how impractical and difficult it is to consistently track patients among practices, pet owners could exploit the opportunity to “hop” from veterinarian to veterinarian and falsify information. The pet owner could manipulate a pet’s information to make it difficult for veterinarians and pharmacists to keep track of a patient’s prescribed medications. The Health Insurance Portability and Accountability Act (HIPAA) prevents a pharmacist from reviewing a pet owner’s medication record or other records associated with the owner’s household when a prescription is brought in for a pet. Only the file associated with the veterinary prescription written for a specific pet can be reviewed.

*Travis Lanaux, DVM, DACVECC et al.  
Clinician’s Brief, Mar 2019*

## Socializing adult dogs

The socialization period, which is approximately 4-14 weeks of age in dogs and 2-7 weeks of age in cats, is the critical stage during which the neural system is primed to receive input about future stimuli. Socialization is critical, as evidenced by extreme fear and fear-related aggression in many poorly socialized animals. Unfortunately, some people falsely assume that socialization of adult animals can solve existing behavior problems, and they put their pets in dangerous situations as a result. Dogs showing aggression to other dogs should never be indiscriminately exposed to unsuspecting dogs and people in dog parks, day care or shopping areas. Not only is this unsafe, but it could also sensitize the animal, or worsen the negative emotion. Educate your client about implementing some solid foundation behaviors, taking appropriate safety measures and practicing body language interpretation before exposing the dog to public situations. For example, the pet should master a redirection cue for a reward (“watch me”; “leave it”) in increasingly distracting situations before a walk through the pet store.

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

## Dosing Apoquel

Although a majority of dogs control at once daily dosing some dogs need q12h for more optimal pruritus control in which case you want to decrease to the lowest mg/kg dose that will be effective with the goal of still keeping the daily dose at about 0.6 mg/kg. In some cases, AM dosing is more effective so this can also be tried. You can

also use the recommended dose in the AM and give 1/2 that dose in the evening and not need a full second dose. After the dog has been in remission for another 1-2 months, some cases can then be converted to once daily dosing.

In rare cases the dose or frequency may be lowered further. When planning on using long term this author monitors by performing pre-Apoquel chemistry profiles, complete blood counts and urinalysis testing. This is repeated initially in 3 months and then at 6-month intervals. Patients need to be monitored for the development of infections, demodicosis and neoplasia.

*Craig Griffin, DVM, DACVD  
North American Vet Conf, 02:17*

## Making cats comfortable in the clinic

As cats age, they tolerate less time in the clinic. Siamese cats are especially prone to becoming depressed. Three days is about as long as a cat can stand the indignities and anxieties of hospitalization, even with daily visits from the owner. Consider capping intravenous catheters and send patients home, having them return for outpatient care. Even for in-hospital care, capping catheters off overnight avoids alarms, which can keep patients awake, and allows greater ease of movement. In either case, **administer the overnight fluid volume subcutaneously**. Avoid changing a cat’s diet during hospitalization as it is likely to result in inappetence and possibly the development of an aversion. If a change in diet is required for therapeutic reasons, try to make that change gradually at home.

*Margie Scherk, DVM, DABVP  
Music City Vet Conf, 02:17*

## Exceptions to normal fluid replacements

Exceptions to the recommended maintenance doses of fluids occur under the following circumstances. 1) Oliguria and anuria. After dehydration deficits are replaced, the patient’s maintenance needs depend on urinary output, which should be estimated or quantitated. Providing full normal maintenance fluid volumes to oliguric and anuric patients can lead to fatal pulmonary edema or pleural effusion because of iatrogenic intravascular fluid overload. 2) Polyuria. Polyuric animals require fluid volumes in excess of normal maintenance needs. Failure to provide these volumes can result in a sustained negative water balance if the patient is unable to drink. The maintenance needs for polyuria consist of exact urinary losses plus insensible and ongoing losses. Assurance of adequate treatment is made by weighing the patient each day as well as by assessing the physical and laboratory parameters for hydration. An acute loss of 1 kg of body weight suggests a 1 L fluid deficit. 3) Rapid internal shifts of fluid, which can occur in pancreatitis, extensive burns, enteritis, and gastrointestinal obstructions. In these conditions, the fluid needs of the patient will exceed the usual maintenance volumes by as much as three times.

*Michael Schaer, DVM  
88<sup>th</sup> FL VMA conf, 04:17*

## Practical treatment of congestive heart failure

The 2009 ACVIM Consensus statement Guidelines for the Diagnosis and Treatment of Canine Chronic Valvular Heart Disease provides treatment recommendations for treatment of congestive heart failure (stage C). For acute (hospital-based) care, a reasonable treatment strategy may include: \* Furosemide IV dosing preferred if venous access is safely attainable. Dose variable depending on patient condition (Author's preference is to start with a 2 mg/kg, IV bolus, repeat as needed to stabilize the patient, followed by a CRI at 0.33-1.0 mg/kg/hr until eupneic). \* Pimobendan (Vetmedin) 0.25-0.3 mg/kg, PO, q12h (author's preference is to dose higher initially). \* Oxygen supplementation- oxygen cage preferred, nasal cannula for larger dogs if tolerated. \* Sedation for dyspnea-related anxiety (author's preference is butorphanol). \* Thoracocentesis or abdominocentesis if indicated. \* Antiarrhythmic therapy if indicated.

*Sandra P. Tou, DVM, DACVIM  
VMX Conf, Jan 2019*

## Calculating shock doses of fluids

Although "shock doses" for the dog (90 ml/kg) and cat (60 ml/kg) are based on the total blood volume, they are not administered anymore. Instead, 1/4 to 1/3 of a shock dose is administered and the patient reevaluated. A useful rule of thumb to rapidly determine the fluid bolus amount (mL) for a patient in shock is to **add a "0" to their weight in pounds**. This delivers a 2 ml/kg bolus which equates to a 1/4 shock dose in dogs and a 1/3 shock dose in cats. For example, a 70 pound dog would receive a 700 mL bolus. Boluses are repeated until perfusion parameters are normalized. If 2-3 boluses do not correct perfusion parameters, then hypertonic saline and/or synthetic colloids may be considered. Large dosages of crystalloids (i.e. greater than a blood volume) during resuscitation are associated with numerous side effects such as hypothermia, hypoproteinemia, dilutional coagulopathy, gastrointestinal ileus, and loss of mucosal barrier function.

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

## Using naloxone

Drugs like naloxone act as antagonists at the opioid receptors. They will readily replace full agonists, reversing side effects but also reversing analgesia. Excitement may occur. Full reversal dose 0.01 to 0.04 mg/kg (0.005 - 0.02 mg/lb), lasts 20-60 minutes. Duration is generally shorter than that of most opioid drugs, so be cautious for the possibility of re-narcotization. Partial agonists and agonist-antagonist drugs are hard to reverse given their high affinity for the mu receptors. Similar to butorphanol, micro doses of naloxone can be used to **reverse sedation while maintaining analgesia** - 0.001 to 0.01 mg/kg (0.0005 - 0.005 mg/lb), given to effect IV. The duration of effect of the antagonist may be shorter than the opioid agonist, therefore redosing may be required to prevent re-narcotization.

*Phillip Lerche, BVSc and Elizabeth A. Martinez, DVM  
VMX, 02:18*

## Diet trials

A limited antigen diet that contains a single novel protein-source and a single novel carbohydrate source is a good first choice for patients with suspected idiopathic IBD. A wide variety of such diets is available and sometimes several diets have to be tried in sequence before one is identified that is effective in controlling the diarrhea. A hypoallergenic diet based on hydrolyzed proteins can also be used. A recent study showed that, while a hydrolyzed diet showed comparable initial response rates with other diets, long-term response rates, were better for a **hydrolyzed protein diet containing soy protein** as the hydrolysate. Since there are significant differences between different types of hydrolyzed protein diets, these results can not necessarily be transferred to other hydrolyzed protein diets.

*Jörg M. Steiner, med.vet., Dr.med.vet., PhD, DACVIM (SAIM)  
Music City Vet Conf, Feb 2019*

## Diet of the breeding bitch

Bitches should be supplemented with folic acid (5-8 mg daily) initiated as soon as the bitch comes into heat to lower the incidence of cleft palate, spina bifida, and other neural tube abnormalities. This is much more of an issue with grain free diets as the grain is the primary source of B vitamins. Maternal diets with additional eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) during gestation and lactation improve puppy and kitten learning, memory, and vision. Generally other supplements should be avoided. Additional calcium decreases puppy size, and increases rates of dystocia. Increased vitamin A causes various congenital defects. Dogs make their own vitamin C. Vitamin D supplementation interferes with calcium metabolism. Raspberry leaves increase dystocia. Cottage cheese drastically alters Ca:P ratios to the detriment of the neonate. Raw egg binds B vitamins.

*Michael E. Peterson, MS, DVM  
AVMA Conf, 07:17*

## Fecal tests for Giardia detection

Studies have shown that approximately 70-75 percent of Giardia-positive dogs can be identified on a single zinc sulfate centrifugation test (as opposed to approximately 40 percent of dogs after 3 separate saline smear preparations). Slides should be examined within 10 minutes of preparation because the cysts may subsequently begin to shrink and will be more difficult to recognize. Since animals shed Giardia on an intermittent basis it is recommended that a series of 3 zinc sulfate concentration tests be run over a 3-5 day period. If the Giardia antigen test is not run concurrently, in order to maximize chances of accurately diagnosing or ruling out Giardia in animals with chronic diarrhea, IF there are 3 negative tests within 5 days, it is not likely the patient has Giardia. Diagnostic efficiency increases to 90-95 percent when 3 zinc sulfate examinations are conducted over a 3-5 day period. A positive result on any of the tests warrants treatment for Giardia.

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

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## Monitoring trilostane

It has been found that the pre-trilostane (before the next dose) resting cortisol concentration correlated better with clinical control than did the post-pill resting (baseline) and/or post-ACTH cortisol concentrations. It is important to recognize that this is not the same as the post-trilostane resting cortisol (the baseline sample of the ACTH stimulation test) which is not a good monitoring tool. Although the monitoring recommendations have not “officially” changed in the United States, a number of institutions in the US are evaluating the use of the pre-trilostane resting cortisol concentration for monitoring. This author’s experience is similar to that of the researchers in the UK in that the pre-trilostane cortisol concentration and clinical assessment/response appears to be an effective way to monitor most dogs that are clinically well. If a single cortisol measurement is to be used for monitoring purposes (synthetic ACTH is not available or an ACTH stimulation test cannot be performed because of financial limitations), the pre-trilostane cortisol concentration will likely provide the most clinically useful information.

*Jon M. Fletcher, DVM, DACVIM  
103<sup>rd</sup> WI VMA Conf, 10:18*

## Fluorouracil poisoning

Fluorouracil (5-FU) is a chemotherapeutic agent commonly found in topical ointments used to treat epidermal neoplasms (e.g., superficial basal and squamous cell carcinomas) and actinic keratoses in humans. Importantly, 5-FU can be lethal when ingested by dogs, even after ingestion of very small amounts. In dogs, clinical signs develop rapidly following ingestion of 5-FU, with gastrointestinal tract, bone marrow, and nervous system abnormalities seen most commonly. Typically, dogs die soon after the onset of neurologic signs. The topical ointments typically contain a 5% concentration (w/w) of 5-FU in a 40-g tube, so a 6-kg puppy would need to ingest only about an eighth of a tube to obtain a fatal dose. Currently there is no specific antidote available to treat 5-FU toxicosis in dogs.

*Eric N. Glass, MS, DVM et al.  
JAVMA, Apr 2019*

## Understanding CRIs

Most CRI’s consist of an opioid + ketamine +/- lidocaine +/- dexmedetomidine. The choice of the opioid is based on comfort level of the user, availability and prior experience of the animal to receive the CRI. Most commonly the opioids used are either morphine, hydromorphone, fentanyl or methadone. Dexmedetomidine is often considered for use in those animals that either have breakthrough pain despite measures such as local anesthetic and CRI, or who awaken from anesthesia agitated, often due to dysphoria. **Never use bupivacaine** in place of lidocaine as it can have a deadly cardiac reaction when given IV. Opioids best avoided are Butorphanol as it is a weak opioid, and

buprenorphine that does not work as well IV as it does by other routes of administration. The use of lidocaine for IV administration in cats is controversial, and probably it is best to leave it out of the CRI. Also, many practitioners feel more comfortable with one opioid over another when administering to cats. Finally, many anesthesiologists like to give lower doses of morphine in cats than they do in dogs, but research shows that cats don’t make much of the active metabolite of morphine and need the same dose as dogs do.

*Michael C. Petty, DVM  
VMX, 02:18*

## Urolithiasis prevention, necessary?

Owners today are more aware of urinary stone disease than they once were, and it’s not uncommon for owners of healthy cats to ask if a preemptive approach is needed. While it’s always good for the patient’s overall health to address issues such as obesity and a sedentary lifestyle that may predispose them to urolithiasis, it’s impossible to know if a cat is going to develop urinary stones unless he or she actually does. As a result, there is **no need to attempt prevention** through a specialized diet. Unlike the feline diets of several decades ago, well pet diets today are less alkaline than they once were, which has helped reduce the incidence of struvite stones.

*Steven Cohn, DVM  
Clin Brf Supp, Mar 2019*

## Stop slacking on heartworm conversation

1) Stop telling people who say their pet doesn’t go outside that they can skip heartworm preventives. Just the other day this author was in a room in the house that was the farthest from any exterior doors, and guess what was buzzing around? A mosquito. You know it, I know it, we all know it: Indoor-only pets are still at risk for heartworm disease. 2) Stop arguing your client’s financial limits. Ever said to yourself, “The client only has so much money, and the fill-in-the-blank chronic medicine is more important.” Or: “OMG, this dog has so many problems I have to talk to the client about. There’s no way they’re going to hear me out on parasite control too!” Do yourself a favor and suspend your own disbelief about what the client will pay for, and just go into that exam room and give your clients the information they need to hear—even if you don’t think they want to hear it or you don’t want to say it. 3) Stop saying “I recommend.” One of the most profound and effective changes this author has made in the way to talk to clients is to stop saying, “I recommend...” and instead substitute, “Your pet needs ...” or “We need to ...” or “You need to ...” While clients value our opinion, they’re less interested in what we recommend and more interested in what their pet needs. Switch your language and take the emphasis off you and put it back it onto the pet, where it belongs.

*Sarah Wooten, DVM  
DVM News Magazine Supp, Mar, 2019*