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THE CAPSULE REPORT® On Animals

Small Animal/Exotic Edition

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L-carnitine recommendations

Recommendations for L-carnitine supplementation in dilated cardiomyopathy are as follows: Indicated in most American Cocker Spaniels. Indicated as a therapeutic trial in Boxers with dilated cardiomyopathy, not arrhythmogenic right ventricular cardiomyopathy (Boxer cardiomyopathy). Indicated in animals with low plasma carnitine levels. Consider in animals with dilated cardiomyopathy and cysteine or urate urolithiasis (e.g., English Bulldog, Newfoundland and Dalmatian). Can consider in any breed with dilated cardiomyopathy. Approximately 5% responded. L-carnitine dosing recommendations are as follows: American Cocker Spaniel: 1 g, PO, q8h. Boxer dogs with dilated cardiomyopathy: 2 g, PO, q8h. Systemic carnitine deficiency: 50-100 mg/kg, PO, q8h. Myocardial carnitine deficiency only: 200 mg/kg, PO, q8h. Sources of carnitine: Tanabe USA, 7930 Convoy Court, San Diego, CA 92111-1212 (858-571-8410); North Carolina Veterinary School, 1400 Hillsborough St, Raleigh, NC 27606 (919-513-6325).

Francis W.K. Smith Jr., DVM, Dip ACVIM
West Vet Conf Procd, Feb 2011

INSIDE THIS ISSUE

Antibiotic use in neonates

Drug pharmokinetics are unique in neonates, and appropriate pharmacologic adjustments are necessary due to neonatal absorption, distribution, metabolism, and elimination. Current recommendations are to decrease the total drug dose by 30%-50% or to increase the interval by 2-4 hours. When using antibiotic therapy in neonates, several antibiotics are contraindicated. Chloramphenicol should never be used in kittens due to hematopoietic effects. Some resources recommend chloramphenicol in severely ill puppies; however, this author cautions its use in neonatal medicine. Gentocin should be cautiously used in neonates due to decreased renal blood flow and GFR. It should be used cautiously in hydrated patients who are undergoing fluid therapy. Tetracyclines are not currently recommended due to skeletal retardation and discoloration of deciduous teeth. Finally, quinolones have been shown to result in cartilage lesions in puppies. Currently recommended antibiotic therapy for the neonate include the following. Amoxicillin at 6-20 mg/kg, PO, q12h; Amoxicillin + clavulanic acid at 12.5-25 mg/kg, PO, q12h; Cephalexin/cefazolin at 10-30 mg/kg, PO, q8-12h; Ampicillin at 22 mg/kg, IV, q8h; and Ampicillin/sulbactum at 22 mg/kg, IV, q8h.

Justine A. Lee, DVM, Dip ACVECC
13th VECCS Conf Procd

Schirmer tear test procedure

Excessive manipulation of the eyelids, topical anesthesia and exposure to other topical and systemic drugs (such as tranquilizers and atropine) are avoided before the test. Increased tear production because of corneal irritation during the test appears to be of little significance in the dog and the cat. The round end of the test paper is bent while still in the envelope and positioned without contamination in the lacrimal lake at the junction of the lateral and middle thirds of the lower eyelid. The animal usually closes its eyelids during the test. After one minute the paper is removed and measured on a millimeter scale on the paper envelope. The STT strip should be left in position for one minute. It is not a linear test, so if you obtain a value of 7 mm/30 seconds this does not mean it will be 14 mm/min!!!! If you get an abnormal value <15 mm in less than one minute the test should be repeated leaving the strip in for a full minute. Normal value for the dog is 21.9 +/- 4.0 mm wetting/minute. Normal value for the cat is 20.2 +/- 4.5 mm wetting/minute.

Dennis Brooks, DVM, PhD, Dip ACVO
New Eng Reg Vet Conf Procd, Sep 2011

Recipe for Pseudomonas otitis

Dilute one 3.1 g vial of Timentin with 100 ml sterile saline; 1.0 ml aliquots of the 3% suspension are drawn into individual syringes (with about 0.5 ml air), and the syringes are frozen. The content of one syringe is instilled into each infected ear twice daily (thus, 4 syringes daily for bilateral disease). Each vial of Timentin will make enough medication to treat a dog with bilateral disease for 25 days. Frozen ticarcillin will remain active for approximately 30 days.

James O. Noxon, DVM, Dip ACVIM
Bayer Derm Symp, 01:08

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Treatment of dermatophytosis

Topical therapy is controversial with the recent finding that clipping and bathing may initially exacerbate lesions. In spite of this finding, this author feels that clipping and topical therapy are helpful in removing infective hairs, crust, and scale from the host (and ultimately from the environment). In dogs and shorthaired cats with localized lesions, clipping hairs at the periphery is all that is necessary. Cats with generalized lesions and all longhaired cats should have the entire body clipped with a #10 blade. Take caution to dispose of infective hairs properly after clipping. Lime sulfur dips, miconazole, and ketoconazole shampoo are available, and should be effective against dermatophytes. The author prefers lime sulfur because of its proven efficacy. Chlorhexidine products are ineffective. Antifungal creams and lotions are of limited use since they are not formulated to penetrate infective hairs. Topical therapy should be performed weekly. Dogs with either localized or generalized infection with *M canis* or *M gypseum* may self-cure, so systemic therapy is often unnecessary. Immunosuppressed dogs or those infected by *T mentagrophytes* should be treated with systemic therapy. Most cats should be treated systemically, as infection is usually more widespread than clinically evident.

Randall C. Thomas, DVM, Dip ACVD
Mich Vet Conf Procd, 01:11

Maintenance fluids

As far as maintenance fluids are concerned, the type can be just as important as the amount. Functional kidneys will correct our errors, but patients with renal compromise are less likely to deal with our flawed plans of using *replacement* fluids instead of *maintenance* fluids. Purely speaking, normal saline (0.9% NaCl) is not considered maintenance because it is so rich in sodium. Think about it. We don't drink salt water when we're thirsty! Lactated Ringer's solution (LRS) is better tolerated as a maintenance solution than Normosol-R, Plasma-Lyte 148, or normal saline because it is buffered and contains less sodium. We get away with using such replacement fluids (the "R" in Normosol R stands for "Replacement") because healthy kidneys sort things out. In other words they balance the salt and water ratio. However, after a few days, even healthy kidneys may not keep up with the sodium load. This free water deficit is often manifested by thirst despite being adequately hydrated. This author has seen patients on LRS run to drink mop water because they were so thirsty. Normosol-M and Plasma-Lyte 56 are considered true maintenance solutions. A compromise may be half-strength saline supplemented with KCl.

Dr. Sean Smarick
Vet Pract News, Feb 2012

Refractory Pseudomonas ear infections

In these cases, the author will use the following combinations (remember to find the underlying cause). Gentamicin or polymyxin B or E or enrofloxacin (2800 mg of enrofloxacin [use large animal injectable enrofloxacin - 100 mg/ml] and mix with 8 oz of TrisEDTA and flood the ear BID), depending on what antibiotics have been used in the past. The author will use silver sulfadiazine (mixed 1:1 w/water), SID, concurrently. An alternative to the enrofloxacin/EDTA mixture is to use Synotic with 3 cc of enrofloxacin added - 10 to 15 drops TID and TrisEDTA a half hour before the Synotic/enrofloxacin. If using both EDTA and silver sulfadiazine, do not use them within 1 hour of each other because of the concern that EDTA may decrease silver sulfadiazine's effectiveness by chelating the silver. If Malassezia is present, Otomax may be substituted for the Synotic/enrofloxacin mixture. *The number one reason that the author sees a resistant Pseudomonas infection is the failure to insist on rechecks* and the casual dispensing of gentamicin or enrofloxacin containing topical medications. It is bad medicine and bad business to dispense medications without (re)evaluation of the ear.

Paul B. Bloom, DVM, Dip ACVD
N Amer Vet Conf Procd, Vol 21

Anesthesia accident

One of the most common anesthetic accidents is a closed pop-off valve. When the pop-off is closed, excess gas is *not* allowed to exit the anesthetic system and pressure begins to build within the system. This includes the patient's lungs. With excessive pressure, significant trauma can occur to the patient including barotrauma to the lungs, a ruptured trachea, cardiovascular collapse by impaired venous return, and pneumothorax. If the rebreathing bag is noticed to be enlarged with the creases of the bag taut, the pop-off should be immediately opened or the bag pulled off of the machine. In either case, excess gas will be allowed to escape the system and the pressure released. The patient should then be thoroughly assessed for signs of pneumothorax or cardiovascular collapse and appropriate treatment administered.

Lindsey Culp Snyder, DVM, MS, Dip ACVA
Cent Vet conf Procd, 10:07

End-of-Life issues for the cat

Hydration is of utmost importance and should be included in any home-care program. Most clients are able to give fluids subcutaneously at home if the care team believes in their importance and that the client is capable. Fluids are a gift to make the kitty feel better. Dehydration at a cellular level results in headaches, sluggishness, inappetence, lethargy, and constipation. When cells aren't getting enough fluid, they take it from urine and feces. This results in hard fecal balls rather than the normal log-shaped feces. Dehydrated cells aren't able to function adequately, can't transport toxins or nutrients well, aren't well oxygenated, and suffer further damage and lethal changes. Daily subcutaneous fluid requirements

are determined just as intravenous requirements are, namely deficit (as a percentage of ideal body weight in kg), plus maintenance (60 ml/kg ideal weight/day), plus ongoing losses sustained by diarrhea or vomiting. If this volume is too large for administration at a single time, it may be divided into multiple treatments during the day. Warming the fluids may make the experience more pleasant for some cats. The author prefers to administer the fluids as rapidly as possible using gravity feed and an 18G needle.

Margie Scherk, DVM, Dip ABVP
78th AAHA Conf Procd, 2011

Intubation in small exotics

Nasal intubation can be used and is fairly easy to perform. An ET tube can be introduced into the trachea via the nasal route. Adequate measurements should be taken on the animal before the procedure is started to ensure that the tube is long enough. The ET tube is gently introduced into one nostril of the heavily sedated animal and fed in a ventral medial direction along the meatus. The soft palate is usually lodged under the pharynx and the ET tube will therefore eventually slide into the trachea. However due to the risk of introducing potential pathogens from the nasal cavity into the lungs, this technique is not recommended for routine intubation. In order to intubate small rodents the author uses the lab animal intubation kit and the *Rodent Work Stand* available from Hallowell (www.hallowell.com).

Jörg Mayer, Dr.MedVet, MSc
Cent Vet Conf West Procd, 10:07

Medical faults of the Norwegian Lundehund

The Norwegian Lundehund is a Spitz breed considered small and agile with characteristics like six toes on each foot, the ability to close its ears completely and tip its head backward until it touches the backbone. The Norwegian Lundehund originated on remote islands in artic Norway, and the AKC says it's the only registered breed whose original purpose was puffin hunting. The popularity of the Norwegian Lundehund dwindled when puffins became a protected species in the 1800s, but the breed's loyal and playful nature make it a good pet. One detractor, according to the Norwegian Lundehund Club of America, is the presence of Lundehund Syndrome, which is a collective term for a group of gastrointestinal disorders that include bacterial overgrowth in the small intestine and protein-losing enteropathy. To say Lundehund Syndrome is pervasive is an understatement. According to research, every Lundehund is affected, though some are asymptomatic. Dr. Nora Berghoff researches Lundehund Syndrome at Texas A&M University and offers free blood and fecal testing to diagnose the disease.

DVM News Mag, 42:3

Caging for parrots

It is the author's conviction that pet parrots should have at least two cages, one for the night and at least one for the day. The night cage doesn't need to be big and can be sparsely furnished, but it has to provide security, i.e. near a wall, not too low, maybe partly sheltered. The night cage should be placed in a quiet room away from the main living/activity area, where it will be dark after 9 or 10 PM, so that the bird can get a regular and sufficient dark period. The day cage needs to be as large as possible. For small species that are not strong chewers, cages can easily be made from galvanized welded wire with 1x2 inch mesh. Zinc toxicity is of some concern. However, if the birds are furnished regularly with fresh branches and toys, they will not likely chew the wire very much. Small species will also not be easily able to get the zinc off. The wire should be pretreated with vinegar and/or a wire brush. Many breeders let the wire sit outside for a few weeks, where it is rained on. For birds housed in galvanized wire cages, a yearly vet-check may include testing zinc levels.

Andrew U. Luescher, Dr med vet, PhD, Dip ACVB
12th NC VMA Conf Procd

Treatment of epistaxis

Epistaxis from trauma is usually self-limiting and treatment is not usually necessary. In patients with severe or uncontrollable hemorrhage, cotton swabs dipped in dilute epinephrine solution can be applied to the nasal mucosa or the nasal cavity can be packed with sterile gauze. Acepromazine (0.05-0.01 mg/kg, IV) can also be used to assist in reducing acute hemorrhage. However, because the mechanism of action of this drug is to reduce blood pressure, it should not be used in trauma patients that may already have or may develop significant hypotension.

Alice M,. Wolf, DVM, Dip ACVIM
OR VMA Conf Procd, 03:07

Vaccination at perioperative period

Surgery and anesthesia reportedly have immunosuppressive effects that may influence the efficacy of vaccines administered in the perioperative period. In this study neutering at or near the time of first vaccination with a modified-live virus vaccine did not impair antibody responses in kittens. Many kittens that were last vaccinated at 14 weeks of age had inadequate antibody titers at 17 weeks of age. Kittens may be vaccinated in the perioperative period when necessary, and the primary vaccination series should be extended through at least 16 weeks of age.

Michael J. Reese, DVM et al.
JAVMA, 233:1

Cat practice tips

In the exam room: observe the cat while chatting with the owner–avoid looking directly in the eyes; try the slow blink that cats give each other. Rubber-backed bath mats in the exam table don't slip; spray bath mats with Feliway before use and wash mats between uses. For vaccination, change needle from one used to draw up

the vaccine to a 25 ga before you give the vaccine. For hospital stays: have owners send something with the cat that "smells like home" to put into the cage with the cat. Ask the type of litter used at home and duplicate in the hospital. Spray the cage with Feliway and leave the cat alone for at least 35 minutes; after this the cat will settle down. Continue to intermittently sneak spritzes of Feliway into the cage. Stainless steel cages are the bane of most cats. Large "Sky Kennels" are great, easy to clean, warmer, and easier to remove the cat. Use towels or other soft items–no newspapers. If you insist on newspapers, use Wall Street Journal which has soy-based ink and is less likely to aggravate respiratory conditions.

Hazel C. Carney, DVM, MS, Dip AVBP
WA St VMA Conf Procd, 05:08

Changing food in cases of FIC

Changing to moist food (i.e., food with >60%-70% moisture, most often supplied in cans or pouches) may be the most important treatment to implement, considering that it is the only treatment to date that has been associated with a statistically significant reduction in recurrence of clinical signs in cats with feline idiopathic cystitis (FIC). While a food change sounds like a fairly straightforward proposition, if not done properly it could lead to additional stress or inappetence and its subsequent medical complications. If a cat is being switched from dry food to moist food, the dry food should *not* be abruptly removed and replaced with moist food. Instead the moist food should initially be offered as an additional option in a second dish next to the usual dry food. If the cat will consume moist food, then the dry food offering can be gradually reduced. If this is not successful, providing a second dish with a mixture of moist and dry food may be attempted. Other tips to enhance palatability of canned food include warming the food, offering different flavors, and feeding minced formulas. Bowl conformation also may impact a cat's willingness to eat; narrow/deep bowls may bother the cat as its whiskers brush against the sides. For cats that are highly resistant to changes in food, it may be prudent to maintain the original food as negative consequences may outweigh potential benefits.

Jacqueline C. Neilson, DVM, Dip ACVB
OR VMA Conf Procd, 03:07

SQ wound reactions in cats

This problem, in the author's experience, is caused not by the type of suture used in the abdominal wall and subcutaneous tissues in cats, but by the technique of closing these tissues. Avoid handling, undermining, or excising subcutaneous tissues in cats. Close the abdominal wall with sutures no larger than 3-0 and avoid crushing the abdominal wall by placing too much tension on the sutures while knot tying; avoid closing the subcutaneous tissues all together in most cases; if tension relief is needed, pick up only the hypodermis during subcutaneous closure (the reaction is most likely caused by tissue devitalization when taking large subcutaneous tissue bites and pulling sutures tight which rips the tissue from its blood supply). The subcutaneous reaction that is observed is due to the body's response in removing the devitalized fatty tissue during the debridement phase.

Daniel D. Smeak, DVM, Dip ACVS
72nd CO U CVM Conf Procd

State regulations online

The AVMA State Legislative and Regulatory Affairs Department has compiled information on states' regulations regarding breeding of companion animals, requirements for veterinary prescriptions, and requirements for veterinary facilities. The summary of regulations addressing pet breeding covers prohibitions and standards of care; licensing, registration, and permits, and inspections. The summary of requirements for veterinary prescriptions covers definitions of the veterinarian-client-patient relationship and rules relevant to the VCPR related to prescribing. The summaries are available at www.avma.org/advocacy/state/issues, along with many other informational resources on state issues. Thirty states and Washington, D.C., have specific regulations for the operation of veterinary facilities. The text of regulations for a particular jurisdiction is available by e-mailing avmastateleg@avma.org.

JAVMA, Feb 15, 2011

Maintaining oral health

This author recommends brushing once daily before feeding. By disrupting the subgingival bacterial matrix once daily, an environment which predisposes the gram negative anaerobic bacteria to overpopulate is reduced. Human toothpaste should not be used since the amount of fluoride contained in these products is not meant to be swallowed and may precipitate fluorosis of the kidneys. One study involving the use of veterinary toothpaste versus just water on the toothbrush demonstrated no difference in the amount of plaque and tartar accumulation. Veterinary toothpaste tastes good to dogs and cats and functions more as a reward than a primary cause for plaque reduction. With a large variety of products on the market, it can be overwhelming when trying to decide which products really work. Since no one polices the label claims of veterinary products the Veterinary Oral Health Council has developed a system for the evaluation of products similar to the fundamentals of a similar system used by the FDA. Clients can be directed to www.vohc.org for information on products that have demonstrated, using sound scientific procedures, that the products are safe and effective.

Christopher Snyder, DVM, Dip AVDC
35th Royal Canin/OSU Symp, Oct 2011