

A digest of practical and clinically relevant information from this month's journals and proceedings



Small Animal/Exotic Edition

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Novel treatment of urethral obstruction (UO) in male cats

Treatment involved administration of a standardized dose of acepromazine (0.25 mg, IM or 2.5 mg, PO) and buprenorphine (0.075 mg, PO) three times daily, decompressive cystocentesis as needed, and subcutaneous fluids as needed. Patients were placed in a quiet, darkened environment to minimize stress. A dose of medetomidine (0.1 mg) was administered if urination did not occur within 24 hours. Treatment success was defined as spontaneous urination within 72 hours and discharge from the hospital. Twelve cats were treated with success in 67% of cases. Cats responsive to treatment tended to have spontaneous urination resume within 24 hours and were more likely to eat in hospital. Treatment failure occurred in 33% of cases. Three were euthanized for significant complications (uroabdomen or hemoabdomen). The fourth case survived but only urinated after urethral catheterization. It was concluded that pharmacologic therapy, in conjunction with a decompressive cystocentesis and a low stress environment, can result in spontaneous resolution of UO without the need for urethral catheterization. This protocol could offer a low cost alternative to euthanasia for patients which cannot receive traditional treatment.

*T. Owens et al.
22nd Fred Scott Fel Symp, 2010*

Insulin options in the cat

Most feline diabetics are treated with protamine zinc insulin (PZI), insulin glargine, or a pork Lente product (Vetsulin). Various compounding pharmacies market beef PZI products, but these facilities are not FDA-regulated, and quality control may be a concern. In November 2009, the FDA approved a U40 human-recombinant PZI (Pro-Zinc—Boehringer) for use in cats. It is advisable, to switch to this product if a cat receiving compounded PZI becomes unregulated. Dose equivalency may be questionable, so it is prudent to start again with a conservative dose (0.25 units/kg). The only insulin glargine product currently available is a U100 formulation (i.e. each ml contains 100 units). Dosing small cats with a

U100 product can be difficult, and practitioners may be tempted to dilute the insulin. However, the slow absorption of insulin glargine depends partly on its acidic pH. Dilution will markedly affect the pharmacokinetics and should never be considered. If anything has been added to the bottle, discard it and start again with an undiluted product.

*Audrey K. Cook, BVM&S,
MRCVS, Dip ACVIM
Vet Med, 105:3*

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Cleaning the Pseudomonas ear

Water should be used as the first flush to break up mucus from the middle ear, followed by an antiseptic flush. Any product that lowers the pH of the ear canal will be effective in killing Pseudomonas; however, acetic acid at a concentration of 2% is lethal to the organism within 1 minute of contact and can be used daily to flush the ear canal before applying a topical antibiotic solution. This strategy appears to be very safe even if the eardrum is ruptured. Where resistant infections are known to be present, a second antiseptic solution,

Tris EDTA, may be used as a final rinse that is not flushed away. Used as a prepared solution or in combination with other topical products (e.g., chlorhexidine or ketoconazole), Tris EDTA increases the permeability of the Pseudomonas cell membrane by binding calcium and magnesium ions. A Tris EDTA flush should be used twice daily prior to antibiotic administration.

*Susan Paterson, MA, VetMB, DVD, MRCVS, Dip ECVD
NAVC Clin Brf, 8:6*

Cruciate brace for dogs with cruciate injury

A cruciate brace (www.woundwear.com) provides a conservative treatment for dogs when surgery is not an option. When surgery is an option, it protects the surgical repair by providing stability to the stifle joint while allowing for normal range of motion. It can also reduce the likelihood of later injury to the opposite limb. Off-loading to the healthy extremity occurs whenever a dog is lame, whether it is a result of the initial injury or due to a long recovery following surgery. Off-loading is the leading cause of contralateral injury—cruciate tear to the opposite limb—most times occurring within one

The Capsule Report®

year of the initial injury. Contralateral injuries occur in a whopping 30%-60 % of dogs following the initial cruciate injury. Bracing provides stability, decreases painful weight bearing and minimizes the off-loading that results in this devastatingly frequent complication. Bracing provides another sensible cost-effective treatment.

*Joel Spatt, DPM, ABPS
Vet Pract News, 19:10*

Puppy and kitten formula

The selected formula should be species specific. While most formulas are available in both a canned and powder forms. This author prefers the powdered formula for both economy and shelf-life. Place an opened can of powdered formula in the freezer for long-term storage. Canned formula should be stored in glass containers to decrease the gummy formations and kept no longer than 72 hours. The labeled instructions on volume should be followed exactly to avoid potential problems. For very short-term applications, the following "emergency" formula will be adequate for both species: 4 oz. whole cow's milk, 4 oz water, 2 egg yolks, 1 tsp. vegetable oil, and 2 Tums. Both the emergency and most commercial puppy or kitten replacement formulas contain approximately 1.2 kcal/ml. Using this figure, the following are "rules of thumb" feeding volume calculations: Week 1–60 ml of formula/pound of body weight; Week 2–70 ml of formula/lb; Week 3–85 ml of formula/lb; Week 4–100 ml of formula/lb. This daily volume is divided into 5 equal feedings for the first week, then 3-4 feedings for weeks 2 through weaning.

*William Fortney, DVM
GA VMA Conf Procd, 11:07*

Spironolactone in heart disease

Spironolactone is a relatively weak potassium-sparing diuretic, and its potency prevents its use as the sole diuretic agent in dogs with chronic heart failure. The value of spironolactone most likely lies in its action as a specific aldosterone antagonist. Aldosterone is a part of the RAAS and promotes fluid retention and vascular and myocardial remodeling. Interestingly, in both humans and dogs with heart disease, aldosterone can be elevated despite the use of ACE inhibitors. Suppression of this "aldosterone escape" by spironolactone is associated with reduced morbidity and improved survival in dogs with degenerative mitral valve disease (DMVD). In dogs with signs of heart failure, spironolactone (1-2 mg/kg, q12h) is recommended in addition to furosemide, ACE inhibitors, and pimobendan. In Europe, where spironolactone is specifically approved for use in dogs with DMVD, the

recommended dose is 2 mg/kg, q24h. In the US, many cardiologists use a lower dose of spironolactone (0.5-1 mg/kg/day) or spironolactone coupled with a thiazide diuretic such as hydrochlorothiazide. Routine renal and electrolyte monitoring is recommended.

*Mark A. Oyama, DVM, Dip ACVIM
NAVC Clin Brf, 7:10*

Opioid analgesia in the cat

Opioids can be safely administered to cats to provide analgesia. Hydromorphone or oxymorphone, 0.05 mg/kg, titrated slowly IV, can be administered for analgesia; however, side effects such as hyperexcitability or agitation may occur. It has been shown that the onset of mydriasis following administration of opioids correlates with adequate analgesia in cats; continual dosing after achieving mydriasis may result in adverse side effects such as dysphoria and agitation. The mixed partial mu agonist buprenorphine, 10-20 µg/kg transmucosally-oral, IV, IM, q6-8h, has been shown to be an effective analgesic in cats.

*Jane Quandt, DVM, MS, Dip ACVA
119th SD VMA Conf Procd, 08:10*

Handling wild birds

Legally, a practitioner usually can stabilize a wild animal before locating a rehabilitator or rehabilitation center with the appropriate permits to care for the animal. The Migratory Bird Treaty Act prohibits the possession, without a permit, of the migratory birds that fall under four international treaties. Within 24 hours of stabilizing a migratory bird, a veterinarian in private practice must find a rehabilitator or rehabilitation center with the appropriate permits. Veterinarians must notify the local USFWS Ecological Services Offices upon receiving threatened or endangered species. Veterinarians also may euthanize migratory birds, but they must keep records for 5 years of birds that die in their care—including the species, injury, date of acquisition, date of death, and whether the veterinarian euthanized the bird. International treaties cover most of the birds in the United States, except for nonnative species such as starlings. To find a rehabilitator, go to Web sites from the National Wildlife Rehabilitators Association and the International Wildlife Rehabilitation Council: www.nrawildlife.org, under Need Help?—Finding a Rehabilitator, and at www.wildlife-international.org under Emergency.

*Eliza Savage
JAVMA, 231:10*

Treating ringworm in multi-cat homes

1) Culture all animals to determine the extent and location of animal infections. 2) Culture the environment (cages, counters, furniture, floors, fans, ventilation units, etc.) to map the infected areas to be disinfected. 3) Treat all infected animals with systemic antifungals until each animal has two negative fungal cultures taken at least 1 month apart. 4) Treat all infected and exposed animals with topical 2%-4% lime sulfur solution every 3-7 days

to prevent contagion and zoonosis. Continue until all animals have 2 negative fungal cultures taken at least 1 month apart. Do not clip cats as this contaminates the clippers and facility and worsens the risk of contagion. 5) Dispose of all infected material. Remove any clutter from animal facilities or other infected areas. 6) Clean and disinfect all surface areas every 3 days. Continue until all animals have 2 negative fungal cultures taken at least 1 month apart. Enilconazole is a very effective environmental disinfectant, but it is licensed only for poultry farm use in the United States. Household chlorine laundry bleach (5% sodium hypochlorite) diluted 1:10 in water, is an effective, inexpensive environmental disinfectant.

*Keith Hnilica, DVM, MS, Dip ACVD, MBA
17th San Diego Co VMA Conf Procd*

Advancing pain management

Many resources are available to veterinary professionals interested in learning more about the principles and applications of multimodal pain management, including the International Veterinary Academy of Pain Management (IVAPM). The IVAPM is dedicated to promoting, advancing, and enhancing pain management in animals. Membership is inexpensive, especially if multiple members of a practice join. Go to www.IVAPM.org.

*Janet Van Dyke, DVM
DVM, 41:6*

Protein-to-creatinine ratio by free-catch

Although cystocentesis is generally considered the most reliable technique to provide an accurate UPC ratio, only a couple of studies about the effects of voiding on the urine protein measurement have been published. In one report in dogs it was suggested that urine samples collected by free catch during the midstream phase of micturition, in particular in males, may result in a higher UPC ratio, compared with urine samples collected by cystocentesis. Cystocentesis is not accepted by a number of owners and some practitioners; as a result, urine sample collection by cystocentesis is not performed. As a matter of fact, the UPC ratio is generally considered reliable only if urine samples are collected by cystocentesis. The results of this study showed that the UPC ratio in dogs was minimally affected in urine samples collected by free catch, thus allowing correct grading of proteinuria with this method. The high reliability of the UPC ratio in free-catch urine samples coupled with the ease of collection should increase the use of this value for assessment of proteinuria.

*Laura Beatrice, DVM et al.
JAVMA, 236:11*

Zinc phosphide toxicosis

Precautions for caregivers of affected animals: Inhaling the liberated phosphine gas from vomitus or during postmortem examination is potentially dangerous to people. Therefore, take precautions. Warn pet owners and your veterinary staff to limit exposure and to remain in well-ventilated areas. Phosphine is considered an oc-

cupational hazard at 0.3 ppm, but the olfactory detection threshold in people is 1.5-3 ppm. Phosphine gas is known to cause serious illness and death in people at 7 ppm. Treatment involves inducing emesis, reducing phosphine gas liberation, and providing supportive care and antioxidant therapy. Induce emesis immediately in dogs and cats that have ingested zinc phosphide unless the animals are convulsing or comatose. The emetic of choice is apomorphine (0.03 mg/kg, IV or 0.25 mg/kg, placed into the conjunctival sac) to minimize gastric acid secretion. However, 3% hydrogen peroxide (2 ml/kg, PO, not to exceed 45 ml) is available over-the-counter and easy to administer promptly by pet owners before presentation to your clinic.

*Amanda G. Schnitker, DVM and Steven L. Marks, MS, MRCVS
Vet Med, Sep 2010*

Antibiotics for Staph skin infections

The empirical choice of a β -lactamase stable antibiotic is very often appropriate when treating staphylococcal skin infections. This class of drugs exhibits a broad spectrum of activity with low toxicity to the host. In addition, they are typically given orally and remain affordable, improving ease of administration. They are very effective against most staphylococcus species as they are bactericidal and development of resistance to the β -lactamase stable drugs has been slow. An important point is strains exhibiting methicillin resistance may appear susceptible to the β -lactam antibiotics in vitro, but in vivo are resistant to the entire class. It is important to be aware of this as most microbiology laboratories do not alter the report to reflect this and you must use the oxacillin or methicillin susceptibility result in order to guide the interpretation. Drugs and dosages follow. Cephalexin, 22-33 mg/kg, q12h; amoxicillin + clavulanic acid, 22-33 mg/kg, q12h; cefpodoxime 5-10 mg/kg, q24h.

*Elizabeth R. May, DVM
102nd ND VMA Conf Procd*

Which fluid bag to grab

Recently, there has been discussion about what is the safest IV fluid bag to grab. Does it matter if you stock LRS vs. 0.9% saline vs. Norm-R vs. Plasmalyte on your shelves? In the event of an emergency, does it really matter? Recently, the misconception that LRS is always the safest choice for fluid therapy has been debated. When it comes down to it, most crystalloids are safe in replacing what you need with either dehydration or shock-free water and salt. Most of these balanced replacement or maintenance crystalloids provide a sodium level similar to the body, and for that reason, it is generally safe to

go with the decision to pick an IV fluid choice closest to your patient's sodium.

*Justine Lee, DVM, Dip ACVECC
110th MN VMA Conf Procd*

Dispensing drugs to a vacationing pet owner

The following information applies to Wisconsin veterinarians. However, the subject is of interest to all veterinarians and may be applicable in your state as well. Check with your State VMA. Wisconsin Administrative Code, would appear to prohibit the dispensing of a drug without meeting the requirements for prescribing the drug. However, the definition of "prescription" appears to allow a veterinarian to dispense a drug on the prescription of another veterinarian. The Veterinary Examining Board considered this issue and concluded that a second veterinarian could dispense prescription drugs that are written by the primary veterinarian who had examined the animal and initially wrote the prescription. In the instance of the vacationing pet owner, the alternatives are: 1. have the patient's regular veterinarian fax a prescription to you, or 2. do an examination of the patient. It is not otherwise permissible to dispense the requested drug.

*Gregory E. Scallon
Wisc VMA News, Sep 2010*

Post-chemotherapy precautions

For drugs that are excreted in the urine (such as cyclophosphamide metabolites or platinum drugs), the pet should be encouraged to urinate on soil where urine will drain quickly, and any urine in other areas should be handled and disposed of as chemotherapy. Soiled bedding should be discarded rather than laundered. Surfaces should be washed down gently. For cleaning of soiled cages and runs, pressure hosing must be avoided as it efficiently aerosolizes any toxic substances. These precautions should be followed for 48-72 hours following administration.

*Antony Moore, BVSc and Angela E. Frimberger, VMD
25th ACVIM For Procd*

Losing weight in the cat

This point cannot be overstated: too many calories of any kind, including protein calories, will cause weight gain or failure to lose weight. Thus, at this time, the best commercial diets for achieving a high-protein, low-carbohydrate, low- to moderate-fat profile that can provide reasonable portion sizes are canned cat foods. For example, a typical diabetic (high-protein/low-carbohydrate) canned diet contains 165 to 190 kcal/5.5-oz can. Thus, when the target for caloric intake is 180 kcal or less, it can be easier to achieve the high protein necessary to preserve muscle mass in a portion-controlled diet with these foods. However, canned foods can also be high in carbohydrate or low in protein or have poor-quality ingredients, resulting in ineffective or unhealthy weight loss. One size does not fit all in cat foods, and careful reading

of the label can help determine the protein, carbohydrate, and fat levels, which is the start of the process.

*Debra L. Zoran, DVM, MS, PhD, Dip ACVIM
Comp, 31:6*

Analgesia in the ferret and rabbit

Hydromorphone and fentanyl are μ -receptor agonists and are excellent analgesics for visceral and somatic pain. CRIs are necessary when using rapidly metabolized opioid, such as fentanyl, for operative and postoperative analgesia. Fentanyl and hydromorphone can be reversed using naloxone or partially reversed with butorphanol (reverse the respiratory depression and sedation without completely reversing analgesia). The pre-op hydromorphone dose listed for the rabbit or ferret is 0.05-0.1 mg/kg, IV. The CRI or post-op dose is 0.05 mg/kg, IV, loading dose, then 0.05-0.1 mg/kg/h. The pre-op dose listed for fentanyl is 5-10 μ g/kg, IV. During surgery: 5-20 μ g/kg/h with ketamine CRI.

*Mark Lichtenberger, DVM and Jeff Ko, DVM
Vet Clin N Amer, Exotics, 10:2*

Identifying the cat with inappropriate urination

Diagnosing the early causes of a long-standing housesoiling problem can be very difficult. Even with the best efforts, the initial reasons for not using the litterbox may not become evident. Be sure the cat presented for the problem is actually the one that is housesoiling. In a multi-cat household, separation may be necessary to find the culprit. Another method is to give fluorescein orally (0.5 ml of a 10% solution) or by injection (0.3 ml of a 10% solution, SQ) in order to trace urine stains to the individual with the problem. Urine-soiled spots retain fluorescence for at least 24 hours.

*Wayne Hunthausen, DVM
West Vet Conf Procd, 02:10*

Hydrolyzed diets

With hydrolyzed diets, the protein source—usually a common protein such as chicken or soy—is degraded into peptides and amino acids by enzymes to reduce, but not eliminate, the allergenicity of proteins. A recent study demonstrated that a variable proportion (up to 50%) of dogs will exhibit worsening of clinical signs when fed hydrolysate diets derived from proteins that are involved in their adverse reaction to food. Therefore, these diets are probably best used in cases where there is no suspicion of hypersensitivity to the diet's individual components.

*Jeanne B. Budgin, DVM, Dip ACVD
NAVC Clin Brf, 8:8*