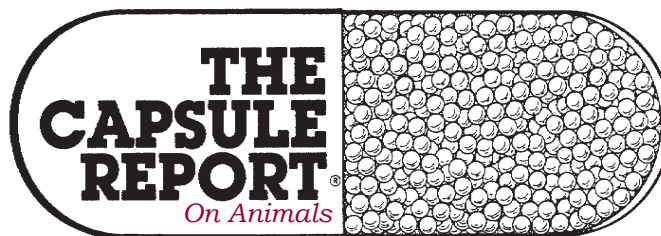


A digest of practical and clinically relevant information from this month's journals and proceedings



Small Animal/Exotic Edition

Our 30th Year

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Amnesia effect of midazolam

Opioids are the foundation of multimodal perioperative analgesia. They have analgesic activity peripherally and centrally. Mu agonists such as morphine, hydromorphone, and methadone and the partial mu agonist buprenorphine are the authors' preferred pre-surgical opioids. The kappa agonists butorphanol and nalbuphine are best suited for sedation for nonpainful procedures. Midazolam, a benzodiazepine, is also an excellent premedication component. Unlike diazepam, midazolam is well-absorbed intramuscularly. Midazolam provides additional sedative effects as well as analgesic benefit, and there is reason to believe that some **patients given midazolam experience short-term amnesia**, reducing their awareness of the hospital experience. In addition, most of the authors' healthy patients require a third premedication component—acepromazine, medetomidine, or dexmedetomidine.

*Robert M. Stein, DVM, DAAPM and Stephanie Ortel, LVT, BVS
Vet Med Supp, 06:08*

Management of diabetes in the cat

Diabetes mellitus in cats is usually due to a combination of insulin deficiency and insulin resistance. Both must be addressed to achieve success. Therefore, the first step is to diagnose and treat the causes of insulin resistance, which most commonly include chronic pancreatitis, bacterial cystitis or pyelonephritis, and periodontal disease. Urine culture and fPLI should be performed on all newly diagnosed diabetic cats. The oral cavity should be examined for periodontal disease. Failure to diagnose and treat these problems will usually lead to therapeutic failure. Diet is an important part of the therapeutic package. An ultra-low carbohydrate (carbs <10%) diet is preferred. The author's preferred approach is best described as "ultra loose control." This means that regulation is based more on control of clinical signs than on trying to achieve "ideal" blood glucose levels (100-300 mg/dl). It recognizes that cats tolerate hyperglycemia better than other species. A protamine zinc insulin product is used on a q12h basis. Owners are not asked to check

blood glucose levels at home. The author does not use glucose curves or home glucose testing in the regulation protocol. Glucose curves are notoriously inaccurate and misleading in cats and should be used sparingly, if at all. Home glucose testing places undue emphasis on glucose values instead of the whole cat. It also often results in clients making dosing decisions and excluding professional involvement.

*Gary D. Norsworthy, DVM, DABVP
Music City Conf Procd, Mar 2012*

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Topical therapy for cataracts

Various nutraceutical products, including vitamin and mineral supplements, have been marketed with claims that they dissolve, reverse, or slow cataract progress. Because these products are not classified as drugs, proof of efficacy or company claims of success are not required by the FDA. In some cases, product claims are made without scientific merit. In other cases, veterinarians have misinterpreted test results (e.g., pupillary light reflex, dazzle reflex, menace response) that led to erroneous conclusions about the role of the supplements in bettering canine vision. Claims of efficacy for some supplements marketed for cataracts are mainly anecdotal; how-

ever, there are documented studies in scientific and refereed journals for others, including Ocu-GIO (ocuglo.com), a supplement that possibly slows progression of degenerative eye disease, including cataracts. In addition, Kinostat, an aldose-reductase inhibitor developed to prevent progression of early diabetic cataracts, is undergoing trials and evaluations before FDA approval is sought.

*K. Ketring
NAVC Clin Brf, Jun 2012*

Tear staining

Treatment to stop the staining from the tears (does not stop the tearing itself) consists of oral tetracycline: 5-10 mg/kg/day. The mechanism is thought to be chelation by tetracycline of the pigment in the tears. This treatment works as long as the drug is given. Other treat-

The Capsule Report.

ments listed (and of unknown efficacy because reports are anecdotal) include chlortetracycline; oxytetracycline: 25-50 mg/day, 2 weeks on and 2 weeks off; doxycycline and niacinamide; tylosin, give a pinch in food once a day until the staining is gone, then every other day for one month, then twice each week; metronidazole: 100-200 mg, orally, once/day for 10 days of each month; and topical naphazoline HCl 0.1% (e.g. Albalon, Clear Eyes).

*Sheryl G. Krohne, BA, DVM, MS, Dip ACVO
N Amer Vet Conf Procd, Vol 22*

Scalding from garden hoses

In this report, 22 skin biopsy samples had histopathologic findings consistent with thermal burns. Of these, 10 cases had histories suggestive of exposure to hot water from garden hoses. These cases came from areas where the daytime temperatures were known to have reached upward of 90°F before presentation. These cases were typified by injuries along the dorsum. To test the theory that water in the garden hose can get hot, a hose was left out for 2 hours in temperatures rising from 89°F to 94°F. The water collected from the hose reached a temperature of 120°F, a temperature capable of producing thermal scald injury. With scalding injuries, clinical signs may not be apparent for several days or even longer after the heat exposure. Pet owners may not be able to remember when or how the injury occurred. This study shows that discussing the possibility of garden hose scalding syndrome with your clients is prudent.

*E.M. Quist et al.
Vet Med, Jul 2012*

iPhone app for dog nutrition

Sheri Cone, DVM, has announced the release of a new iPhone app to help dog owners monitor pet activity and caloric intake. *Doggie Dietician* tells dog owners in a simple, easy-to-use format whether dogs are over- or underfed and makes specific recommendations for improving pet diets. Some app features include an updated database of breeds and ideal weight, a database of common food and treat caloric contents, client-updated status of the pet's activity level and age, calculation of correct caloric needs, a list of toxic foods to avoid, and more.

NAVC Clin Brf, 9:11

DES for incontinence

Reproductive hormones are reasonably effective in improving continence in dogs with urethral incompetence. Estrogens are often chosen for dogs that do not tolerate alpha agonists and for pet owners who prefer the less frequent dosing regimen. Most practitioners are familiar with DES (0.1-1.0 mg/dog, q 4-14 d). DES is no longer commercially available but is available from many veterinary compounding agencies. The effec-

tiveness of estrogen is improved by using a "loading" phase of 5-7 days, followed by a frequency of administration tailored to the individual patient and drug. A prolonged residual effect of estrogen administration can be seen in some dogs after a period of successful treatment. Administration can be stopped on a trial basis and restarted when incontinence returns (usually weeks to months). DES administration leads to improved continence in 60%-80% of treated dogs.

*India F. Lane, DVM and Julie R. Fischer, DVM
ACVIM For Procd, 06:11*

Treating fungal otitis

Antifungal agents are required in any case complicated or caused by the yeasts, *Malassezia* or *Candida* or dermatophytes. Some products that appear effective in vitro are not always effective for *Malassezia* clinically. This can be seen most commonly with nystatin (Panalog) and to a lesser degree Thiabendazole (Tresaderm). Clotrimazole is one of the most commonly used antifungal/antiyeast agents and is found in many brand name products. It is often highly effective but on occasion there will be non-responsive *Malassezia* cases. The author finds topical 1% miconazole (Conofite lotion) to be very effective. Even more resistant *Malassezia* cases can be treated by adding a **crushed 200 mg tablet of ketoconazole** to the miconazole products. Miconazole should usually be combined with a topical glucocorticoid, as straight miconazole can be irritating when applied into the ear. A 1% dexamethasone solution can be made by removing 7 ml from a 30 ml bottle of Conofite lotion and replacing it with 7 ml of dexamethasone (4 mg/ml). When acetic acid is found to be irritating to the ear canal, milder *Malassezia* cases can be treated with boric acid solution, without the presence of acetic acid.

*Wayne Rosenkrantz, DVM, Dip ACVD
West Vet Conf Procd, 02:10*

Internal medicine pearls

Sometimes cats fail to respond to prednisone because the diagnosis is wrong and they don't have a corticosteroid-responsive disease. But sometimes they fail to respond because they can't convert prednisone to the active form, prednisolone. Eliminate the potential for treatment failure based on poor hepatic conversion by giving prednisolone to all cats that require oral corticosteroid therapy from the start. Lactulose (for cats with chronic constipation) is effective because there is no enzyme to digest this disaccharide; thus, the disaccharide stimulates osmotic diarrhea. Most cats are lactose-intolerant and will have a similar response to milk. Cats frequently hate the taste of lactulose but love milk. Titrate the dose to soften stools. Lime sulfur is still the most effective antifungal for treating dermatophytosis. Sure it stinks, but it's safer than griseofulvin and cheaper than fluconazole or itraconazole. And it more effectively eliminates dermatophytosis than any of those products combined.

*Kenneth R. Harkin, DVM, Dip ACVIM
Vet Med, 102:12*

Puppy classes and Parvo

Although veterinary behaviorists have espoused the importance of puppy socialization classes for years, many general practitioners are uncomfortable making this recommendation. A commonly held belief among some veterinarians is that attending socialization class increases an incompletely vaccinated puppy's risk of contracting infectious disease. This study disproves that notion and indicates that the risk of a puppy becoming infected with canine parvovirus (CPV) while attending puppy class is very low, even in lower-income areas where the likelihood of contracting CPV was higher. When run by knowledgeable trainers, the benefits of puppy classes far outweigh any risks. Puppy classes not only socialize puppies and prepare them to be good canine citizens, but also educate owners on canine behavior and positive, humane training methods.

*M.E. Stepita et al.
So Cal VMA Pulse, 55:11*

Pseudomonas otitis and steroids

One very important key to successful treatment of *Pseudomonas* otitis, is the concurrent use of glucocorticoids, preferably systemically. Glucocorticoids reduce the pain that is associated with this condition and thus will make application of topical medications easier and more effective. In addition, glucocorticoids reduce the inflammation, which also reduces the discomfort and swelling that accompanies this condition. Naturally, any allergy testing should be *done prior* to initiation of glucocorticoid therapy. ANOTHER important point: Patients with *Pseudomonas* infections tend to get other secondary infections, most often yeast infections, immediately after the *Pseudomonas* is cleared. This is probably because application of topical medications to clear the bacterial infection tends to leave the inflamed ear moist, and thus more susceptible to yeast infections. Therefore, the author recommends prophylactic anti-yeast therapy be initiated as soon as the bacterial component of the otitis is controlled.

*James O. Noxon, DVM Dip ACVIM
WA St VMA Conf Procd, 06:08*

Intranasal vaccine given parenterally

Can a vaccine intended for intranasal administration be effectively given parenterally; for example, SQ administration of an intranasal *B. bronchiseptica* + parainfluenza? NO! This MUST NOT be done. Severe post-vaccination complications associated with replication of bacteria and release of toxic proteins that target the liver could cause acute hepatocellular injury and death following a single dose. WARNING: some products licensed for IN administration are packaged as though they are intended for parenteral administration. All personnel authorized to administer vaccine must be trained on proper administration techniques.

*Richard B. Ford, DVM, MS, Dip ACVIM
PVMA Sem Procd, 02:11*

End-of-life issues, cat

Feeding tubes save lives. They make administration of nutrients and medications less stressful for the client and for the patient. Naso-esophageal tubes can be used short term and require a liquid diet, such as Clinicare Feline (1.0 kcal/ml). Human enteral diets are too low in protein for long-term use and have a high osmolarity resulting in diarrhea. Oral syringe feeding can be performed with minimal stress if several tips are considered. Face the cat away from you; small volume syringes are preferable as administration of more than one ml at a time is larger than the oral capacity of the kitty; place the tip of the syringe at the back of the mouth to make it harder for the cat to spit out the food; room- or body-temperature food is less unpleasant. A cat's stomach can hold up to 100 ml in health, so starting with 6 ml and increasing in 6 ml increments to 48 ml total per feeding is realistic with most cats.

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

Kitten immunity

Kittens receive almost all their passive immunity during the first 18 hours of life (before gut closure) with the ingestion of colostrum; there is little or no transplacental transfer of immunoglobulins in the cat. The serum IgG nadir is reached at about 4 weeks of age due to catabolism of maternal IgG and correlates with a period of vulnerability to infection. IgG levels then steadily increase as the kitten's own adaptive immunity develops. Failure of passive transfer can occur in kittens that have not ingested colostrum during the first critical hours. Correction of failure of passive transfer can be accomplished by SQ injection of adult cat serum from a cat with compatible blood type that has been screened for infectious diseases (15 ml/100g body weight, divided into 3 doses over 24 hours). Kittens with uncorrected failure of passive transfer start to produce IgG at about 4 weeks of age; they are therefore most vulnerable to infection from birth to at least 4 weeks of age.

*Susan Little, DVM, Dip ABVP
Am Ass'n Fel Pract Conf Procd, 03:10*

Dosing cyclosporine

Overall, cyclosporine (CsA) tends to be well tolerated, although GI upset is common, especially when the drug is first started. Starting doses are commonly 5 mg/kg, once daily or, in some cases, BID. In order to avoid the GI side effects (vomiting, diarrhea, anorexia), the dose of CsA is often given at half the starting dose WITH FOOD for 5-7 days. Then the dose is increased to the total dose WITH FOOD for another 5-7 days. If the animal is still tolerating this dose, food is then

removed and the drug is given on an empty stomach as directed. Other side effects with cyclosporine may include callusing of the footpads, proliferation of the gums/gingiva, and red or swollen ear flaps. Other serious complications may include activation of certain infections (e.g. toxoplasmosis) or susceptibility to new ones (fungal and viral disease) due to its potent immunosuppressant. The efficacy of vaccination may also be impaired when animals are on cyclosporine. Other considerations when starting an animal on cyclosporine include cost. In medium to large breed dogs, CsA can cost an owner hundreds of dollars a month. It can be combined with ketoconazole in larger pets (with normal liver function) in an attempt to decrease the dose. For its part, ketoconazole is dosed at 5 mg/kg/day and the dose of CsA subsequently decreased to (as much as 50%). Liver enzymes should be monitored closely for any signs of hepatopathy resulting from ketoconazole.

*Dr Allison Bradley et al.
72nd CO St U CVM Conf Procd*

Kidney disease and proteinuria

If, in the past, you've been inclined to not worry about proteinuria in a seemingly normal patient, it's time to start paying attention. In patients with chronic kidney disease, the risk of an adverse outcome worsens 1.5 times for every increase by 1 in a patient's urine protein/creatinine ratio. Your clients will appreciate your proactive approach to their pets' care.

*David J. Polzin, DVM, PhD, Dip ACVIM
Vet Med, 102:12*

Hyperthermia in the field

Overheating in the field is a scary situation, and time is of the essence. It is best to educate the clients that have athletic or working dogs on how to handle dogs with hyperthermia. They must understand that the most important thing to do is to get to the veterinarian. The longer the body is exposed to high temperatures the more damage is done. Too many dogs have suffered brain damage or have died because of futile attempts to treat in the field. The cause of death wasn't the initial heat exhaustion itself, but the secondary damage to the kidneys resulting in kidney failure. In a lot of these cases the dog would have been much better served if the top priority had been to initiate the trip to the veterinarian. The cooling down treatments could have been performed during the trip to the veterinarian and therapy could have been provided at an earlier stage of the emergency. Immediate treatments for this condition is a cool water bath or spray, ice applied to the abdomen, and/or blow a vehicle air conditioner or fan on the dog's body. Cool the body to around 103 degrees and then stop. If cooling measures are continued after this, the body's temperature will continue to drop. This will result in a hypothermic state. Once the veterinarian receives the case, start to cool the dog down, insert an IV catheter and begin to determine the dog's status. Corticosteroids (dexamethasone) given IV at a shock dose of 1 mg/lb have shown to be of benefit in most cases. It

is important to monitor the kidney function of the dog. It is common for a dog to recover from the hyperthermic event and then succumb to kidney failure.

*Robert L. Gillette, DVM, MSE
Cent Vet Conf Procd, 10:07*

Encouraging the older pet to eat

Following a thorough physical examination and medical evaluation attempting to rule out cancer cachexia or various metabolic disease, this author advocates one or more of the following non-medical options for encouraging the pet to eat; more frequent meals; hand feeding the pet; adding water to the dry food; feeding canned food; warming the food; adding commercial flavor enhancers; and mild exercise prior to mealtime. Bowls used for feeding elderly cats should be wide and shallow so that the sides do not touch the cat's whiskers. Dietary fat helps make foods more palatable, an important consideration in older animals that may have a diminished sense of smell or taste. Cyproheptadine (Periactin), 2-6 mg/dog, PO, BID and 1-2 mg/cat, PO, BID has been used as an effective appetite stimulant in some cases, however it may take several days before the desired effect. Alpha-2a Interferon has also been used effectively for long term appetite management as have anabolic steroids. In cats and humans **weekly B complex** injections has also been shown to be effective in increasing appetite in some cases.

*William Fortney, DVM
Cent Vet Conf Procd, 09:07*

Feline dermatophytosis, topical treatment

To clip or not to clip? It depends on the length of the hair, clinical history, extent of the lesions and ability to confine the cat during treatment. The goal is to remove infected hairs which could contaminate the environment and lead to re-infection. This author uses a miconazole-chlorhexidine shampoo (Malaseb:Teva) or a ketoconazole-chlorhexidine shampoo (KetoChlor:Virbac) followed by a lime-sulfur (Lime-Plus Dip:Dechra; LymDyp:Teva) rinse at 8 oz/gallon, twice a week. Studies conducted at a humane society have shown that the use of lime sulfur (8 oz/gallon, twice a week) and itraconazole (10 mg/kg, q24h) in 31 cats demonstrated a median of 30 days (range 10-69 days) to mycological cures. No matter what treatments are used, they should be continued until two negative cultures are obtained 1-2 weeks apart.

*Kenneth W. Kwochka, DVM, DACVD
So Cal VMA Sem, Oct 2012*

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