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"Pearls" of Veterinary Medicine

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Rabies guidelines (continued from April)

As before, cats and dogs that are exposed to rabies and are current on vaccination should receive veterinary care and a booster, then be kept under the owner's control and observed for 45 days. Euthanasia is the primary recommendation for cats and dogs that are exposed to rabies and have never been vaccinated, because of the high risk of developing disease. The other option is vaccination and quarantine. If the owner is unwilling to have the animal euthanized and has the wherewithal to do a strict quarantine, we actually have reduced that quarantine period for dogs and cats to 4 months from 6 months. The most confusing category is dogs and cats that are overdue for a booster vaccination—so, they have received a rabies vaccination at some point—but there is no appropriate documentation. The simplest thing to do is go ahead and booster that animal—get them to veterinary medical care, give them a booster— and then place them in strict quarantine for 4 months. So, essentially, you're treating them as an unvaccinated animal. According to the compendium: Alternatively, prior to booster vaccination, the attending veterinarian may request guidance from the local public health authorities in the possible use of prospective serologic monitoring. Such monitoring would entail collecting paired blood samples to document prior vaccination by providing evidence of an anamnestic response to booster vaccination. If an adequate anamnestic response is documented, the animal can be considered to be overdue for booster vaccination ... and observed for 45 days.

JAVMA, Mar 1, 2016

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Manuka honey for wound care

Raw (not processed) honey has been shown to have antibacterial properties. Manuka honey, derived from the New Zealand manuka tree, has an even greater antibacterial effect, thought to be derived from high levels of antioxidant phenols called UMF or unknown manuka factor. Different batches of honey can have different levels of UMF, so medical-grade manuka honey with greater than 10% UMF should be used. Manuka honey has also been shown in numerous scientific studies to enhance immune activity at the site of application, thought to be due to arabinogalactans. It also causes the release of antiinflammatory cytokines and is associated with decreased bacterial biofilm production in addition to decreased bacterial counts. Many sources of medical-grade Manuka honey are available (check online), as well as different formulations of the product—gels, impregnated gauze, and sponges. Medical studies have shown effectiveness against numerous strains of bacteria, including methicillin-resistant *Staphylococcus aureus* (MRSA) and resistant pseudomonas.

Heidi Hottinger, DVM, DACVS
N Amer Vet Conf, 01:14

Overheating and hypoglycemia in the neonate

One of the most common errors in the emergency room is to overheat neonatal patients. They are put on heating pads with aggressive heat support (e.g., BAIR huggers), only to find that their temperature shoots up to 103°F. As the normal temperature in a neonate (until 2 weeks of age) is 96°F *this is equivalent to overheating an adult dog to* 107°F. Clinically, neonatal patients can quickly deteriorate when overheating occurs (e.g., crying, dehydrated, panting, shock). Early signs of hypoglycemia, which may include lethargy, decreased suckle, crying, and a limp body, should be treated immediately. The use of corn syrup has not been shown to provide an immediate beneficial response in adult humans, but it may have some benefit in neonates. It also provides an emergency treatment option for clients at home. IV dextrose boluses (0.5-1.5 mL/kg, IV of 50% dextrose diluted 1:1-1:2, or 2-4 mL/kg of a 10% dextrose solution) are preferred over PO dextrose. Isotonic fluids supplemented with 2.5%-5% dextrose as a CRI can also be used; however, caution should be used to prevent over-supplementation, as prolonged hyperglycemia can result in worsening dehydration via osmotic diuresis.

Justine A. Lee, DVM, DACVECC and Leah A. Cohn, DVM
NAVC Clin Brf, 13:2, 2016

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Inflammatory polyps in the cat

Current therapies of choice include removal by traction/avulsion or removal by ventral bulla osteotomy. A significant reduction in the incidence of recurrence following traction has been noted in cats treated with ***oral prednisolone following traction removal***. Glucocorticoids can be used at anti-inflammatory dosages (1–2 mg/kg/day to initiate therapy) over several weeks. It would appear that traction/avulsion alone is more effective for nasopharyngeal polyps. Patients with nasopharyngeal polyps are less likely to have radiographic evidence of polypoid tissue within the middle ear, suggesting that they may grow from the auditory tube and are more completely removed with traction. Ventral bulla osteotomy is noted to cure the vast majority of cases.

Jenise C. Daigle, DVM, Diplomate ACVD
Mich Vet Conf, 01:14

Gingivostomatitis, using steroids

The primary goal of any treatment for a cat with gingivostomatitis is to decrease inflammation, pain, infection, and to modulate the host's immune response. Medical treatment is sometimes necessary after oral surgery to control disease in resistant cases. Anti-Inflammatory Drugs: Use of these drugs as a sole treatment for cases with stomatitis is not recommended. Use of long term steroids can lead to diabetes mellitus and can decrease the body's ability to resist the inflammatory process. Often with long term use of steroids, cats seem to develop 'resistance' and their response to the drug decreases. Prednisolone - 2 mg/kg, daily for a week, then 1 mg/kg, daily for a week then a maintenance dose of 0.5-1 mg/kg, every other day (goal is to decrease to the lowest effective dose). Oral triamcinolone - 1.5 mg per cat, once daily, for a week, then every other day, for a week, then every 3 days. Then leave at twice a week for a few months and occasionally try weaning off medication. The pill can be crushed to a powder and suspended in water for administration. Methylprednisolone acetate - 15-20 mg/cat, SQ, every 3-6 weeks as needed.

Cindy Charlier, DVM, DAVDC
MidWest Vet Conf, Feb 2016

Acepromazine

Acepromazine does not provide analgesia and will not block the conscious patient's response to noxious stimuli. Concurrent use of analgesics is advised for noxious procedures. When used as part of a pre-medication plan, doses considerably lower (0.01-0.05 mg/kg, IV, IM, SC) than those listed on the label are effective. Phenothiazines have reportedly lowered the seizure threshold when administered in conjunction with seizurogenic agents (e.g, metrizamide for myelography). More recent reports have shown that increased incidence of overt seizurogenic activity ***has not been associated*** with the use of acepromazine and thus its use has been recommended in animals with the potential seizures.

Khursheed Mama, DVM, DACVAA
Plumbs Ther, Mar 2016

Night time waking

For the dog or cat that has difficulty settling at night but then sleeps well, situational use of anxiolytics that may promote sleep may be beneficial as adjunctive therapy to behavior modification. Benzodiazepines may be useful because of rapid onset of short-acting anxiolytic and sedative effects. In senior pets, especially if liver function might be compromised, clonazepam, lorazepam, or oxazepam might be preferable to alprazolam or diazepam since these do not have active intermediate metabolites. The dog that goes to sleep and then wakes up in the middle of the night may be experiencing pain, elimination urges, confusion or even seizures. Consider a trial of gabapentin as adjunctive therapy for pain management. ***Gabapentin may also have mood stabilizing effects*** and anticonvulsant properties which may be useful. Provide a comfortable sleeping area with an Adaptil Diffuser for support of emotional wellbeing. Some elderly dogs benefit from a heated bed which may provide comfort for neuromuscular disorders. Assure clients they may attend to their pet's needs in the night and that "ignoring" such bad behavior is not required. If a little reassurance helps a confused pet settle in the night, then this is a humane and kind strategy. Some clients feel they must ignore their pet in the night and this may result in more confusion and anxiety in a dog that is experiencing cognitive distress. Certainly punishment or reprimand for behaviors caused by confusion is contraindicated. A day time routine that includes fresh air, sunshine and exercise may help reset the day time – night time cycle for all family members. Excessive or extreme increases in exercise should be avoided.

Theresa DePorter, BSc, DVM, dip ECAWBM, Dip ACVB
Mich Vet Conf, 01:14

Giardia and the immunocompromised

It appears that there are specific genotypes of *Giardia* that commonly infect dogs (*G. canis*; Assemblages C and D) and cats (*G. feli*; Assemblage F) but not people. Accordingly, ***healthy pets are not considered significant human health risks*** for HIV infected people by the Centers for Disease Control (www.cdc.gov/hiv/pubs/brochure/oi_ pets.htm). Genotyping of feline *Giardia* cases is routinely available in the USA (www.dlab.colostate.edu) if the owner would like to know if the cat is carrying a zoonotic genotype.

Michael Lappin, DVM, PhD, DACVIM
2016 VA Vet Conf

Staging kidney disease

As common as kidney disease is in companion animal practice, many practitioners in the U.S. may not be aware that there are guidelines on diagnosing and treating it. Dr. Larry D. Cowgill sits on the board of the International Renal Interest Society (IRIS), which sponsors the guidelines. All the kidney literature now would probably describe patients on the basis of IRIS staging guidelines, but if those papers aren't in the literature that general veterinarians are reading— and they're often in

the specialty journals — then they may not be exposed to the guidelines. The guidelines, posted at www.iris-kidney.com, comprise the IRIS statement on Staging of Chronic Kidney Disease, IRIS Treatment Recommendations for CKD, guidelines on Grading of Acute Kidney Injury, and consensus recommendations for Treatment of Canine Proteinuric Kidney Disease.

Dr. Larry D. Cowgill
JAVMA, Mar 15, 2016

NSAIDs in ferrets

A study of the metabolism of acetaminophen by the ferret liver concluded that the activity of the hepatic enzyme, glucuronosyltransferase, in ferrets is similar to that in cats and that as a consequence ferrets have a poor ability of glucuronidation of nonsteroidal anti-inflammatory drugs (NSAIDs). Since this was an in vitro study it emphasizes the need for proper scientific studies into the pharmacodynamics and safety of NSAIDs and other analgesic drugs in ferrets. Until these studies are available, it is advised to ***extrapolate data on the use of NSAIDs in the cat to ferrets***.

Nico J. Schoemaker, DVM, PhD, DECZM, DABVP
N Amer Vet Conf, 01:14

Squamous cell carcinoma, cat nasal planum

UV-induced squamous cell carcinoma (SCC) starts out as a nonhealing wound. The human equivalent to this stage is actinic keratosis or solar dermatitis and is deemed a dermatologic condition. It's not cancer yet! These precancerous lesions progress to carcinoma in situ, where cells have developed hyperplastic characteristics but haven't adopted an aggressive, invasive phenotype yet. After this stage comes carcinoma, where the cells become invasive to surrounding tissues. If disease is diagnosed in the multi-centric carcinoma in situ and actinic keratosis state, there is some evidence that using a 5% imiquimod cream (e.g., Aldare, Zyclara) on the lesions can treat the condition. While imiquimod cream has been tested on SCC in cats, it is not labeled for use in cats, and it can be difficult to keep the cat from licking off the cream. However, it is an option to consider in cats for which surgery or radiation therapy is not an option.

Timothy Fan, DVM, PhD DACVIM
DVM, Mar 2016

Rehab - walking

Walking exercises can increase range of motion, promote normal gait and placement, improve muscle mass and strength, improve circulation of the blood and lymphatic vessels, increase endurance, and prevent joint degeneration. Place a leash on the patient, and position him or her on a firm surface that provides good footing. Walk the patient slowly, giving him or her adequate time to place each limb on the ground and shift weight to that limb, ensuring even therapy for all limbs. As the patient improves, you can increase the speed and eventually allow the patient to run on the leash. You can also do these exercises: Inclined walking - Walk the patient up a gradual incline or short flight of stairs. This increases hindlimb muscle and strength, flexion, extension, and range of motion. Figure-of-eight pattern - Walking a patient in a figure-of-eight shifts weight across all four legs and increases the amount of body weight forced on each leg as the patient turns. Squats - Sit-to-stand exercises help build quadriceps and hamstrings. Have patients perform these periodically during walks or have them do repeated sets of stationary sit to-stands. Make sure the dog sits with both legs under the rump. Encourage this by placing the weaker leg against your leg or having the patient squat in a corner or against a wall.

Jennifer L. Wardlaw, DVM, MS, DACVS
Vetted, Jan 2016

Minocycline, give without food

Superficial pyoderma, a common disorder in dogs, is increasingly associated with methicillin-resistant *Staphylococcus pseudintermedius* (MRSP). Doxycycline is often used to treat MRSP infections in dogs. Minocycline is substantially less expensive, but limited data exist in the veterinary literature as to its pharmacokinetics in dogs. In this study, a single oral dose of minocycline (5 mg/kg) was administered to 10 hounds, and the pharmacokinetics were determined with vs without food in a crossover study. Results showed that feeding significantly varied the drug's pharmacokinetics in dogs; therefore, ***minocycline should be given without food***.

M.L. Hnot et al.
Plumb's Ther Brf, Mar 2016

Questioning tramadol as an analgesic

Although advances have been made in veterinary pain management, areas remain for further investigation. One example is effective oral analgesics for acute postoperative pain control in dogs, as an alternative or in addition to NSAIDs. A growing percentage of veterinarians prescribe tramadol as an alternative, but there is ***little evidence about its clinical efficacy***. Moreover, the pharmacokinetic data are limited and inconclusive; many questions remain about indications for tramadol, effective doses, and administration frequency. This study shows how tramadol is a long way from becoming a reliable oral analgesic in dogs. In this dog model for post-enucleation pain control, tramadol was inferior compared to carprofen. Despite the risk for side effects, the efficacy of NSAIDs is undisputed and should be used as a base for the analgesic protocol unless contraindicated.

Maria Angeles Jimenez Lozano, DVM, CertVA, DECVAA
NAVC Clin Brf, Mar 2016

Weaning the epileptic off phenobarbital

There are several reasons to decrease the phenobarbital dose or wean a patient off phenobarbital: 1) Patient is seizure-free for one year. 2) Side effects of phenobarbital are affecting patient's quality of life (polyuria, polydypsia,

polyphagia, ataxia). 3) Patient develops liver disease. 4) Patient develops an idiosyncratic blood cell dyscrasias. 5) Patient is being switched from phenobarbital to another anticonvulsant. How do you wean a patient off phenobarbital? There is no set rule for how to wean a patient off phenobarbital. The key is to slowly wean them off rather than stopping it abruptly. Stopping phenobarbital abruptly could result in rebound (withdrawal) seizures. Most patients can be safely weaned off phenobarbital over a 3-6 month period by decreasing the dose 10%-20% every 2 weeks. Ideally, serum phenobarbital concentrations should be checked every month after weaning starts. Phenobarbital can be safely stopped once the serum concentration reaches 10 µg/mL. The phenobarbital dose can be decreased more rapidly in patients that develop severe hepatotoxicity from phenobarbital. In this situation, the dose can be reduced by as much as 25% a week, or in rare instances stopped abruptly.

Jared B. Galle, DVM, Diplomate ACVIM (Neurology
Mich Vet Conf, 01:14

Interpretation of ALT

Serum alanine aminotransferase (ALT) is probably the most accurate indicator of liver disease in small anima! medicine. However, it is important to realize that ALT is *not* a liver function test but rather an indicator of hepatocyte injury. ALT is a liver-specific enzyme present in high concentrations within the cytoplasm of hepatic parenchymal cells. As such, serum ALT activity is obviously increased with necrosis. However, a common response to non-lethal hepatocellular injury involves membrane blebbing with subsequent release of cytoplasmic-rich vesicles such that increased ALT activity is seen in the serum. Therefore, in a general way, the degree of elevation correlates not with the severity of hepatocellular damage but rather with the number of hepatocytes involved. In other words, diffuse fatty change may result in more extreme ALT activity elevations than focal hepatic necrosis. As with other serum enzymes, interpretation of ALT values is largely dependent upon circulation dynamics. Serum alanine aminotransferase activity reaches maximum elevation approximately 48 hours after acute injury. The half-life of ALT is approximately 2-4 days in the dog and approximately 6 hours in the cat. Consequently, elevations of ALT activity following single episodes of hepatocellular damage will be transient; continuous and persistent elevations imply ongoing hepatocellular damage.

Alan H. Rebar, DVM, PhD, DACVP
3rd Gulf-Atl Vet Conf

Atopy, topical steroids for flares

Topical corticosteroid application can provide the benefits of systemic corticosteroids with lower risk of adverse effects. Topical corticosteroids can prevent flares of atopic dermatitis and, in some cases, can perform as well as systemic antipruritic medications. Product selection is critical. Long-term use of betamethasone-gentamicin sprays (i.e., more than a week) should be avoided because of cutaneous steroid adverse effects and development of antimicrobial resistance. Betamethasone valerate is a potent corticosteroid that can induce epidermal atrophy and ulceration. Systemic absorption of topical steroids can induce systemic adverse effects, such as suppression of the hypothalamic-pituitary-adrenal axis and sensitization of the endocrine pancreas. A ***simple alternative to steroid and antibiotic combinations*** is chlorhexidine to control infection and a steroid-only product to control inflammation, facilitating tailored steroid and antibiotic treatment to the clinical condition. There are few veterinary-specific corticosteroid-only topical products. A 0.015% triamcinolone acetonide spray is moderate-potency and low concentration; this is useful for localized inflammation and pruritus.

Douglas J. DeBoer, DVM and Elizabeth A. Layne, DVM
NAVC Clin Brf, Dec 2015

Successful transition to a renal diet

It's important to educate pet owners about effectiveness of nutritional management for prolonging survival time and improving quality of life in patients with CKD. There are many treatments that are recommended and used for patients with CKD; however, nutritional management is the only treatment that has been shown to significantly prolong survival time in cats with CKD. Avoid offering therapeutic renal foods in stressful environments (sick and/or hospitalized, during force-feeding); a food aversion may develop causing decreased acceptance of the food when the patient is feeling better. Stated another way - while hospitalized, do not feed cats the food you want them to eat for the rest of their lives. In this situation, one option would be to initially feed a maintenance food that avoids excessive protein, phosphorus, and sodium and then begin gradual transition to a therapeutic renal food when the patient is at home and feeling better. The single most important thing you can do to increase patient acceptance of a therapeutic renal food is ***gradually transition to the new food***. The transition period should be a minimum of 7 days; however, some cats need a transition of 3-4 weeks or longer. Chronic kidney disease doesn't occur overnight and it's acceptable to take the necessary time to gradually transition to a renal food. It is critical to discuss the need for this transition with pet owners, otherwise, they are likely to take the new food home, and switch "cold turkey" from the old food to the new food at the next meal. The outcome of this scenario is very predictable - most cats will refuse to eat the new food, which results in an unhappy owner and a patient with CKD that will likely never receive the maximal benefits of nutritional management.

S. Dru Forrester, DVM, MS and Jane Robertson, DVM
3rd World Fel Vet Conf, 10:15