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THE CAPSULE REPORT® On Animals

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Vaccine basics

Can one mix vaccines from different manufacturers? No-NEVER do this in the same syringe! On the other hand, vaccines from different manufacturers may be administered at different sites in the same patient at the same visit without risk of compromising the immune response. Once reconstituted, how long can a Modified live vaccine dose be stored at room temperature and still be safe/effective? It varies-canine distemper and feline herpesvirus-1 vaccine can lose immunizing capability within 2-3 hours. Parvovirus vaccines (canine and feline panleukopenia), on the other hand may be stable for a few days. GENERAL RECOMMENDATION: For all MLV vaccines—reconstitute and use within 1 hour. If not used within 2 hours... discard the product.

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

Top 5 reasons dog itch

Armed with the knowledge that there are lots and lots of differential diagnoses for pruritus, how should one proceed? First, don't try to rule out 43 differentials the first visit. Second, realize that 95% to 98% of patients presenting for pruritus will have one of the top five causes, so you can ignore the other 38 differentials in the vast majority. **THE TOP FIVE** include: 1. Atopy. 2. Food allergy. 3. Parasite hypersensitivity (Fleas, Sarcoptes, Cheyletiella, or Otodectes). 4. Malassezia dermatitis. 5. Staphylococcal pyoderma. That's it! To make it even easier, Malassezia dermatitis and Staphylococcal pyoderma are almost always complications of atopy, food allergy, or parasite hypersensitivity. So, pretty much you just need to do cytology to determine #4 and #5, treat them directly, and only worry about #1, #2, and #3.

John C. Angus, DVM, Dip ACVD
N Amer Vet Conf Procd, Vol 22

Preventing fetal suffering in OHE

Compelling scientific evidence supports the conclusion that fetuses remain unconscious when retained in utero after maternal ovariohysterectomy. Maternal general anesthesia results in equilibration of most common anesthetic drugs across the placenta, subjecting the fetus to circulating drug concentrations comparable to those of the dam. Hypoxemia suppresses fetal EEG activity, making consciousness impossible once the maternal uterine blood supply has been occluded or transected. Thus, for veterinarians performing ovariohysterectomy in pregnant animals, appropriate procedures for fetal disposition should include the retention of the fetuses in the closed uterus after uterine removal from the dam. Once the uterus is removed from the dam, fetal death will occur ***without fetal suffering or fetal consciousness*** without any further action on the part of the veterinarian. The closed uterus may be simply set aside and the fetuses left undisturbed. If the pregnant uterus is to be opened after ovariohysterectomy, the author recommends, on the basis of the evidence cited in this commentary, that the uterus be left unopened and the fetuses undisturbed for a minimum of 1 hour after removal from the dam to prevent inadvertent fetal resuscitation. Fetal exposure to air prior to fetal death may lead to the stimulation of respiration.

Sara C. White, DVM
JAVMA, May 15, 2012

INSIDE THIS ISSUE

Practice tip

Treat for Physaloptera (the stomach worm) in the dog with chronic vomiting prior to expensive work-ups. For otherwise healthy dogs with chronic low-grade vomiting (1-2 times daily, with good appetite, no weight loss, normal blood work {you may even skip this part initially}, negative fecal), treat for Physaloptera prior to endoscopic or surgical gastroduodenal biopsies with 5-days of fenbendazole + 1 day of pyrantel and repeat in 3 weeks.

Kenneth Harkin, DVM, Dip ACVIM
Cent Vet Conf Procd, 09:07

New shock doses of fluids

When practitioners are presented with a "shocky" patient (tachycardiac, hypotensive, poor perfusion), they need to rule out cardiogenic shock (e.g., myocardial failure secondary to dilated cardiomyopathy), as the other

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types of shock generally require IV fluid therapy as part of the primary intervention to volume resuscitate the patient. Using the entire shock dose of IV fluids in emergency medicine is ***no longer considered a standard of care***. Traditional shock dose is extrapolated from the total blood volume of the patient (dogs, 60-90 ml/kg; cats, 60 ml/kg). A patient rarely requires replacement of its entire blood volume with crystalloid fluids. Instead of immediately using a whole shock dose, using smaller, repeated aliquots of IV crystalloids (over 20-30 minutes) is recommended. Hint: Simply adding 0 to the dog's weight in pounds results in a conservative shock bolus, equating to a 22 ml/kg bolus (e.g., 70 lb + 0 = 700 ml). The use of one-quarter to one-third of a shock bolus of a balanced, maintenance crystalloid over 20 minutes can be implemented in shocky patients, followed by frequent reassessment of perfusion parameters.

Justine A. Lee, DVM, Dip ACVECC
NAVC Clin Brf, Aug 2012

Treating diabetes and hyperthyroidism

Depends on which of two scenarios we are evaluating. In the first scenario, if the cat has recently become a diabetic and its hyperthyroidism is being well-controlled clinically and biochemically, have the patient stay on Prescription Diet y/d (preferably canned). Then, initiate insulin therapy with glargine at 0.5 U, BID along with the diet and monitor the cat weekly for remission. If the diabetes goes into remission, the author would have the owners continue to monitor the diabetes with fasting and 4-hour postprandial blood glucose concentration measurements on a monthly basis. If the diabetes does not go into remission after the cat has received glargine and the canned Prescription Diet y/d for 2 months, switch the cat to a higher protein, lower carbohydrate diet and recommend that we manage the hyperthyroidism with either methimazole or radioactive iodine therapy, depending on the owners' preference. In the second scenario, if this is a diabetic cat that has been well-controlled on insulin and its current diet for more than 6 months and has then become hyperthyroid, the author would switch the cat to canned Prescription Diet y/d. In a cat that has been diabetic for more than six months, there is little chance that the cat will attain remission, so the diet is less important in this case as we will be able to manage the cat's blood glucose concentration with insulin.

David S. Bruyette, DVM, Dip ACVIM
Vet Med, Apr 2012

Demodicosis pearls

Trichograms may be used in areas where deep skin scrapings are difficult and (if positive) may be diagnostic, rendering scrapings unnecessary. When one mite is found on a skin scraping, three more areas should be scraped. If no more mites are detected, the one mite was most likely not causing disease. If more mites are identified, the dog has demodicosis. Aggressive therapy with antimicrobial shampoos once or twice weekly may be a substitute for systemic antibiotic therapy in many dogs. The bitter taste of ivermectin may be masked by diluting the medication with fruit syrup or ice cream.

Ralf S. Mueller, Dr. med. vet., DACVD, FACVSc
Comp, Apr 2012

Pearls

*Pericardial effusion is more common than you think. It's an often missed diagnosis by referring veterinarians. Clinical clues may include a patient with collapse, jugular venous distention, vomiting (perhaps within the week preceding presentation), hyponatremia, ascites (especially in animals with chronic pericardial effusion), and a large vena cava seen radiographically (conversely, in animals with hypovolemic shock, the vena cava looks small on radiographs). In a crisis, pericardiocentesis can be lifesaving. *A fever doesn't always indicate an infection—so if a febrile patient doesn't improve within 24-72 hours of treatment with a reasonably chosen antibiotic and supportive care, stop and reevaluate. *Your diagnosis is probably wrong if a patient isn't responding to antibiotics. ***Cats that are in heart failure are hypothermic.*** So if you see a dyspneic cat with a temperature >100º F, think respiratory disease. If its temperature is <100º F, think heart failure. *Animals with head trauma can make amazing recoveries. So give them at least 24 hours to show improvement with treatment.

Scott P. Shaw, DVM, Dip ACVECC
Vet Med, 106:12

Activated charcoal

The primary adsorbent used in veterinary medicine is activated charcoal. (Note: broken-up charcoal briquettes as used for outdoor grilling or the old "burnt" toast are not effective.) Activated charcoal is available for veterinary use either as activated charcoal and a small amount of kaolin or another product with sorbitol, a mild hyperosmotic cathartic. The optimum dose for small animals is 5-10 ml/lb. For best results, activated charcoal should be re-administered QID for several days following an intoxication. Activated charcoal should not be used with syrup of ipecac, as the syrup reduces the absorptive capability of the activated charcoal. The so-called ***"Universal Antidote"*** is not effective due the presence of tannic acid. It consisted of activated charcoal - 2 parts, magnesium oxide - 1 part, and tannic acid - 1 part.

E. Murl Bailey, Jr., DVM, PhD, Dip ABVT
Cent Vet Conf Procd, 09:07

CPR guidelines

Perform 100 to 120 chest compressions per minute of one-third to one-half of the chest width, with the animal lying on its side. Ventilate intubated dogs and cats at a rate of 10 breaths per minute. For mouth-to-snout ven-

tilation, maintain a compression-to-ventilation ratio of 30-2. Perform CPR in 2-minute cycles, switching the person performing the compressions with each cycle. Administer vasopressors every 3 to 5 minutes during CPR. The new CPR guidelines for dogs and cats are available by visiting www.veccs.org and clicking on "Recover CPR Initiative" to access the free special issue of the Journal of Veterinary Emergency and Critical Care.

Am J Vet Res, Aug 2012

Dangers of masking down the cat

Induction to anesthesia with inhalant anesthetic drugs alone ("masking" or "boxing") should be avoided in all but the direst circumstances. This technique is acceptable only for roughly 5% of feline patients—4% are so sick that they only need a "whiff of gas to be completely anesthetized (and NO excitement or struggling will occur), and 1% are so aggressive that they can't be anesthetized in any other way. Here are the reasons that induction to anesthesia with inhalant anesthetic drugs alone is absolutely not recommended. Masking/boxing down is ***dangerous to the patient.*** Although inhalant anesthetic drugs are fairly safe, they do cause dose-dependent depression of the CNS, cardiovascular, and respiratory systems. Thus, a LOW dose of inhalant gas is safe, but the HIGH dose required to induce a patient to anesthesia when no concurrent drugs are administered is technically an overdose and is NOT safe. The excitement that the patient goes through with the resultant increase in the release of catecholamines and all of the physiological changes that occur secondary to catecholamine release (e.g., tachycardia, hypertension, hyperventilation, etc.) is very dangerous and can result in complications in even healthy patients. These complications can be severe in compromised patients, and mortality from cardiac or pulmonary arrest has occurred. Paradoxically, mask or box induction is frequently reserved for sick and compromised animals, the group that is least likely to tolerate the high concentrations of inhalant anesthetic required to induce anesthesia.

Tamara Grubb, DVM, MS, Dip ACVA
76th AAHA Conf Procd

Demodicosis dosing schedule for ivermectin

A few dogs, many of them Rough Collies and other herding breeds have mutations of the MDR1 gene which codes for p-glycoprotein. Ivermectin is very neurotoxic, but the blood/brain barrier prevents penetration of the drug, allowing safe use. MDR1 mutants prevent normal function of the BBB. Dogs homozygous for the MDR1 mutation can have severe, life-threatening adverse effects from very low doses of ivermectin; only dosages up to 12 µg/kg once monthly have been clearly demonstrated as safe. Fortunately, there is a convenient inexpensive test for the mutation. Any herding breed, and some others including Australian Shepherd, Australian Shepherd (Mini), Long-haired Whippet, McNab, Silken Windhounds and others (including 1 in 20 mixed breeds) can have the mutation. Checking the genetic status is a good idea for any patient. An alternative, which this author frequently uses, is to test any known commonly-affected breed or herding breed cross. All others are instead begun with a very low dosage which is increased slowly to the target therapeutic dose. For example: 10 µg/kg, PO, q24h x3d, then 20 µg/kg, PO, q24h x3d, then 40 µg/kg, PO, q24h x3d, then 80 µg/kg, PO, q24h x3d, then 160 µg/kg, PO, q24h x3d, then 320 µg/kg, PO, q24h x3d, then (stop after one 320 µg/kg dose for Sarcoptes) 600 µg/kg, PO, q24h until resolution for follicular/sebaceous demodicosis. Owners must be informed of the off-label use of medication, especially those which ivermectin can have severe adverse effects.

Gregory C. Griffeth, DVM, Dip ACVD
112th Penn Vet Conf Procd

FeLV, discordant test results

Discordant test results occur when results of ELISA and IFA testing do not agree and may make it difficult to determine the true FeLV status of a cat. Most typically, this is an ELISA-positive and IFA-negative cat. Discordant results may be due to the stage of infection, the variability of host responses, or technical problems with testing. The status of the cat with discordant results may eventually become clear by repeating both tests in 60 days and yearly thereafter until the test results agree. Unfortunately, a significant number of these patients have persistently discordant test results and the cat's true status may not be known. Cats with discordant test results are best considered as potential sources of infection for other cats until their status is clarified.

Susan Little, DVM, Dip ABVP
CVC Wash DC Conf Procd, 2012

Feeding strategies in the cat

Cats in wild are nocturnal; house cats may adapt to owner's schedule but if left alone, they are usually less active during the day than in evenings. Most owners bowl feed with big volume in a.m. and as soon as cat eats, it goes for a nap This means excess calories that the cat ate at breakfast are converted to fat. Nutritionists postulate that a small high protein meal increases metabolic rate so try this: Feed a small pure protein meal in a.m.- not cat food but true meat. Feed measured volume of a carbohydrate based food in evening at bedtime - this may have added benefit in the cat that is usually wired at owner's bedtime: the postprandial alkaline tide should encourage the cat to go to sleep. Both times, limit food availability to 5-10 minutes. Convince owners that begging cats many times are looking for owner interaction, not food - try play or petting in place of food.

Hazel Carney, DVM, MS, Dip ABVP
Wa St VMA Conf Procd, 05:08

Diabetic ketoacidosis, new approach

Administration and careful monitoring of intravenous fluid therapy is the most important component of treatment. The use of 0.9% saline is recommended because of its relatively high sodium concentration. A recent study of 12 dogs with DKA, 6 of which were treated with regular insulin IV and 6 others treated with lispro insulin IV found that fluid therapy alone, significantly decreased blood glucose concentration. At the time of admission into the hospital, median blood glucose concentration in the lispro insulin and regular insulin treated groups was 400 mg/dl and 500 mg/dl, respectively. At the time IV insulin CRI began, after about 6 hours of fluid therapy alone, median blood glucose concentrations were significantly lower than at admission: 377 mg/dl and 369 mg/dl) in the lispro and regular insulin treated groups, respectively. Therefore, it is recommended that insulin treatment of dogs with DKA be withheld for the first 6 hours of fluid therapy. This approach will prevent too rapid a decline in blood glucose concentrations. A rapid decline in blood glucose concentration could lead to potentially dangerous osmotic shifts.

Rebecka Hess, DVM, Dip ACVIM
112th Penn Vet Conf Procd, Mar 2012

Intramedullary catheter technique

The use of an intramedullary catheter is valuable in the critically ill animal when venous access is not available. Fluid therapy as well as emergency drugs can be administered via this route. There are several anatomical sites that can be utilized. These sites include the trochanteric fossa of the femur, the greater tubercle of the humerus as well as the proximal tibia. Purpose made intramedullary catheters are available or any standard bone marrow aspiration needle can be used. In young animals hypodermic or stiletted spinal needles may be used. In most cases these catheters can be placed with light sedation and local anesthesia. The area where the catheter is to be placed is shaved and aseptically prepared. The region should be infiltrated with lidocaine making sure to infiltrate the periosteum. A small stab incision is made in the skin with a scalpel and the bone marrow needle or catheter is driven into the bone using a screw-like motion. The size of the needle can vary depending on the size of the patient. Usually 16-18 gauge needles work best. To avoid a cortical bone plug it is important to keep the stylet in place if using a stiletted needle. Once placed, aspiration can be performed to check placement and saline can be infused. This area can be covered with a 4x4 gauze with antiseptic or antibiotic ointment and bandaged. A ***new technique*** has recently been used to place bone marrow catheters. The EZ-IO® infusion system is a slow speed drill that places a purpose made bone marrow catheter (www.vidacare.com).

Steven L. Marks, BVSc, MS, MRCVS, Dip ACVIM
SW Vet Sym Procd, 09:09

Chest compressions in CPR

Temporary discontinuation of chest compressions has been reported as a frequent and serious problem in CPR of human patients. Unfortunately, resuscitators may be tempted to suspend compression activity in order to perform other tasks associated with CPR such as intubation, venous catheterization, ECG rhythm analysis, and pulse monitoring. In the absence of chest compressions, no blood flow is generated. Coronary perfusion pressure and cerebral perfusion pressure (CePP) after a pause in compressions are lower than values just prior to the interruption, and it takes several compressions for perfusion pressures to return to pre-interruption values. Pauses have been shown to negatively affect outcome. The AHA 2010 CPR guidelines emphasize the importance of minimizing these interruptions. This recommendation is further supported by results of a recent study in humans that showed a 14% decrease in survival to hospital discharge with every 5-second increase in chest compression pause intervals before and after defibrillatory shock. Moreover, limiting rhythm checks to once every 2 minutes is currently recommended, with uninterrupted chest compressions in between. Rescuers are often unaware of the duration of these interruptions during CPR. It is therefore the responsibility of the CPR team leader to direct the CPR effort in a way to maximize effectiveness of compressions, limit the number of pauses to once every 2 minutes, and limit the duration of such pauses to < 10 seconds.

Manuel Boller, Dr med vet, MTR, Dip ACVECC et al.
JAVMA, Mar 1, 2012

Acepromazine in UK Boxers

On rare occasions, individual variability can result in a sub-population within a breed that responds differently to anesthetics. An example can be seen in Boxers from the UK. In this sub-population, acepromazine often causes severe bradycardia, hypotension, and collapse; so a reduced dose of acepromazine (0.01-0.025 mg/kg) is recommended. Because there are no published reports describing similar effects in US-bred Boxers, standard doses of acepromazine are typically routine in the US sub-population.

Stephanie Krien, DVM and Lois A. Wetmore, DVM, ScD
NAVC Clin Brf, 10:3

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