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CONSULTATIONS • CASE MANAGEMENT • SCHEDULED PROCEDURES

With the addition of Staci Goussev, *DVM, DACVIM*, to our Internal Medicine team, we can help your patients more than ever.

Joining our team in February!

Dr. Goussev: Wednesday - Friday and alternating Saturdays; late appointments available.

Dr. Davis: Monday - Wednesday and alternating Thursdays; late appointments available.

CONTACT US for up-to-date availability: 971-255-5995

Always here. Always open.



PHOTOS BY: JUNE LION

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DVM, DACVIM



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DVM, DACVS

Plus!

Review preventative measures for patient hypothermia with surgery technician James Reid, CVT, VTS (Anesthesia & Analgesia).

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main 503-228-7281
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POP QUIZ

Medical Math

MEDICAL MATH is critical for anyone in the veterinary field. Test your skills or make a copy to share with your team!

1

You are asked to make a metoclopramide CRI for a patient who weighs 20kg. Their fluid rate is 75ml/hr and the dose is 1mg/kg/day. **How many mg/L will you add to the fluids?**

2

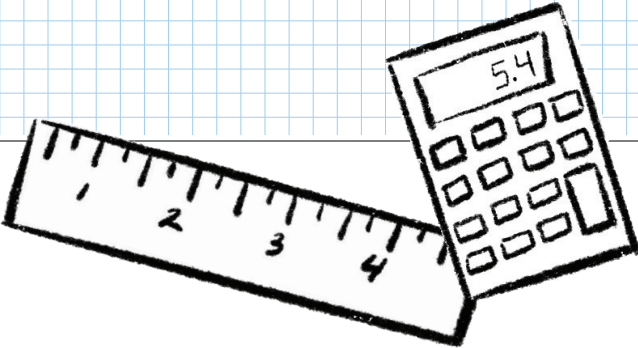
You are asked to make a dopamine CRI for a patient who weighs 4kg. You want to make this CRI so that a rate of 1ml/hr = 1mcg/kg/min for easy dose adjustment. You will be making the CRI in a 100ml bag of NaCl. **How many mg of dopamine will you add to 100ml of NaCl?**

3

You are asked to make a metoclopramide CRI for a patient who weighs 6kg. Their fluid rate is 35ml/hr and the dose is 1.5mg/kg/day. **How many mg/L will you add to the fluids?**

4

You are asked to make a fentanyl CRI for a patient who weighs 35kg. You want to make the CRI so that a rate of 1ml/hr = 1mcg/kg/hr for easy dose adjustment. You will be making the CRI in a 100ml bag of NaCl. **How many mg of fentanyl will you add to 100ml of NaCl?**



ANSWERS ON PAGE 11

CUT HERE

Mass Removal in an Aged Patient

ASHLEY MAGEE, DVM, DACVS

A 14-YEAR-OLD MALE DACHSHUND was presented to DoveLewis' ER for evaluation of a large mass over the right eye (*figure 1*). The mass was present as a small nodule for a year, but over the past 6 months, it started growing rapidly, ruptured through the skin and started intermittently bleeding. The patient was previously evaluated by the primary care DVM and antibiotics and pain medication were prescribed. Surgical removal of the mass was recommended but the client was financially unable to pursue further treatment. At the time of evaluation at DoveLewis, the patient was having trouble holding his head up due to the size of the mass and appeared to be painful and pruritic. The clients had used up previously prescribed pain medications. Thanks to generous donors, we were able to offer a palliative procedure to relieve his suffering and allow him good quality of life.



Figure 1: Although the clients sought veterinary care, they did not have the means to pursue surgery to remove the mass. What began as small nodule became a large, ulcerated mass causing significant discomfort.



Figure 2: Closer examination of the mass showed evidence of infection.

On exam, the patient was quiet and responsive with a pain score of 2/5. A 10-12 cm pink fleshy mass was present over the right eye and appeared to be originating from a 4 cm skin pedicle (*figure 2*). The mass exhibited purulent odorous discharge and evidence of prior bleeding. Other physical exam findings included mature cataracts bilaterally (the mass could be elevated to allow brief exam of OD), a soft heart murmur (grade 2/6), significant dental disease, and thin body condition (4/10). Mass removal was recommended along with appropriate preanesthetic diagnostic tests and biopsy/culture.

An IV catheter was placed and the patient was sedated with maropitant 1 mg/kg, methadone 0.3 mg/kg, midazolam 0.2 mg/kg and propofol 3-5 mg/kg to allow intubation. Patient was maintained on oxygen and propofol titrated to maintain sedation for the procedure.

With the eyes protected, the skin around the mass was clipped then prepared with povidone iodine. The skin at the base of the mass was infiltrated with 2 mg/kg lidocaine, then final preparation and aseptic draping was performed. A doyen forcep was placed across the base of the pedicle, and the skin pedicle and interposing subcutaneous tissue was sharply transected just above the clamp and the mass was removed. (*figure 3*). Several large vessels were identified and ligated with 3-0 Maxon. The site was lavaged and then closed in two layers resulting in a 5-6 cm incision over the right eye (*figure 4*).

The patient recovered smoothly and was discharged later that day with pain medication and empiric antibiotic therapy. Follow-up two weeks later revealed the patient had recovered well and was able to spend the holiday season with his family in comfort (*figure 5*).

THIS CASE ILLUSTRATES that geriatric dogs with surgical disease can be managed successfully with a relatively simple treatment plan in selected patients. While diagnostics such as CBC, clinical chemistry, urinalysis, thoracic radiographs, cardiac ultrasound, wound culture and biopsy would have been ideal for this patient, they were unattainable due to severe financial restrictions. When a thorough physical examination did not elucidate any distinct contraindications to anesthesia other than the heart murmur, an anesthetic plan designed to provide maximum safety (IV catheter, secured airway) and minimal cardiovascular effects (oxygen, local anesthesia, titrated propofol, full agonist opioid) was implemented and used successfully to remove the mass. While it is possible that, if malignant, this mass may re-occur as relatively conservative margins were taken (1-1.5 cm); this was done to minimize surgical time and potential wound healing complications by leaving ample skin for a tension free closure. In this geriatric patient, the object of surgery was palliative as it was clearly affecting his quality of life, and the clients were without the means for a more intricate surgery or follow-up. 🐾

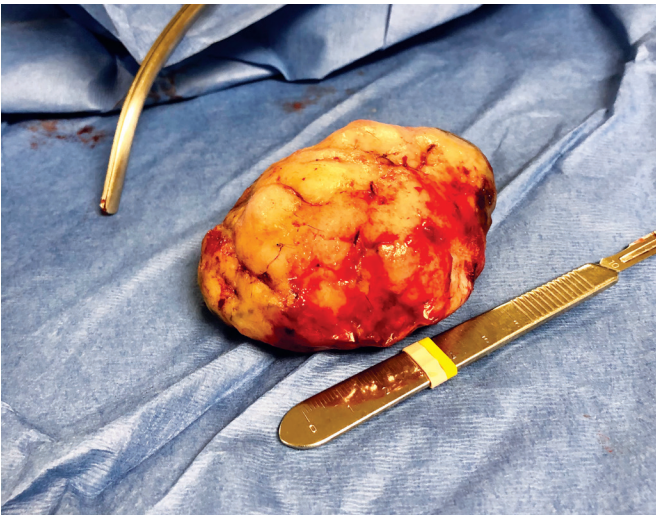


Figure 3: Mass after surgical removal.



Figure 4: Patient immediately post-op.



Figure 5: Patient 2 weeks post-op and healing comfortably.

Perianesthetic Hypothermia: Why Do We Care?

JAMES REID, CVT, VTS (ANESTHESIA & ANALGESIA)

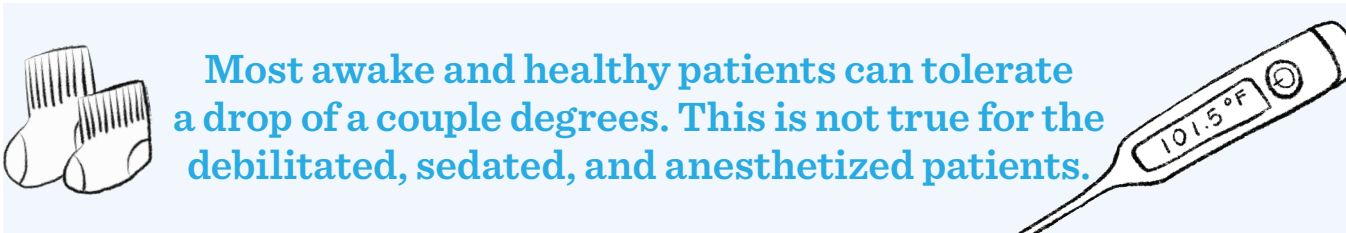
HYPOTHERMIA IS THE MOST COMMON PERIANESTHETIC COMPLICATION. Hypothermia occurs when there is a decrease in core temperature, causing the patients temperature to fall below the normal range. The normal range varies, but in general, it should be about 100°F to 102.5°F for dogs and cats, and can be determined by a temperature reading from an oral or rectal thermometer. Hypothermia can also effect specific areas, such as extremities, and be described as local hypothermia.

The most common cause of hypothermia during the perioperative period is the lack of prevention. What else can contribute to hypothermia?

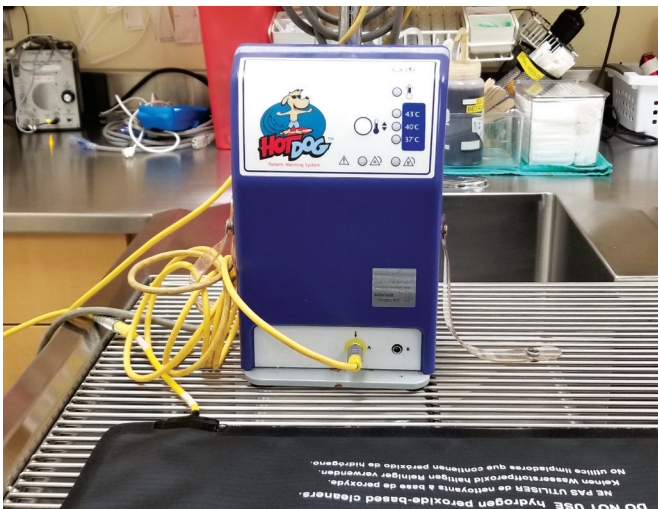
- The ability to thermoregulate can be depressed as soon as a patient is sedated.
- Pediatric, neonates, geriatric, and exotic pets generally have a large body surface area to body mass ratio leaving them susceptible to hypothermia.
- Clipping fur, using copious amounts of scrub and alcohol will lead to an evaporative cooling effect.
- Prepping patients for surgery on cold tables or floors.
- Once the patient is anesthetized muscles relax and they also lose the ability to shiver.
- Vasodilation from pre-operative medications and anesthetic agents is known to cause heat loss.
- Peripheral vasoconstriction from certain medications can cause a local hypothermia in the extremities.
- Metabolism during anesthesia slows to about half that of an awake patient.
- Open body cavities lead to a large surface area where heat loss can occur.
- Room temperature intravenous fluids.
- High oxygen flow rates along with non-rebreathing anesthetic circuits.



Patients that are immobile or rehabilitating are good candidates for Bair Hugger warming methods.



Most awake and healthy patients can tolerate a drop of a couple degrees. This is not true for the debilitated, sedated, and anesthetized patients.



Hot Dog warmers can warm patients, from above and below, making them an ideal option.



Water circulating heat pads are a quiet option to put in kennels or under patient bedding.

What are some of the effects of hypothermia?

- Hypothermia slows the metabolism of some preanesthetic drugs and anesthetic agents directly leading to a longer recovery.
- Hypothermic patients require less gas anesthetic which can easily lead to an overdose.
- Atrial arrhythmias, coagulopathies, bradycardia, decrease in cardiac output leading to hypotension can be seen as hypothermia progresses.
- Patients can become unresponsive to anticholinergics.
- Decreased tissue perfusion leading to delayed wound healing and potential for infection.
- Shivering post-operatively greatly increases the patient's oxygen consumption and metabolic demands.
- Take note that some patients experiencing hypothermia during the recovery period may not have regained the ability to shiver.

It is important to be proactive in preventing heat loss.

What are some of the treatments and preventative options for hypothermia?

- Socks and bubble wrap on the feet.
- Heat loss is generally at its worse during the first 20 minutes of anesthesia
- Turn down your oxygen flow rates. Use a calculation specific to your anesthetic circuit to determine the ideal oxygen flow rate.

- Use active heating sources like Bair Huggers, HotDog Blankets, or waterbed heaters.
- Warmed intravenous fluids.
- Intravenous fluid line warmers.
- “Warmies” such as heated fluid bags are not recommended. They have the potential to cause burns and once they cool off, they will pull heat from your patient.
- Hypothermic patients that are laterally recumbent during recovery, whether they are shivering or not, should have oxygen support. 🐾

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Grimm, Kurt A., et al. *Veterinary Anesthesia and Analgesia: the Fifth Edition of Lumb and Jones*. Wiley Blackwell, 2015.

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Elevated ALP in the Asymptomatic Adult Dog

BARBARA DAVIS, DVM, DACVIM (INTERNAL MEDICINE)

A COMMON ABNORMAL FINDING on a chemistry panel in an asymptomatic adult dog is an elevated ALP. There are a number of conditions that could be responsible for this elevation. The first thing to investigate is medication history. Steroids, phenobarbital, potassium bromide, and possibly supplements and herbs can lead to an increase in ALP. If there are clinical signs such as polyuria, polydipsia, or polyphagia, consider testing for hyperadrenocorticism (HAC) and examining for exogenous sources of steroid administration that may not be readily apparent, such as topical medications.

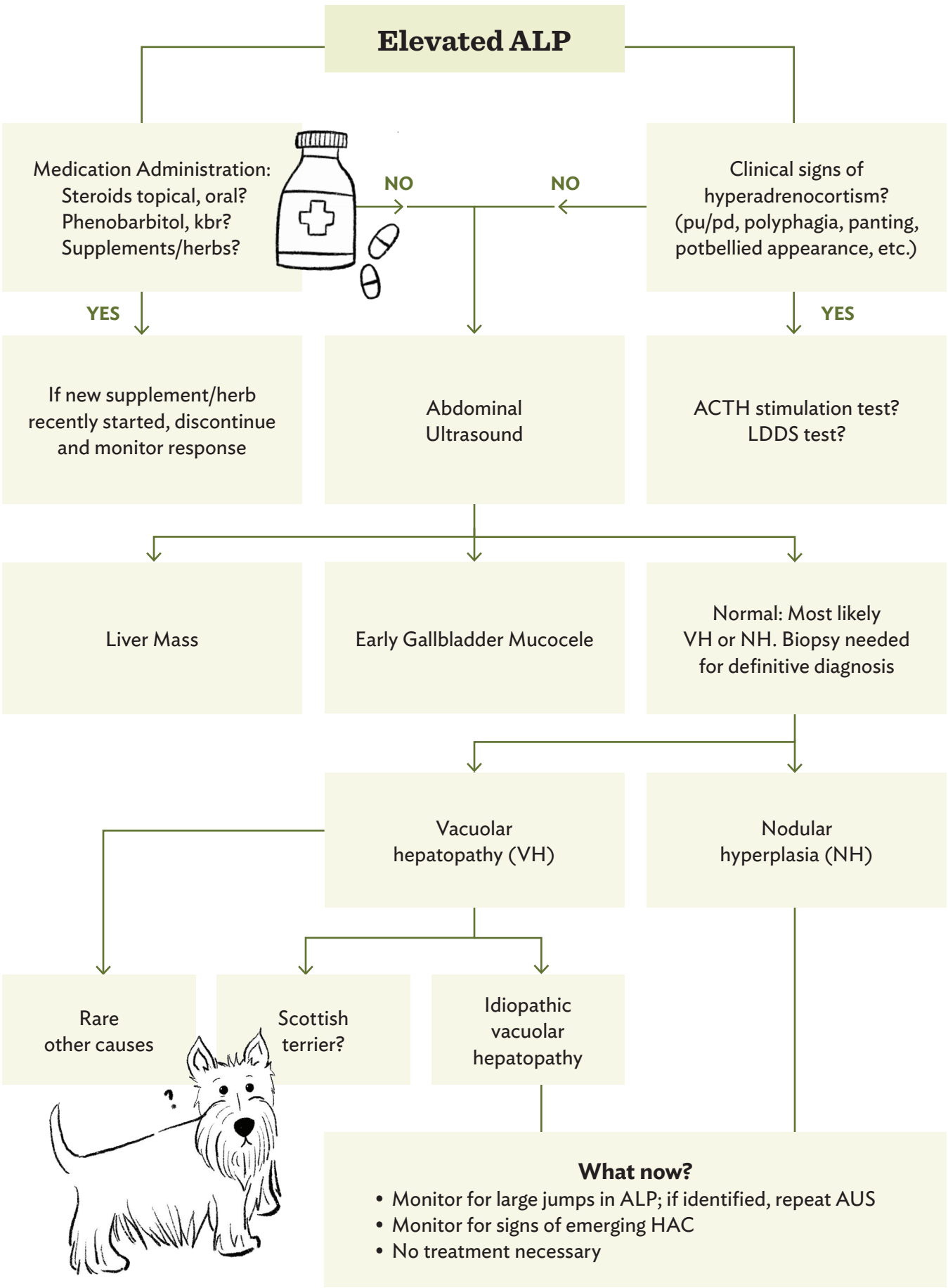
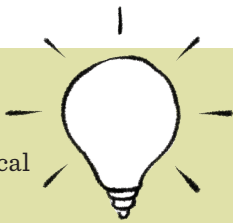
If either HAC or a medication-related increase cannot account for the elevation, the most likely causes include early gallbladder mucocele, nodular hyperplasia, idiopathic vacuolar hepatopathy, and hepatic neoplasia. The next step in these patients is an abdominal ultrasound. If the abdominal ultrasound is unremarkable, have the owner monitor for signs of HAC and periodically (~q 3-6 months) monitor for large jumps in the ALP values (ie: jump from 800 to 2500). If there is a large jump in ALP, a repeat abdominal ultrasound is recommended. I suspect that many of these dogs with normal ultrasounds have idiopathic vacuolar hepatopathy. The only way to definitively know the underlying etiology of a solitary elevation in ALP is with a liver biopsy, which I discuss with owners, but rarely recommended. 🐾

VACUOLAR HEPATOPATHY

Vacuolar hepatopathy (VH) in dogs is most often associated with hyperadrenocorticism (HAC). Other causes include congenital glycogen storage disorders, breed-specific disorders, hepatic nodular hyperplasia, and a variety of stress-associated secondary diseases. There is a subset of dogs that do not have an underlying disease leading to VH, and these dogs are referred to as having an idiopathic vacuolar hepatopathy. Scottish terriers are reported to have a breed-specific syndrome associated with VH and elevated ALP. Most dogs are middle-aged to older. There does not appear to be a breed or sex predisposition other than in the Scottish terrier. I personally do not treat dogs that I suspect have idiopathic vacuolar hepatopathy. There is no evidence that hepatoprotectants such SAmE or silymarin are beneficial for this syndrome.

Did you know...

...that a small percentage of dogs with hyperadrenocorticism have normal ALPs? If you suspect a dog has HAC based on classic clinical signs, don't let normal ALP prevent you from testing.

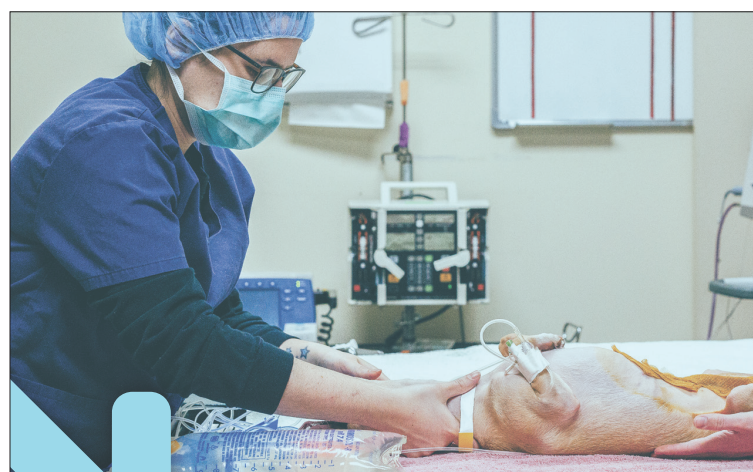


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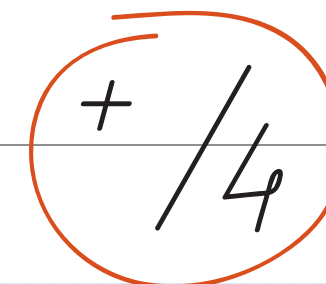
DoveLewis® Third Thursday Rounds

- February 20, 2020
- March 19, 2020
- April 16, 2020
- May 21, 2020

We invite all doctors, technicians, managers and support staff in the veterinary community to attend our Third Thursday Rounds. Attendees will receive one unit of Oregon approved CE credit (CE pending).

RSVP online at doveweb.org

Answer Key



MEDICAL MATH (page 3)

1

$20\text{ kg at }1\text{ mg/kg/day} = 20\text{ mg metoclopramide/day}$
 $1.000/75 = 13.3\text{ hrs per liter of fluids for this patient}$
 $13.3/24 = 0.56\text{ days per liter}$
 $20\text{ mg} * 0.56\text{ days} = 11.1\text{ mg/L}$

2

$4\text{ kg at }1\text{ mcg/kg/min} = 4\text{ mcg/min}$
 $4\text{ mcg/min} * 60\text{ min/hr} = 240\text{ mcg/hr}$
 $100\text{ ml bag} = 100\text{ hrs}; 100\text{ hrs} * 240\text{ mcg} = 24000\text{ mcg}$
 $24.000\text{ mcg}/1.000 = 24\text{ mg}/100\text{ ml}$

3

$6\text{ kg at }1.5\text{ mg/kg/day} = 9\text{ mg/day}$
 $1.000/35 = 28.57\text{ hrs per liter of fluids for this patient}$
 $28.57/24 = 1.2\text{ days per liter}$
 $9\text{ mg} * 1.2\text{ days} = 10.7\text{ mg/L}$

4

$35\text{ kg at }1\text{ mcg/kg/hr} = 35\text{ mcg/hr}$
 $100\text{ ml bag} = 100\text{ hrs}; 100\text{ hrs} * 35\text{ mcg} = 3.500\text{ mcg}$
 $3.500\text{ mcg}/1.000 = 3.5\text{ mg}/100\text{ ml}$



Saving Sprinkles

SPRINKLES WAS ATTACKED by raccoons, and DoveLewis' Velvet Assistance Fund made a difference.



IT WAS A TYPICAL MORNING at home when Teresa Glover heard her dogs barking in the backyard as she got her children ready for school. Not noticing anything unusual, Teresa grabbed treats to coax her dogs back inside – and that’s when she saw the raccoons. Sprinkles, Teresa’s three-year-old Chihuahua, had been attacked by multiple raccoons, prompting a visit to DoveLewis for further treatment and assessment.

Sprinkles was diagnosed with soft tissue trauma including left lateral vulva puncture wounds and multiple superficial excoriations along her left caudal gluteal region.

After evaluation, Sprinkles was given pain relief and mild sedation with hydromorphone and acepromazine. Her wound edges were clipped and cleaned, and the wound cavity was lavaged with sterile saline.

Sprinkles was discharged with Meloxicam, Amoxicillin, and an E-collar. Teresa was instructed to apply a warm compress at home to keep the wound clean, and monitor for any signs of infection.

The Velvet Assistance Fund is intended to help low-income pet owners who state a financial need when we admit their pet. In the case of Sprinkles, the fund made it possible to treat Sprinkles’ wounds, as well as provide medications for recovery. 🐾



Sprinkles has returned to normal activity with her family.

AS ALL VETERINARIANS KNOW, PATIENT CARE DOESN’T STOP WITH THE ANIMAL. Supporting the pet owner is a vital part of any treatment plan, even after they have left the hospital. The Velvet Assistance Fund helps take the financial burden off qualifying, financially constrained families, and allows them to focus on the recovery of their pet by offering up to \$750 per animal. To ensure these funds help as many animals as possible, funds are focused on supporting illnesses and injuries that are recoverable. For more information about how families qualify for these funds, visit dovelewis.org or call 503-228-7281.

Upcoming Free Events

LEARN MORE AT DOVELEWIS.ORG



SERVICE OF REMEMBRANCE

PRESENTED BY DIGNIFIED PET SERVICES

Feb. 20, 2020 | Doors open at 6:30pm
First Presbyterian Church

Join us for a special memorial service and candle lighting ceremony to honor the memory of your beloved animal companions. The undeniable impact that animals have on our lives is everlasting, and the Service of Remembrance event pays tribute to that deep connection. Surrounded by those who understand this bond, this event brings our community together to commemorate those friends who are no longer here.



THIRD THURSDAY ROUNDS

THE FIVE LANGUAGES OF MOTIVATION

Feb. 20, 2020 | 7-8:30 p.m. | DoveLewis Training Room

Monica Maxwell, *SPHR, SHRM-SCP, MBTI*, will discuss how *The Five Languages of Love* by Gary Chapman can be used in the workplace. She will discuss how the love languages relate to how employees communicate and hear value, and how understanding your employee’s language is key to engagement and retention.



IMPACT & INSIGHT: THE TOLL CASES HAVE ON US

March 11, 2020 | 7-8 p.m. | DoveLewis Training Room

Join like-minded veterinary professionals as we explore, discuss, and reflect on the cases that stick with us, even when our shifts are long over. During these facilitated discussions, group members uncover different and new perceptions about the client’s and clinician’s feelings and their experiences with each other. These meetings are a chance to enhance veterinary professionals’ ability to connect with and care for patients more sustainably.