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MEGHAN CARLTON,
DVM



LEE HEROLD,
DVM, DACVECC



ANDREA SUNDHOLM,
DVM, DACVS-SA

Plus!

Test your knowledge with Megan Urton, technician assistant manager, and see what our animal-assisted therapy dogs are up to in our community!

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TRUE OR FALSE

Cleaning an Isolation Room

MEGAN URTON,
TECHNICIAN ASSISTANT MANAGER

PATIENTS WITH SYMPTOMS of parvovirus, respiratory infections, or any zoonotic diseases get attended to in the isolation room in order to protect our other patients and clients. After working with these cases, it's important to know that cleaning an isolation exam room requires a different process than cleaning any other exam room. Test your cleaning knowledge!

1

True or False

Your patient in the isolation exam room has been determined as not an isolation case. Great! This means that you don't need to do a full isolation clean in that isolation exam room.

2

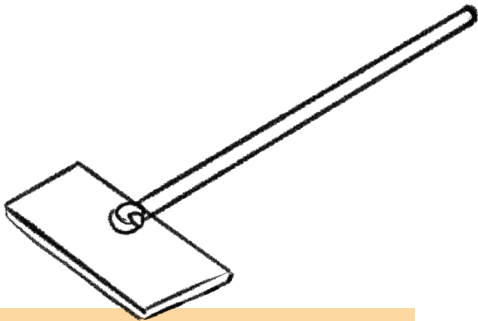
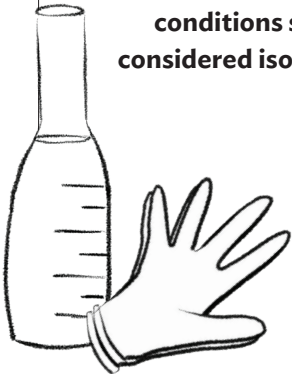
True or False

Upper respiratory conditions should be considered isolation cases.

3

True or False

Isolation gowns and isolation laundry should not enter the ante room.



ANSWERS ON PAGE 13

Check yourself

Did you know these are the most commonly missed places when cleaning an isolation room?

- Sink handles, cabinet or drawer handles, and light switches
- The underside of chairs/benches (animals like to hide under their owner's legs)
- Inside of the garbage cabinet (garbage can come in contact the inside walls of the cabinet)
- Phone receiver and call buttons

Addisonian Crisis: A Summary of Emergency Presentation, Diagnosis, and Stabilization

MEGHAN CARLTON, DVM

AS “THE GREAT PRETENDER,” Addison’s disease (hypoadrenocorticism) can look like just about anything. Thought to be most commonly secondary to immune-mediated adrenalitis, primary Addison’s usually results in deficiency of both glucocorticoids (primarily cortisol) and mineralocorticoids (primarily aldosterone). Atypical Addison’s is only the deficiency of glucocorticoids and the patient has normal mineralocorticoid status and electrolyte values. In a crisis, most of the patients you see will be typical Addisonians due to their mineralocorticoid deficiency contributing to their clinical signs of shock and electrolyte derangements.

As a sometimes slippery diagnosis, it is always important to keep on your differential list, however stabilization in the emergency room requires quick recognition of concerning signs and immediate steps towards stabilization and definitive diagnosis. Provided below is a summary of information provided in *The Textbook of Veterinary Internal Medicine*, 7th Edition, by Stephen J. Ettinger and Edward C. Feldman.

PRESENTATION

- Symptoms can be acute or can be chronic and wax and wane
- GI signs such as anorexia, vomiting, weakness, lethargy, weight loss, and diarrhea are common, and sometimes polyuria, polydipsia, and abdominal pain can be seen
- With mineralocorticoid deficiency, you can more commonly see polyuria, polydipsia, hypovolemic shock, collapse, and severe dehydration
- Less commonly you can see hypoglycemia and even seizures, episodic muscle cramping, and gastrointestinal hemorrhage



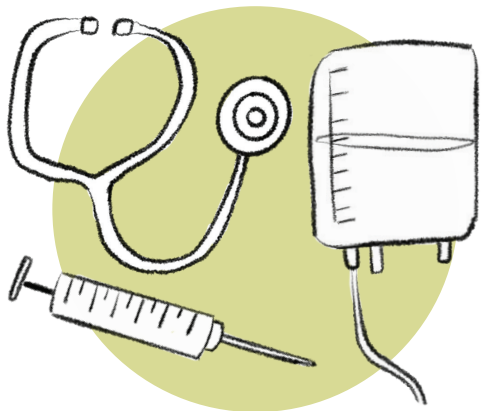
DIAGNOSTIC FINDINGS

- **CBC changes:** many patients will have a nonregenerative anemia (27% of confirmed Addisonian patients), eosinophilia (20%), neutrophilia (32%), lymphocytosis (10%), and almost all will lack a stress leukogram (92%)
- **Chemistry changes:** hyperkalemia (95%), hyponatremia (81%), hypochloremia (42%), hypercalcemia (31%), azotemia (88%), hyperphosphatemia (68%), hypoglycemia (17%), increased liver enzymes (30-50%), metabolic acidosis (40%), hypoalbuminemia (6-39%), hypocholesterolemia (7%), USG <1.030 (60%)
 - **The Na:K ratio** is usually low in dogs with typical Addison’s, however this ratio can be normal, especially in dogs with atypical Addison’s disease. Other disorders can also cause changes to the Na:K ratio, including renal and urinary tract disease, GI diseases and cardiorespiratory disease, so it is important to consider other causes of hyponatremia and hyperkalemia when interpreting the Na:K ratio.

- **Thoracic / abdominal radiographs:** changes secondary to hypovolemic shock including microcardia, small cranial lobar pulmonary artery, narrow posterior vena cava, microhepatica. There can also be megaesophagus or esophageal dilation though to be secondary to muscle weakness due to cortisol deficiency.
- **Abdominal ultrasound:** a measurable reduction in the size of the adrenal glands can be observed, however normal sized adrenal glands do not preclude a diagnosis of Addison’s
- **ECG:** changes secondary to hyperkalemia including peaking of T wave, widening of QRS complex, decreased QRS amplitude, increased duration of P wave, increased PR interval and as values increase there can be loss of P waves, ventricular fibrillation, and asyctole

DEFINITIVE DIAGNOSIS

- ACTH stimulation test is the gold standard of definitive diagnosis and should be performed in an emergency situation
 - This test should not be performed in patients that have received recent treatment with glucocorticoids. In an emergency situation, dexamethasone SP can be administered prior to or during an ACTH stimulation test.
- Basal cortisol is a screening test in non-emergency settings: if greater than 2ug/dL then this is diagnostic for the patient NOT having Addison’s, if it is less than 2ug/dL then this should prompt you to run an ACTH stimulation test



EMERGENCY STABILIZATION

- Place IVC (cephalic or jugular vein ideal)
- Replacement crystalloid fluid therapy: correct for hypovolemic shock by titrating 10-20ml/kg IV boluses for a maximum total of 90ml/kg shock bolus; then continue at a 30-80ml/kg/24 hour fluid rate pending clinical response to therapy. Although 0.9% NaCl is often the replacement crystalloid of choice, care must be taken with severely hyponatremic patients not to correct the sodium level too quickly. When hyponatremia is severe, a crystalloid containing a sodium concentration similar to the patient’s sodium, such as Lactated Ringer’s Solution, which contains 130mEq sodium/L₂ should be chosen.
- Collect blood and urine samples for CBC, Chemistry with electrolytes, Urinalysis and Baseline cortisol. (Please note a single dose of dexamethasone SP is okay to give prior to collecting baseline cortisol / ACTH stimulation samples if patient is in shock and you feel this is clinically indicated.)
- If in shock and your suspicion for Addison’s is high, administer single dose of dexamethasone SP 0.25mg/kg IV once.
 - Please note that this is lower than Plumb’s recommendation!
- Administer cosyntropin 5mcg/kg (max 250mcg/dog) IV.
- Collect post sample 1 hour after administration of cosyntropin.
- Add dexamethasone SP 0.05mg/kg IV q12 until able to switch to oral prednisone.
 - Please note this dose will be lowered for longer-term management and high doses are only necessary in shock scenario.

- If hyperkalemia present: consider IV glucose (2g / unit of insulin administered) and regular insulin (0.5U / kg) to lower potassium quickly if hyperkalemia is > 6.5 mEq/L or ECG shows changes such as bradycardia, loss of P waves, or prolonged P-R interval. Additionally, consider giving 10% calcium gluconate IV over 10 to 15 minutes (2-10 ml/dog) to protect myocardium from effects of hyperkalemia
 - Clinically, I have seen profound bradycardia result from administration of calcium gluconate, so this should always be given slowly while on ECG monitoring. I always start with the low end of the dosage.
 - If insulin is given, I also always start the patient on 2.5-5% dextrose in the IV fluids and recheck a BG in 1-2 hours for a total of at least 4-6 hours to ensure not seeing hypoglycemia
- If hypoglycemia present: you can perform an IV bolus of 25% dextrose with BG monitoring q2-4, or you can add 2.5-5% dextrose in IV fluid with glucose monitoring.
- If acidosis present: consider correction of acidosis (if serum bicarbonate <12 mEq/L). Administer 25% to 50% of calculated dose IV over 6 hours.
 - However, in most cases the acidosis will resolve with fluid support and I personally have not needed to perform this treatment.
- If anemia due to blood loss present: blood products and colloid support if needed
- Consider administration of one dose of injectable mineralocorticoid (Percorten V) 2.2mg/kg IM while waiting for diagnosis to be confirmed if suspicion of Addison's is high.
- Monitor serum electrolytes, blood glucose, acid-base status, blood pressure, UOP if severe azotemia present, ECG if hyperkalemia present.

Following these interventions, most patients will respond well with correction of their hypovolemia and electrolyte changes. For longer-term management once the ACTH stimulation test confirms the diagnosis of Addison's, there are recommendations to find the lowest possible prednisone and DOCP doses and frequencies provided in most internal medicine textbooks. These patients can be managed in primary care clinics, or it is also appropriate to refer them to internal medicine specialists as they can sometimes prove difficult to manage, develop secondary Cushingoid signs, or develop concurrent endocrinopathies.



GREATER
UNDERSTANDING
TOGETHER

Veterinary Support Group Meeting

LED BY DOVELEWIS' CHIEF MEDICAL OFFICER SHANA O'MARRA, DVM, DACVECC, AND JILLIAN ROMM, RN, LCSW, CREDENTIALLED BALINT LEADER

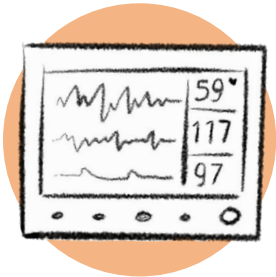
Veterinary support meetings are a way for veterinary professionals to address compassion fatigue and burnout. Through the Balint method, cases are presented to the group with a focus on discussing and enhancing our ability to connect with and care for a patient sustainably. Why? Because we're stronger together.

November 20 | December 18
Up to 6 hours of accredited non-scientific CE in Oregon

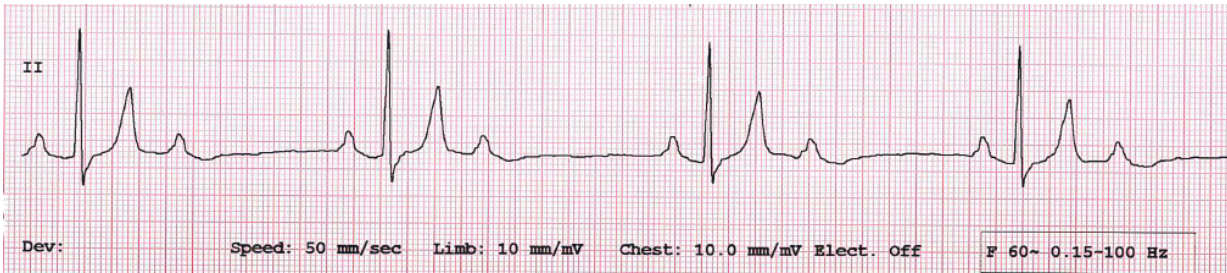
Sign-Up at
dovelewis.org/form/balint-group-interest-form

Guess the ECG

MASTERING THE SKILL of ECG interpretation takes time and practice—and knowing your ECGs can make all the difference in the day-to-day treatment of your patients! To help you in your ECG knowledge quest take a quick quiz!



1



2



3



ANSWERS ON PAGE 13

Being Prepared to Make Quick Decisions in Surgery

ANDREA SUNDHOLM
DVM, DACVS-SA

WE HAVE ALL BEEN in a surgery where we find something unexpected or we are forced to make a decision quickly that will affect the outcome of the case. Although quick decision-making becomes easier with practice, I’ve put together a few ideas that will help you feel more prepared for the elective or emergent surgical case.

BE PREPARED

This is THE most important part for success. Before each surgery, (especially for one that is new to you) review the approach and pay special attention to major anatomical structures that may be encountered. There are no points lost if you bring a book into the operating room! Then, have a plan A, B, C and D ready to go in your head. Plan A would be the ideal, best case scenario. Plan D is the worst case scenario. For example, my plan A for a fractured leg would be to reduce and stabilize it with my choice of implants. Plan B and C may be alternative fixation methods that are less ideal. Plan D would be that nothing works and the only thing left to do is amputate the leg. This way, when things are not going as planned, you’ve already thought of different outcomes.

If you know the surgery needs to happen fast for patient or anesthetic reasons, have all your materials to close the incision either already open on your table or ready to go nearby.



Dr. Andrea Sundholm, one of three board-certified surgeons at DoveLewis.

DAMAGE CONTROL

This usually happens when you encounter things like blood, gastrointestinal contents and urine. With blood (expected or not), it’s all about getting good visualization and then control. Materials that are typically helpful are your fingers (put pressure on it!), gauze/laparotomy pads, Kelly hemostats and suture. Having these ready before you start is beneficial. Ask yourself, “Can I safely ligate this large vessel?”

GETTING VISUALIZATION AND HELP

If you recognize you’re having trouble, help yourself by extending your incision, getting retractors, or asking for help. It’s not worth the struggle to save a few centimeters on the length of your incision. Have someone identified before you go into surgery that would be available to scrub in.

ENCOUNTER SOMETHING UNEXPECTED

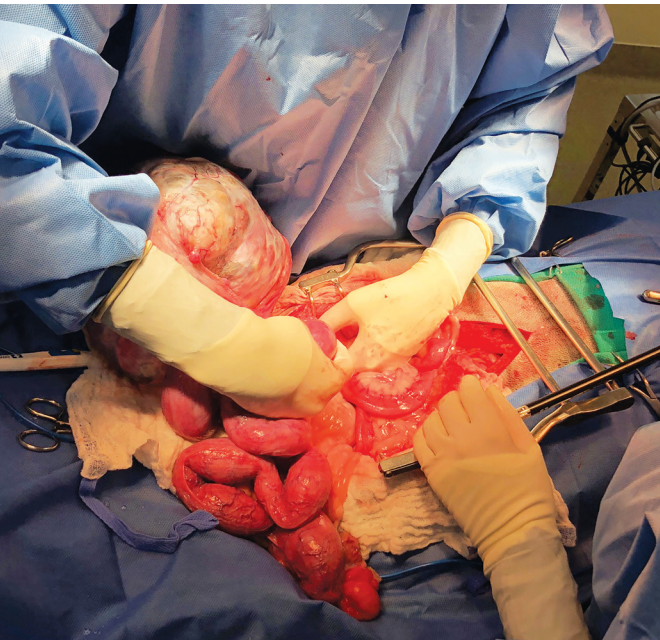
Can you remove it? If the answer is no, then can you biopsy it? If the answer is no, then can you perform a fine needle aspirate?

Take all the samples (biopsy, fine needle aspirate, culture, etc.) at the time of surgery if you’re unsure because it’s a lot easier to not submit something than to wish you had sampled a lesion.

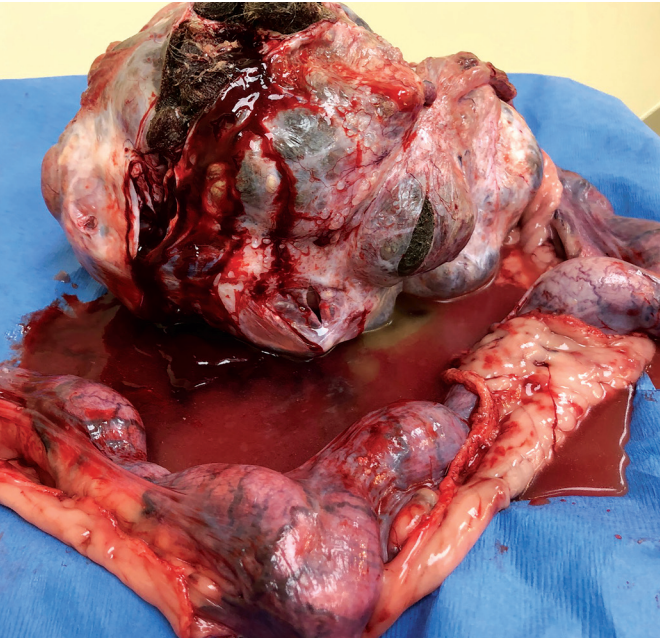
Calling the owners can be helpful because they may have certain wishes on how you proceed.

DEFINITION OF INSANITY

Trying the same thing over and over again expecting different results? Stop, step back, and take a breath. You have time! Sometimes just changing your perspective (going to the other side of the table) or asking someone their opinion is enough to help.



Abdominal exploratory for mass or unknown origin.



Ovarian tumor consistent with a teratoma.

An Ultrasound Pretender

LEE HEROLD, DVM, DACVECC

Ileo-ceco-colic junction or intussusception? The cross sectional appearance of an intussusception on ultrasound is characterized by concentric rings which gives the appearance of a target or doughnut (*Figure 1*). There is a hypoechoic ring on the outside of the target which is the section of bowel that serves as the intussuscepiens (the portion of intestines receiving the bowel) and a ring on the inside that is the intussusceptum.

Ileo-ceco-colic junction (ICCJ) in cross section can appear very similar to the ultrasound imaging characteristics of an intussusception particularly if there is thickening of the ileum, colon or cecal wall (*Figure 2 and 3*).

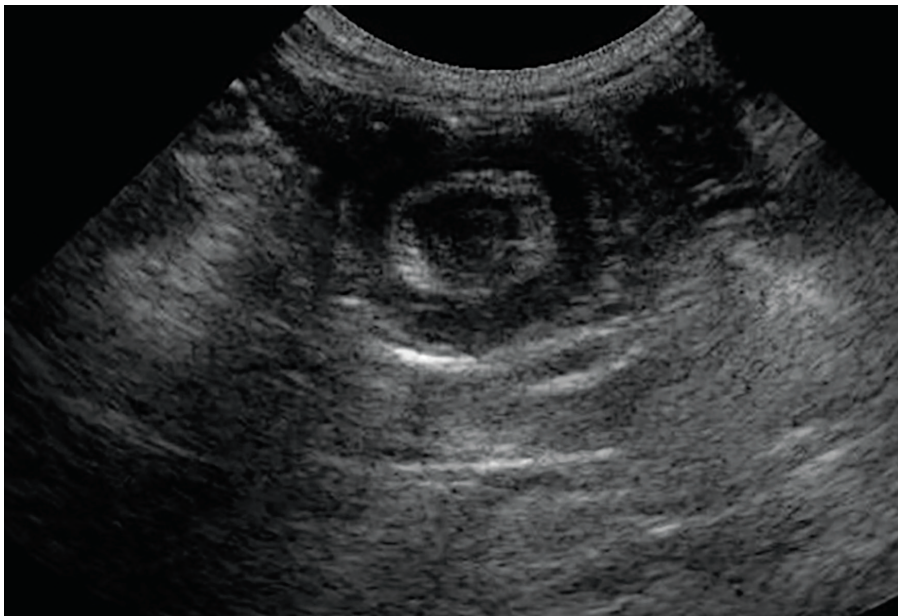


Figure 1: Intussusception in a dog (top) and cat (bottom).

IMAGING ARTIFACTS during ultrasound can sometimes lead to misinterpretation of normal anatomy as pathology. An example of this is given below with some tips to avoid this confusion during abdominal ultrasounds.

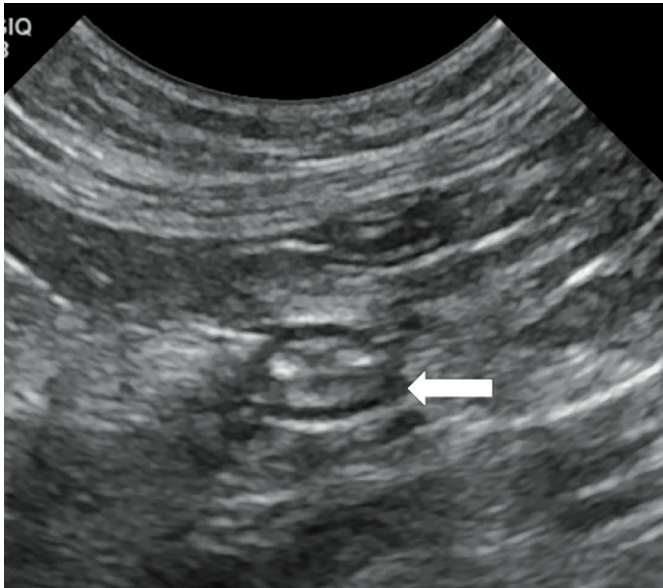


Figure 2: White arrows indicate ileo-ceco-colic junction. Normal ileo-ceco-colic junction in a cat (left). ICCJ in a cat with ileal wall thickening (right).

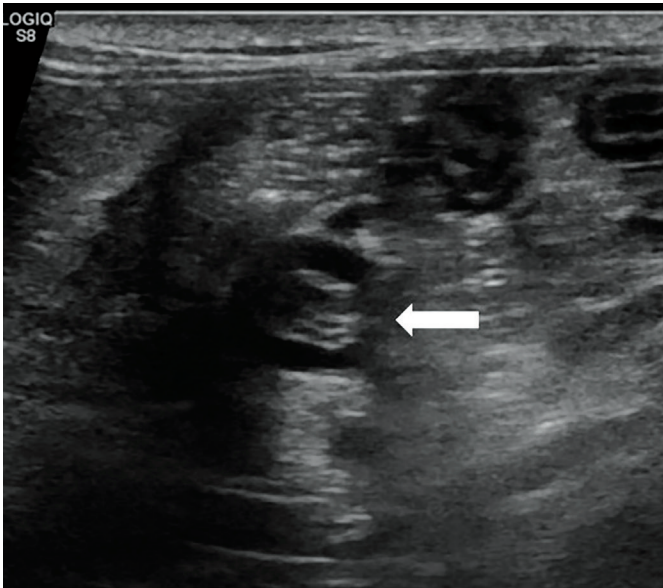


Figure 3: ICCJ in a dog with severe ileal and cecal thickening diagnosed via biopsy as lymphoplasmacytic and eosinophilic enterotyphlitis.



Tip One

TIPS FOR DIFFERENTIATING INTUSSUSCEPTION FROM ICCJ

Look for a hyperechoic rim surrounding the inner “doughnut hole”. You can often see the mesenteric fat adjacent to the internal ring which appears as a hyperechoic crescent or rim around the inner intussusceptum (*Figure 4*).

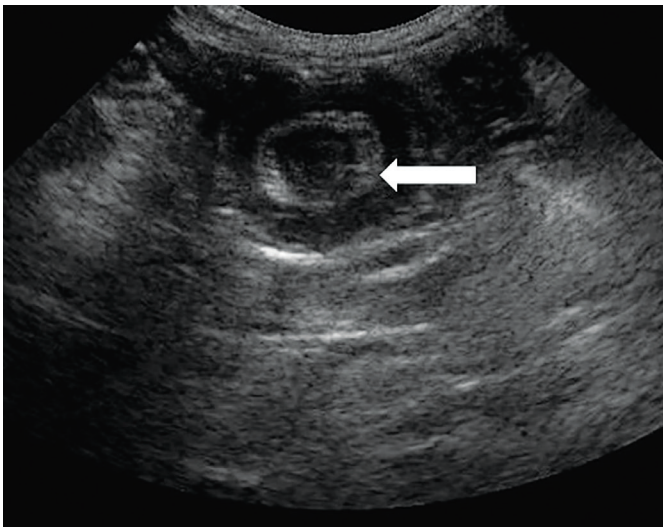
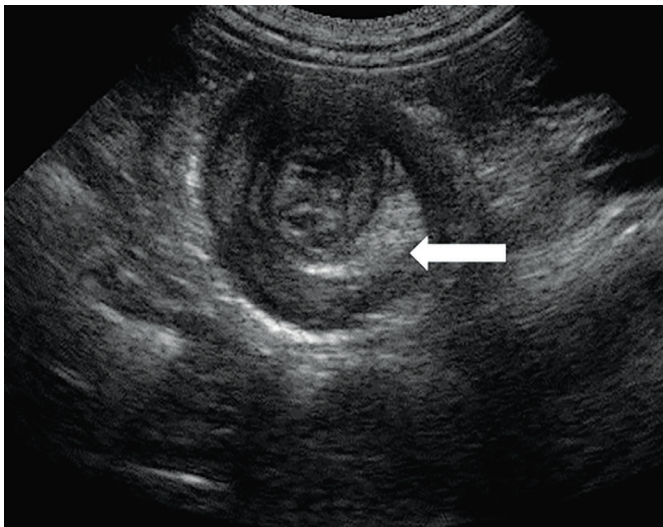
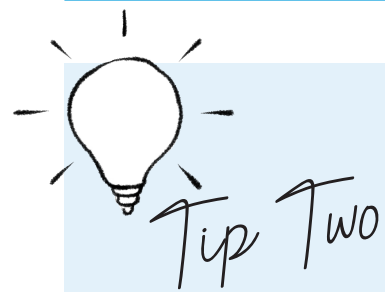


Figure 4: These are the same images as in Figure 1: The white arrows point to a crescent shaped area (left) and circumferential area (right) that represents the hyperechoic mesenteric fat of the inner intussusceptum.



View the structure in both longitudinal and cross sectional planes. An intussusception has a distinct appearance in longitudinal section (*Figure 5*) which is very different from the normal ileocecolic junction (*Figure 6*). The longitudinal appearance of intussusception mirrors the cross sectional appearance where the two “tubes” of the intussuscepiens and intussusceptum are visible as well as the hyperechoic mesenteric fat between them.

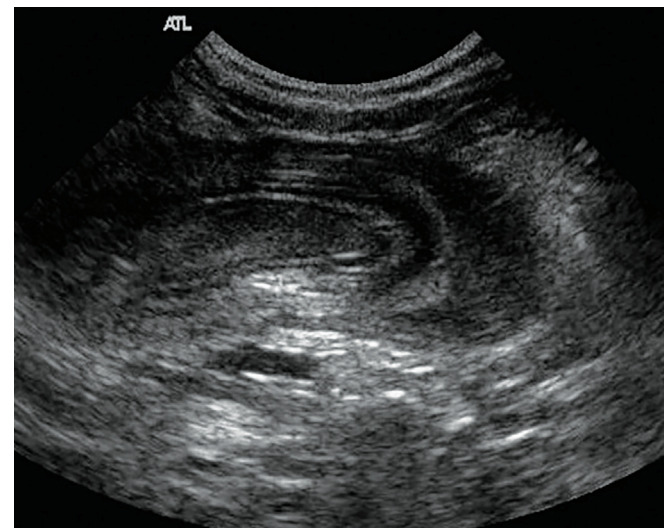
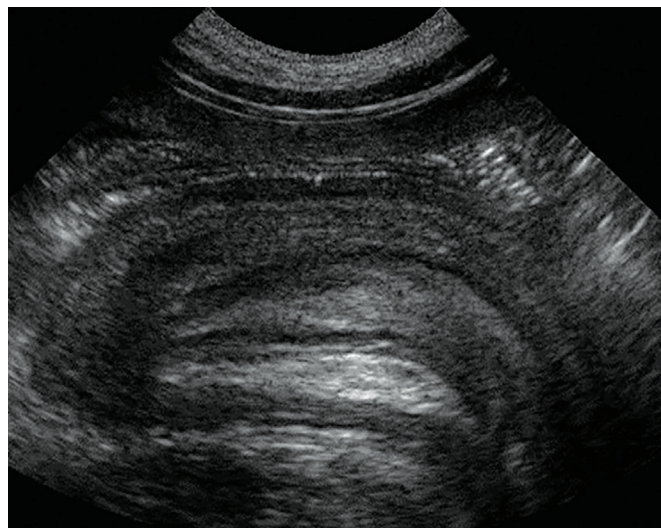


Figure 5: Appearance of intussusception in dog (left) and cat (right) in log axis.

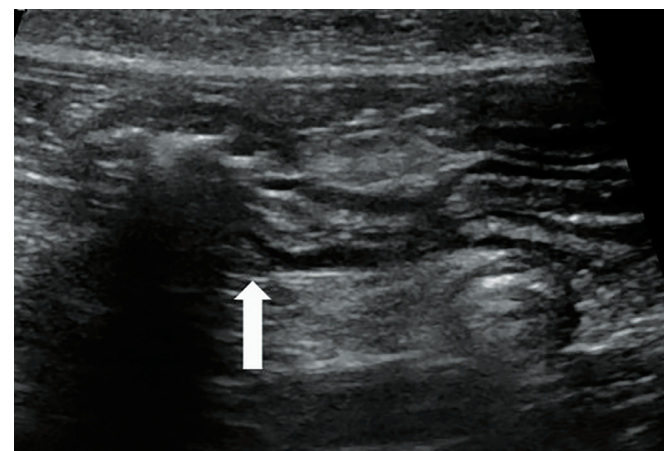
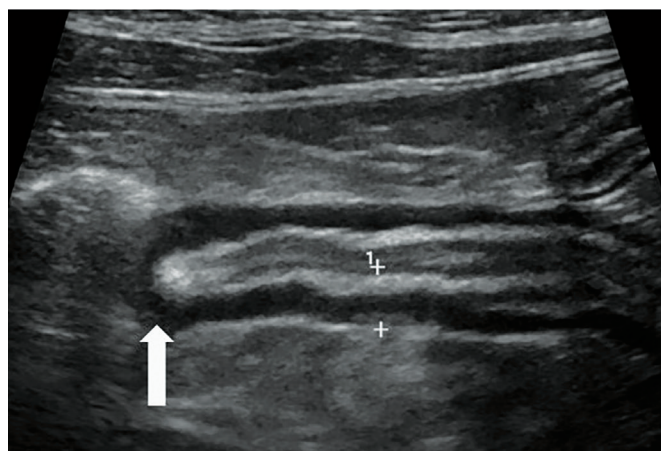


Figure 6: Examples of longitudinal views of normal ileoceco-colic junction. White arrows indicate the clearly visible junction of the ileum on the right with the colon on the left.

Answer Key

CLEANING AN ISOLATION ROOM (page 3)

1. False

- Our isolation exam room is a room that is used for any patient that needs to be isolated from exposure to other patients. This includes immune-compromised patients, as well. This means that after ANY patient has been in the designated isolation exam room, a full isolation protocol cleaning needs to be completed to ensure safety of our vulnerable yet not contagious patients that might be using that room, too.
- A normal exam room where we roomed a suspected isolation patient, who turned out to be a non-isolation case does not need to be isolation cleaned. Just a regular room turnaround will do as the patient did not have anything contagious and can now be treated as any other non-isolation (excluding immune-compromised) patient.

2. True

- Many places do not commonly use isolation protocol for URIs, but everyone should! These conditions are very often contagious and are easily spread between patients.
- A cat sneezing, licking its paw and walking, or any other form of oral/nasal transmission can put other patients at risk. It's important to work with teams at the front and back of the hospital when a patient has been diagnosed with a URI. Contaminated seating areas and non-isolation exam rooms should go through the same cleaning protocol as an isolation cleaning.

3. True

- The ante room is a clean room, meaning anyone should be able to enter or exit without coming into contact with harmful or zoonotic contaminants.
- Isolation personal protective equipment (PPE) has been exposed to the contagion just by entering the isolation exam room (even if you didn't touch anything). The PPE needs to be treated the same as all of the other equipment and gear used for that case and left in the isolation room until proper disposal or cleaning.
- Keep in mind that additional PPE, not just gowns and laundry, are also not allowed in the ante room. Items like gloves, booties, or hair nets are also exposed to contaminants, and should be removed prior to entering the ante room.

GUESS THE ECG (page 7)

1. 2:1 second degree AV block

2. Atrial fibrillation

3. Non-sustained ventricular tachycardia

Upcoming Free Events

LEARN MORE AT [DOVELEWIS.ORG](https://dovelewis.org)



MEMORIAL ART THERAPY

Second Sunday of each month

One of the best ways to navigate your grief when you lose a pet is memorializing them through art. Research shows that art and healing come from the same source. In fact, it is now known that when a person is creating art or is healing, they will emit the same brain wave patterns. Art and healing are so powerful that hospitals are incorporating art into patient care. RSVP at dovelewis.org



PET LOSS SUPPORT MEETING

November 14, 2019 | 7-8 p.m.

This program is designed to help people who have experienced or are anticipating the loss of their pet. We realize that in our society we're often expected to minimize our sorrow for a deceased pet. However, feelings linger long after the loss because our pets shared our lives, dreams, homes, and affections. Because they touched our lives so deeply, they are deserving of our grief. No RSVP required.



VETERINARY SUPPORT GROUP

November 20, 2019 | 7-8 p.m.

Veterinary support meetings are a way for veterinary professionals to address compassion fatigue and burnout. Through the Balint method, cases are presented to the group with a focus on discussing and enhancing our ability to connect with and care for a patient sustainably. Why? Because we're stronger together.

DoveLewis Annual Conference

2019



Thank you to the practice managers, technicians, veterinarians, and supporters who joined us at the 2019 DoveLewis Annual Conference. We hope this event strengthened your skills and allowed you to connect with fellow veterinary professionals.

See what other CE opportunities we have
for your team at dovelewis.org

THANK YOU TO OUR SPONSORS



Dogs Doing Good

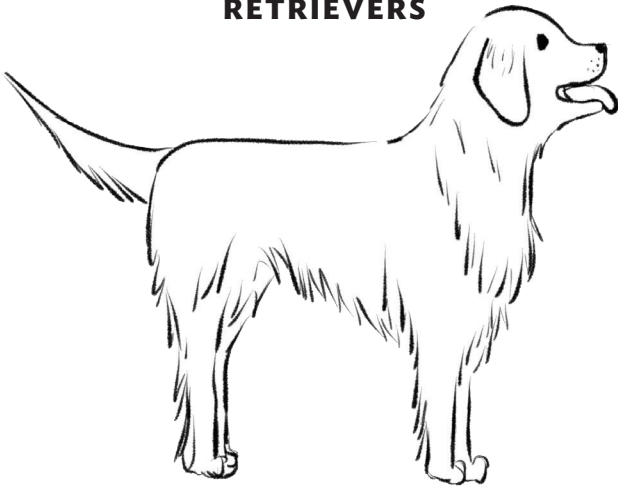
THE HEALING POWER of animals is no secret to us and we are proud to have animal-assisted therapy services for our local community. Our Portland Area Canine Therapy Teams (PACTT) provide people with the therapeutic benefit of positive interactions with dogs throughout the Portland area. The calm temperament, focused upbringing and extensive training of these retired and career-change guide dogs, make PACTT the most advanced team of volunteer therapy animals in town!

A few of our PACTT dogs enjoying the sun (left to right): Crosbie, Marvin, Sandy, Abbott, Bishop, Misha, Roger, and friends.



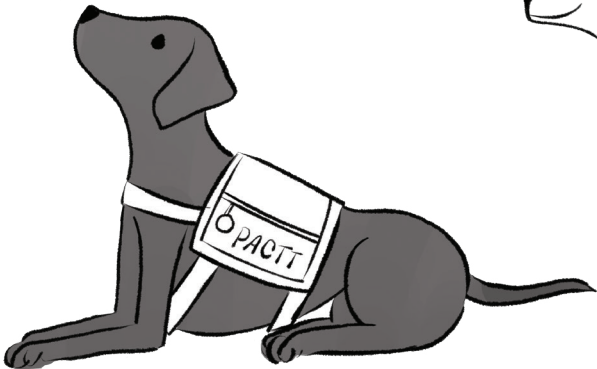
16

RETRIEVERS



28

BLACK LABS



28

YELLOW LABS



- 37 females
- 35 males
- 2-12 years old
- 7,000 volunteer hours last year

DoveLewis® PACTT PORTLAND AREA CANINE THERAPY TEAMS

Quick Facts!



Kiev is gifted in the art of Dog Parkour (urban agility).

Farrah loves to go to Dutch Bros for a puppuccino after a hike.



Abbott is an avid Ducks football fan and likes to hang out at the games.

Hoshi LOVES ice cubes.



Mia's favorite toy is a tug toy – especially when another dog is connected to it.