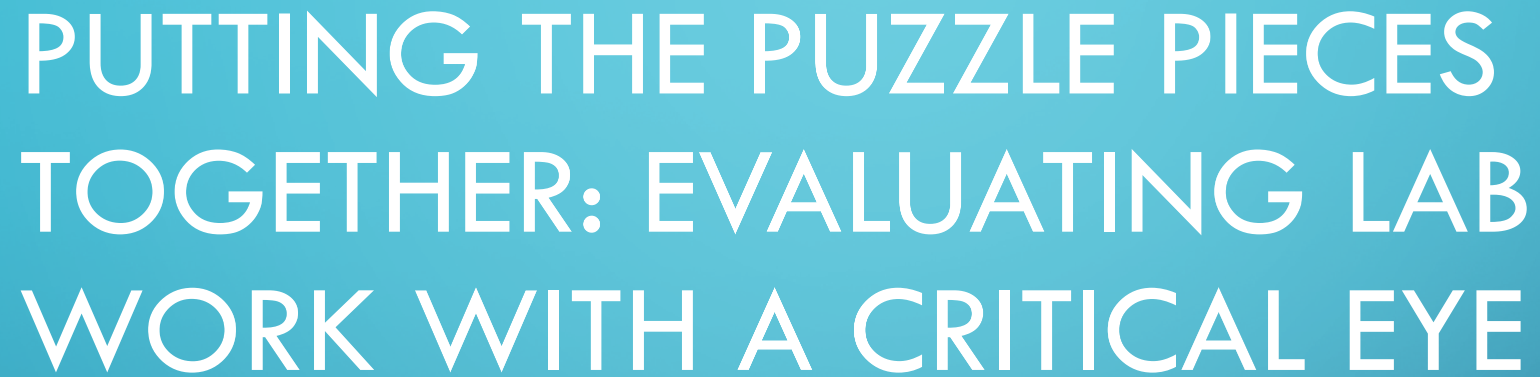
- Dr. Felix attended the University of Arizona and graduated in May 2010 for undergrad - (Bear down Wildcats!) She went on to the University of Wisconsin - Madison for veterinary school graduating in 2015. Then completing her rotating internship at the Veterinary Specialty Hospitals of the Carolinas in Cary, Raleigh, and Durham from June 2015 - July 2016; on to her emergency & critical care residency at Massachusetts Veterinary Referral Hospital in Woburn, MA. Dr. Felix worked outside of Boston with MVRH and Boston West Veterinary Emergency and Specialty for about 1.5 years before moving to LA and working at ASEC for about three years. She now is providing relief critical care coverage. She authored a case report of cholecalciferol toxicity and treatment in a puppy, and professional interests include treating sepsis, trauma, and heatstroke.
- Dr. Felix grew up playing soccer and still loves to catch a game in her free time. She enjoys cooking, going kayaking, playing volleyball... and anything else outdoors by the ocean. She also is a fanatic about all things Arizona Wildcats!

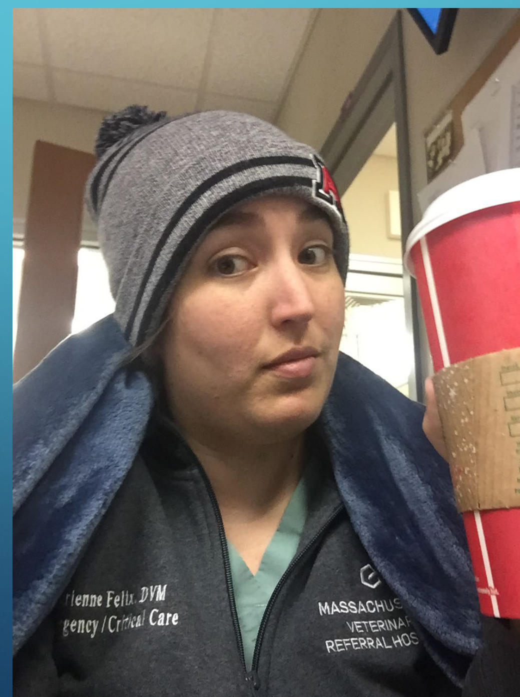


ADRIENNE FELIX, DVM, DACVECC

10/6/2024

ASECSYMPOSIUM 2024

QUICK BIT ABOUT ME



Stock.adobe.com

4 YO MC CORGI "DOUG"

PRESENTING CLINICAL SIGNS: INTERMITTENT VOMITING, LETHARGY, ANOREXIA FOR 3 DAYS , UNSURE IF INGESTED SOMETHING FOREIGN

- ROUTINE BLOOD WORK 3 MONTHS AGO WAS NORMAL

PE: 6-8% DEHYDRATED, GENERALIZED WEAKNESS, MILDLY ICTERIC SCLERA, ABDOMINAL PAIN ON PALPATION

DOUG'S PROBLEM LIST

- Vomiting
- Lethargy
- Anorexia
- Mildly icteric sclera
- Abdominal pain
- Dehydration
- Generalized weakness

DIAGNOSTICS

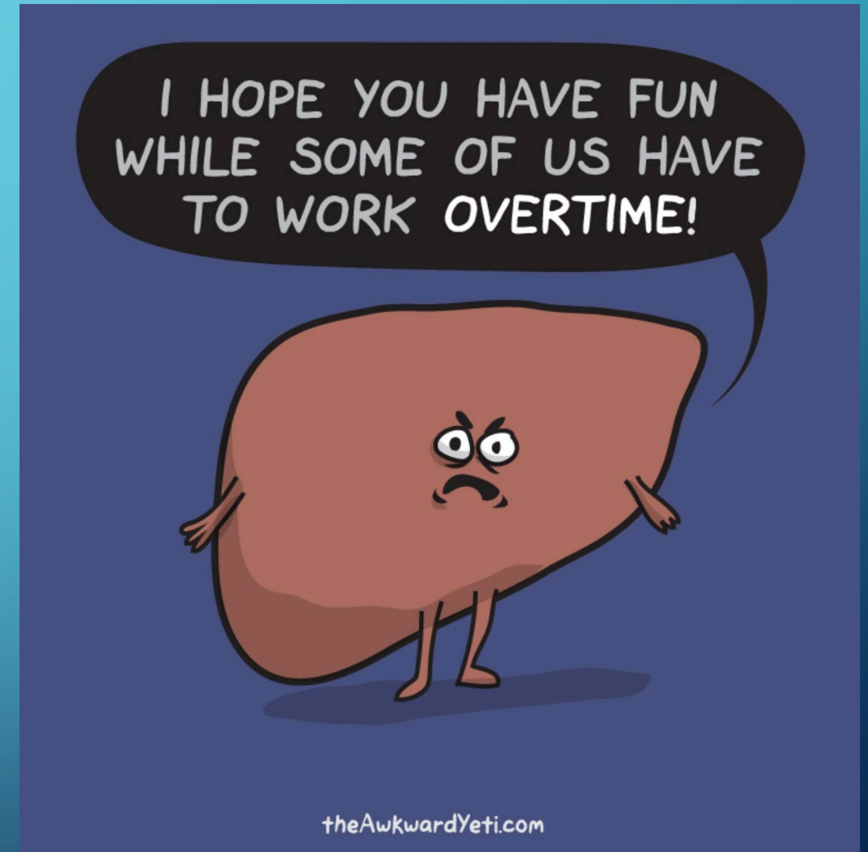
- BP – 120
- CBC – HCT 55, WBC 15K, Neu 12.4K, PLT 120k, PCV/TS 58/6.0
- Chem – Glu 55, BUN 8, Alb 2.0, Chol 80, ALT > 1000, Tbili 3.8, Na 145, K 3.0
- AUS – normal (no foreign body noted)
- PT/PTT – 21/140

REVISED PROBLEM LIST

- Hepatocellular enzyme elevation (ALT)
- Hyperbilirubinemia
- Hypoglycemia
- Hypoalbuminemia
- Hypokalemia
- Coaulopathy
- Vomiting
- Lethargy
- Anorexia
- Mildly icteric sclera
- Abdominal pain
- Dehydration
- Generalized weakness

LIVER FUNCTION ENZYMES

- When assessing liver function
  - ALT (can be elevated or low if in fulminant failure)
  - Glucose
  - BUN
  - Alb
  - Cholesterol



ACUTE HEPATIC DYSFUNCTION/FAILURE DIFFERENTIALS

- Xylitol containing products (think sugar free gums, medications, peanut butter etc)
- Cycad family (ie: sago palm)
- Aflatoxin
- Amantadine
- Acetaminophen
- Blue-green algae
- Many many many others

TREATMENT

- IV dextrose support and boluses as indicated
- Cautious balanced crystalloid IV fluid
- Vitamin K if concern for clinical coagulopathy
  - If clinical bleeding can administer plasma transfusion as well
- Enteral nutritional support
- General supportive care (anti-emetics, promotility agents as needed)
- N-acetylcysteine IV or PO or Denamarin PO

FULMINANT HEPATIC FAILURE/HEPATIC ENCEPHALOPATHY

- If able check NH3+ levels – if elevated hepatic encephalopathy
- Warm water enema followed by retention lactulose enema
- Metronidazole at a reduced dose
- If seizures develop – use levetiracetam as anticonvulsant agent
  - Benzodiazepines can cause profound sedation

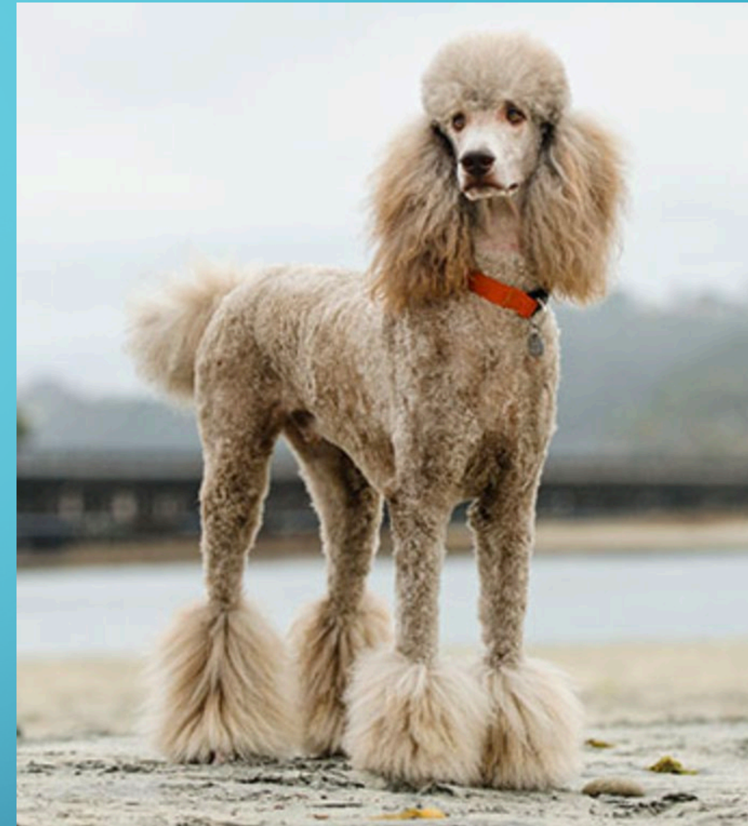
"DOUG'S" OUTCOME

- Owners remembered after diagnostics that he had ingested parts of a plant in their back yard… it was a sago palm

- His liver function only continued to deteriorate and so his owners elected humane euthanasia ☹

Truegreennursery.com

3 YO FS STANDARD POODLE "FANCY"


Akc.org

PRESENTING CLINICAL SIGNS: VOMITING, WEAKNESS, INAPPETENCE, LETHARGY

PE: 8-10% DEHYDRATED, OBTUNDED, TACHYCARDIA

FANCY’S PROBLEM LIST

- Vomiting
- Weakness
- Lethargy
- Inappetence
- Marked dehydration
- Obtundation
- Tachycardia

FANCY'S INITIAL DIAGNOSTICS

- BP – 60
- Spot BG – 48
- CBC – WBC 12k, Neu 10k, Lymph 1k, PCV/TS 68/8.0
- Chem – Na 132, K 6.9, Glu 54, BUN > 140, Crea 4.0, Alb 5.0,
- US – unable to locate adrenal glands, but otherwise normal
- CXR – microcardia and hypovolemia

https://www.linkedin.com/pulse/microcardiahypovascular-lung-pattern-dog-robert-cruz

REVISED PROBLEM LIST

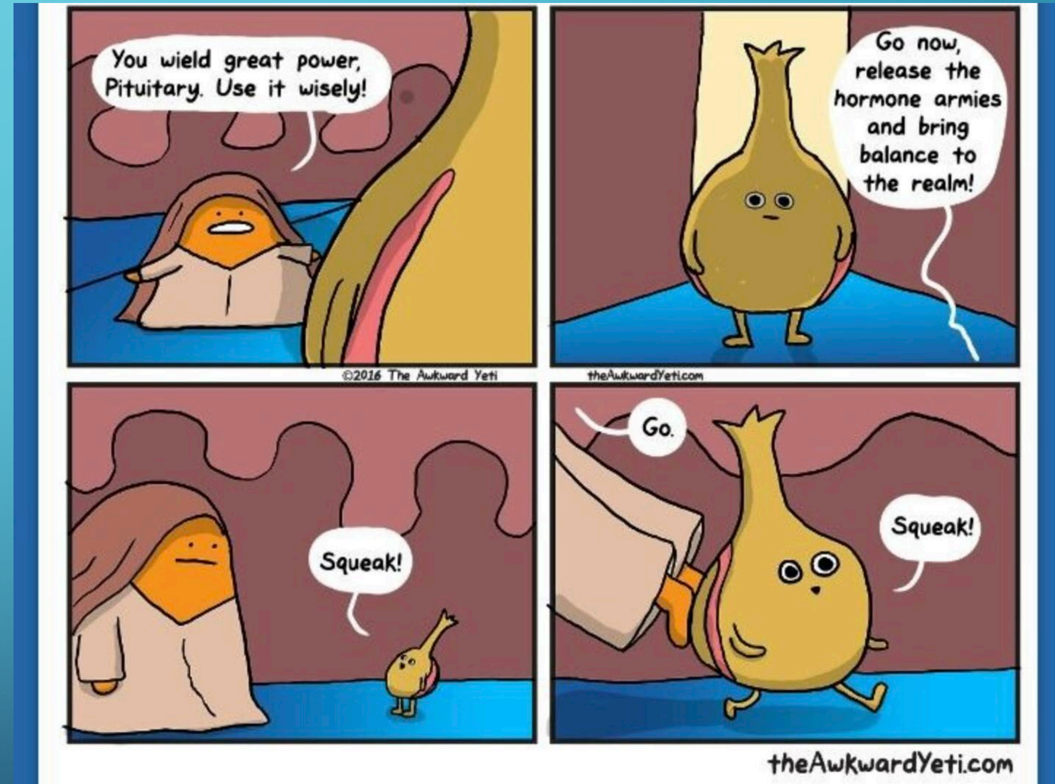
- Vomiting
- Weakness
- Lethargy
- Inappetence
- Marked dehydration
- Obtundation
- Tachycardia
- Hypoglycemia
- Azotemia
- Hyponatremia/Hykperkalemia (Na/K ratio 19.1)
- Lack of stress leukogram
- Marked dehydration
- Missing adrenals

What test should we send out next???

FANCY'S DIAGNOSTICS CONTINUED

- ACTH Stimulation test:
  - Baseline < 1, Post Cortrosyn < 1

- Fancy is an Addisonian in crisis.
  - Typically adrenal glands are unable to produce adequate glucocorticoids and mineralocorticoids



ADDISONIAN CRISIS TREATMENTS

- STEROIDS
- IV FLUIDS – these patients are very very hypovolemic
  - Recommended to use 0.9% NaCl to replace electrolytes
- Dextrose support
- DOCP injection
- Antinausea
- BG, BP and lyte monitoring
- Other support as indicated based on patient

https://nexgenvetrx.com/

https://my.elanco.com/

https://www.dechra-us.com/

RECHECK PLAN

- When to recheck electrolytes?
  - 2 weeks after initial DOCP injection
  - 4 weeks after and will likely need DOCP to be given again
- DOCP is typically given ~ 28 d but can be spaced out more

3 YO MC SPOO EDDIE

www.akc.org

NOW LET'S EVALUATE FANCY'S SIBLING EDDIE

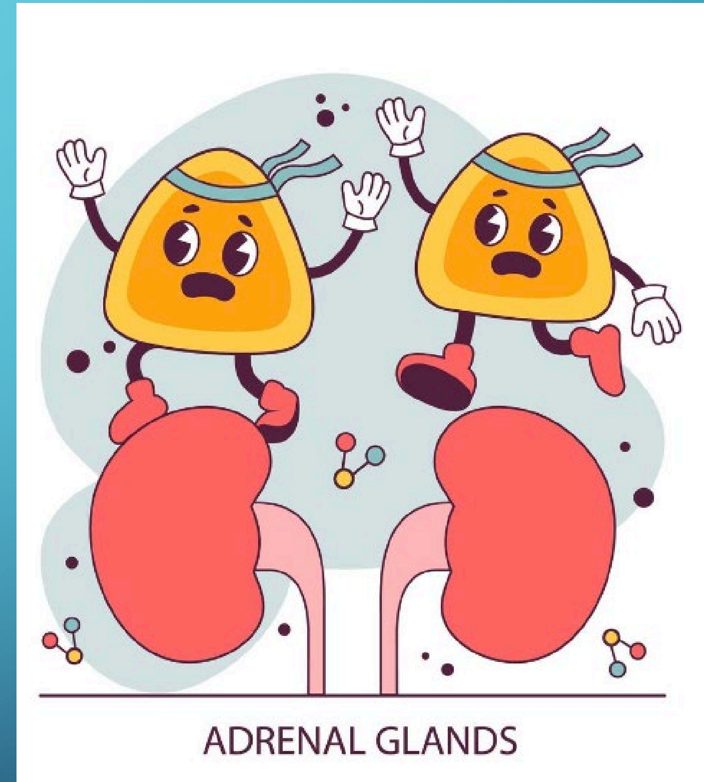
- SAME PRESENTING CLINICAL SIGNS (BUT MORE CHRONIC OF A TIME FRAME) AND PE FINDINGS

EDDIE'S DIAGNOSTICS

- BP – 58
- Spot BG – 45
- CBC – WBC 11k, Neu 10k, Lymph 1k, PCV/TS 67/7.8
- Chem – Na 148, K 4, Glu 54, BUN 80, Crea 3, Alb 2.0, Chol 100
- US – unable to locate adrenal glands, but otherwise normal
- CXR – microcardia and hypovolemia

WHAT IS EDDIE'S DIAGNOSIS?

CAN HE BE AN ADDISONIAN AS WELL??

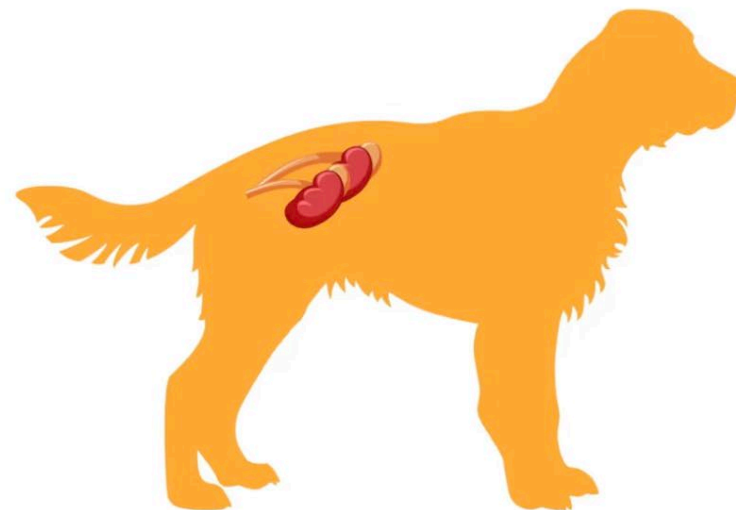


https://www.vecteezy.com/

TYPICAL VS ATYPICAL ADDISON'S DISEASE

Two types of Addison's Disease

Atypical



Classic

https://vimeo.com/

ATYPICAL ADDISONIAN TREATMENT

- Do these guys need DOCP?
  - NOPE – only steroids and general supportive treatment
- Can they transform into a traditional Addisonian?
  - Yes so need to continue to monitor electrolytes

2 YO MC GOLDEN “RILEY”

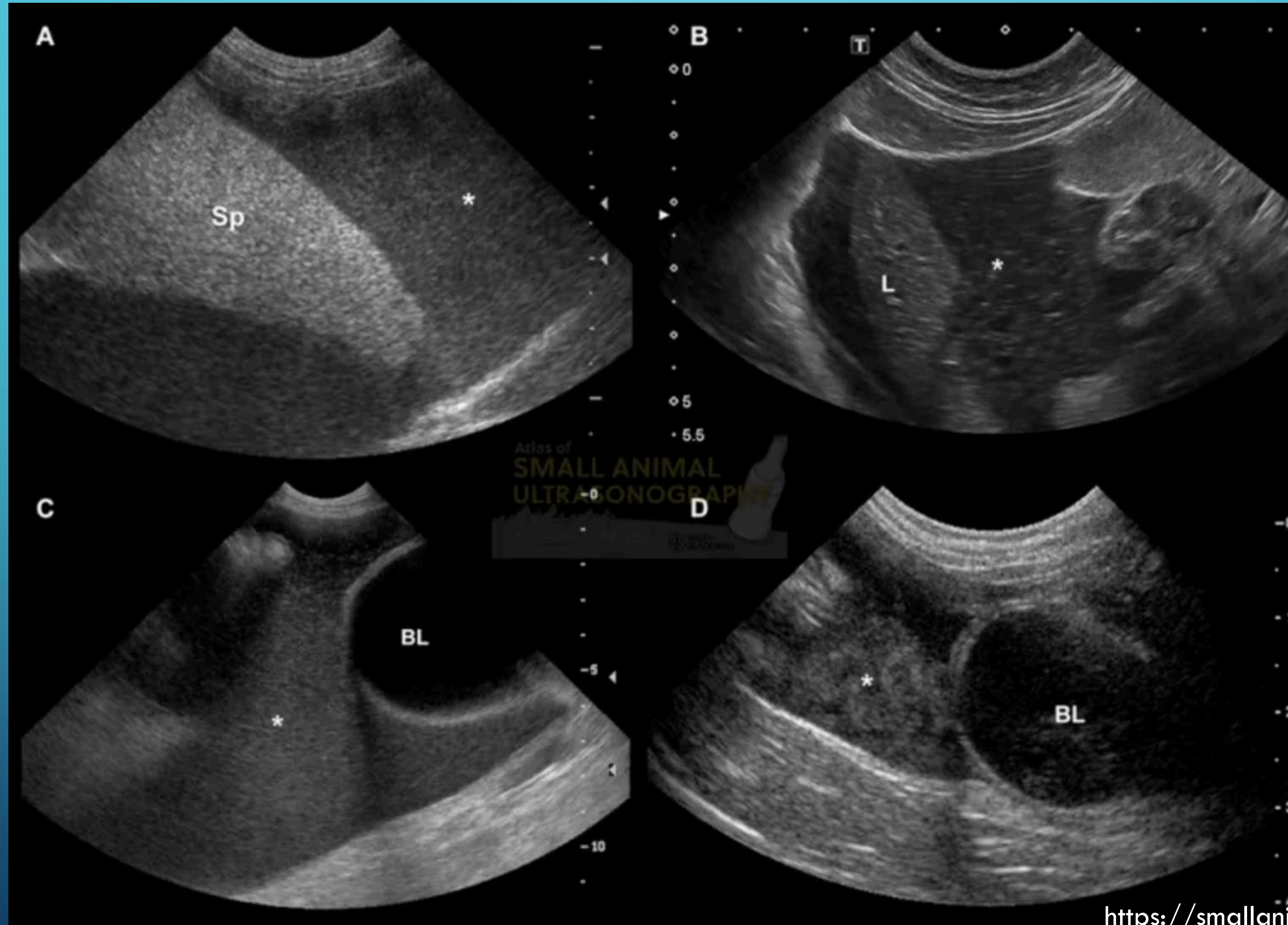
PRESENTING CLINICAL SIGNS: INTERMITTENT VOMITING, LETHARGY, ANOREXIA FOR 3 DAYS , UNSURE IF INGESTED SOMETHING FOREIGN

PE: T 104.3, HR 180, POOR PULSE QUALITY, 6-7% DEHYDRATED, ABDOMINAL PAIN, POSSIBLE FLUID WAVE, WEAKNESS

RILEY'S PROBLEM LIST

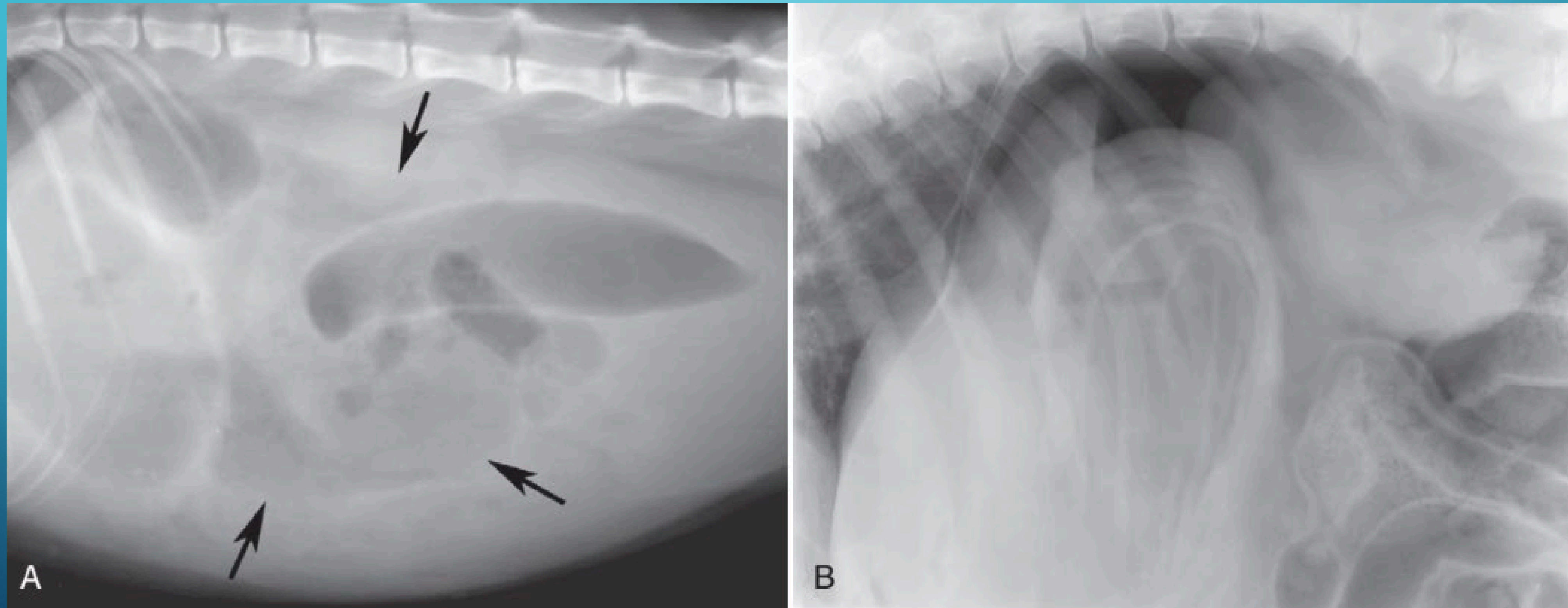
- Vomiting
- Lethargy
- Inappetence
- Dehydration
- Abdominal Pain
- Weakness
- Possible Fluid Wave

BEGINNING DIAGNOSTICS



https://smallanimalultrasonography.com/

BEGINNING DIAGNOSTICS

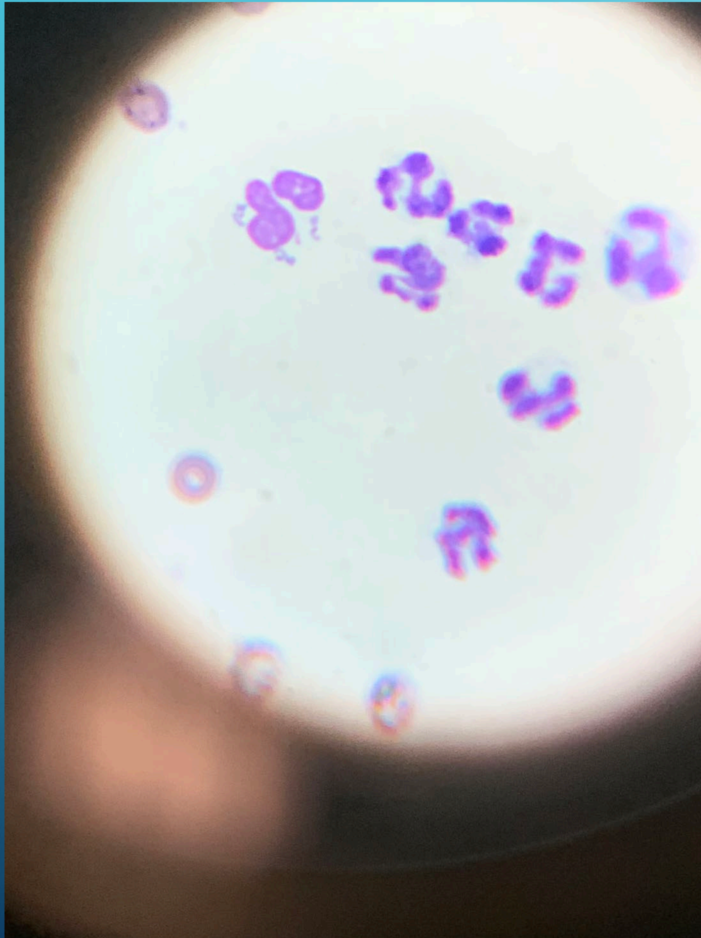


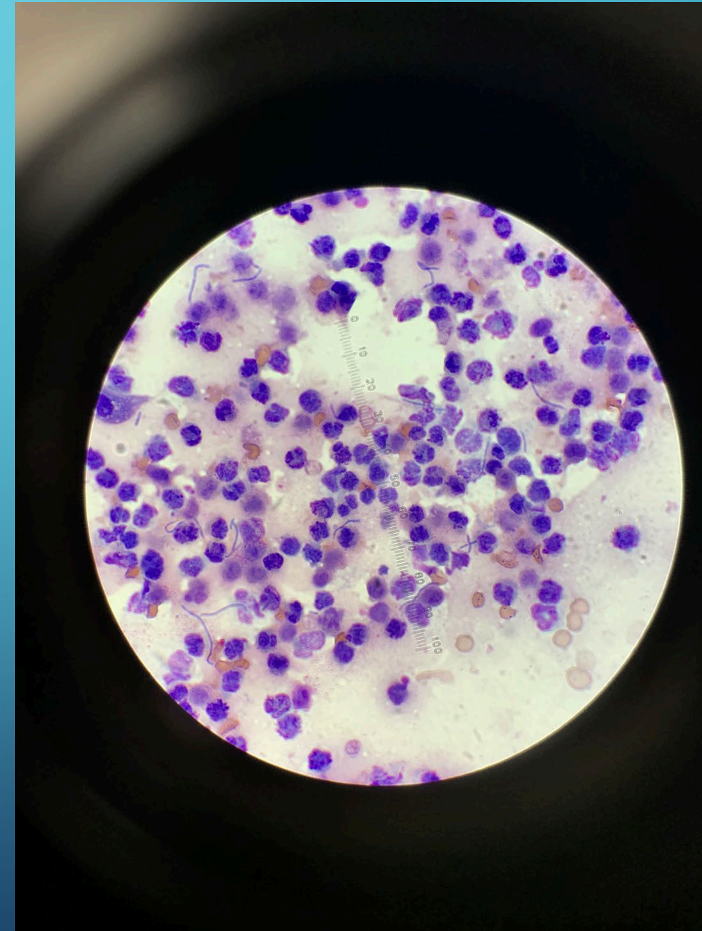
Frank, Paul. (2013). The Peritoneal Space. In D. Thrall (Ed). *Textbook of Veterinary Diagnostic Radiology*. (6th ed., pp. 659-678). St Louis, MO: Elseveir.

DIAGNOSTICS

- Initial BP – 60
- CBC – WBC 3k, Neu 2k, Lymph 0.8k, Plt 100k, PCV/TS 58/6.4
- Chem – Alb 3.2, Glu 55, Na 138, K 3.4, Cl 108
- US – moderate volume echogenic effusion

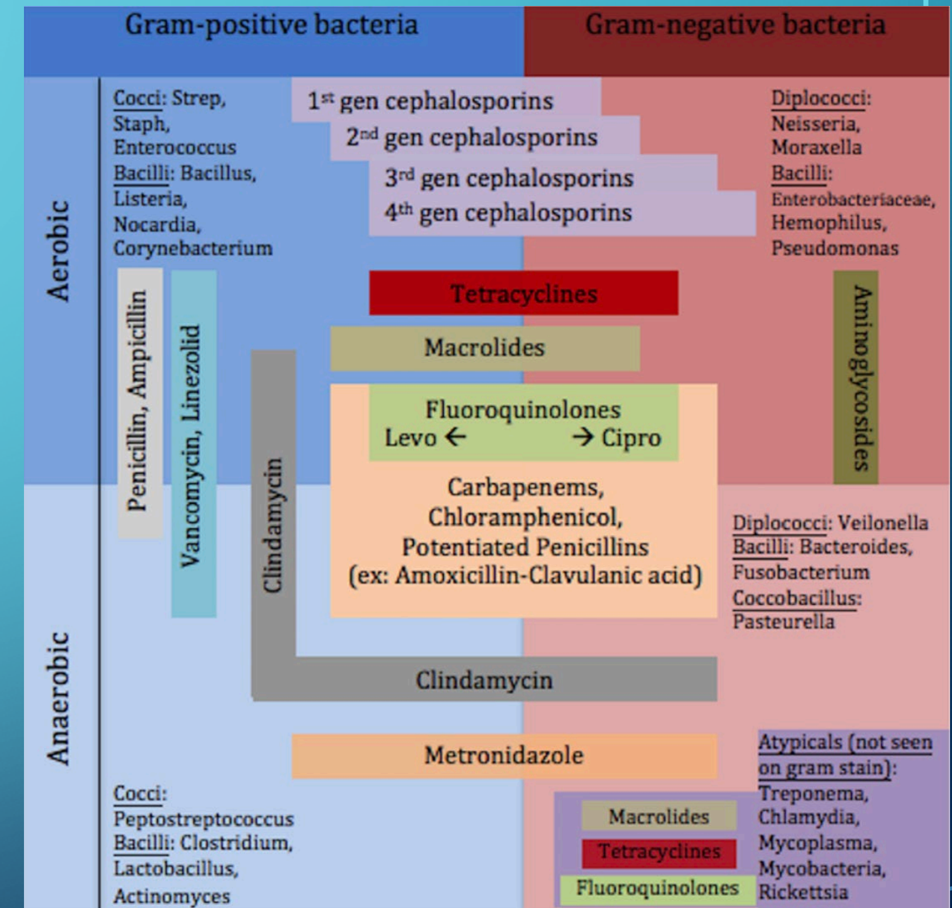
DIAGNOSTICS - CYTOLOGY





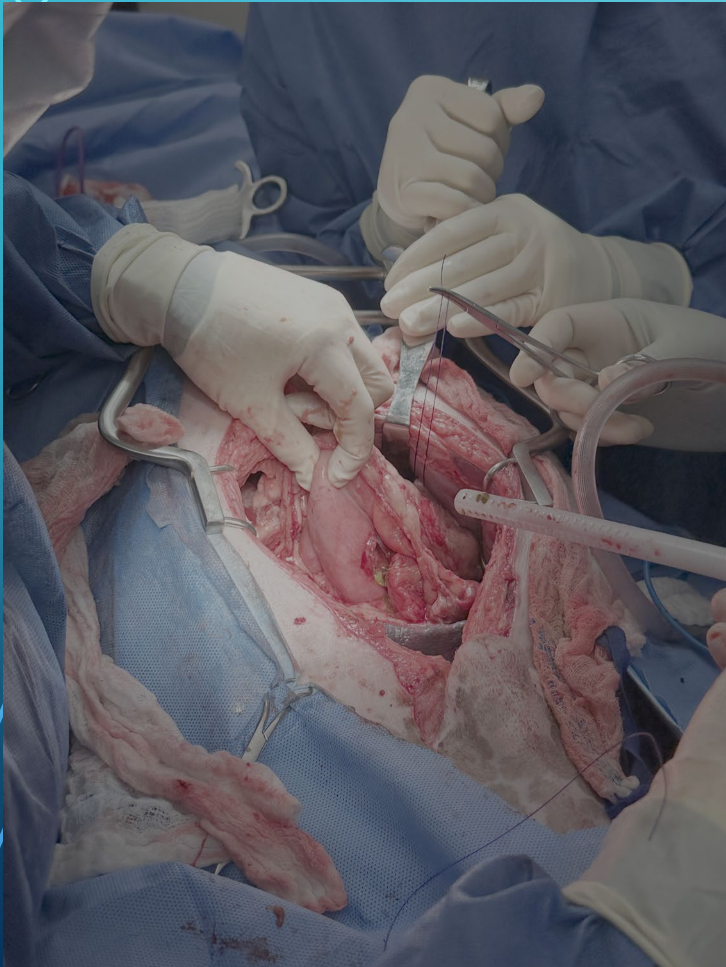
INITIAL TREATMENTS

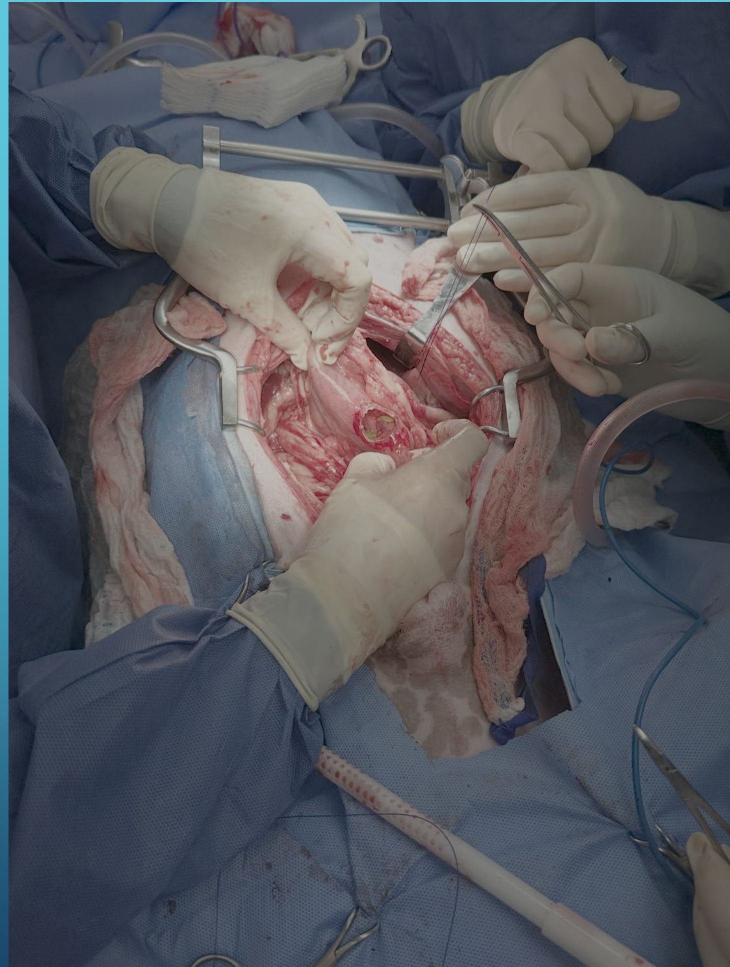
- Balanced crystalloid IV fluids
  - Depending on how BP does may need a vasopressor
- Dextrose support
- FOUR QUADRANT ANTIBIOTIC COVERAGE
- Anti-nausea
- Pain medication
- SURGERY!!!

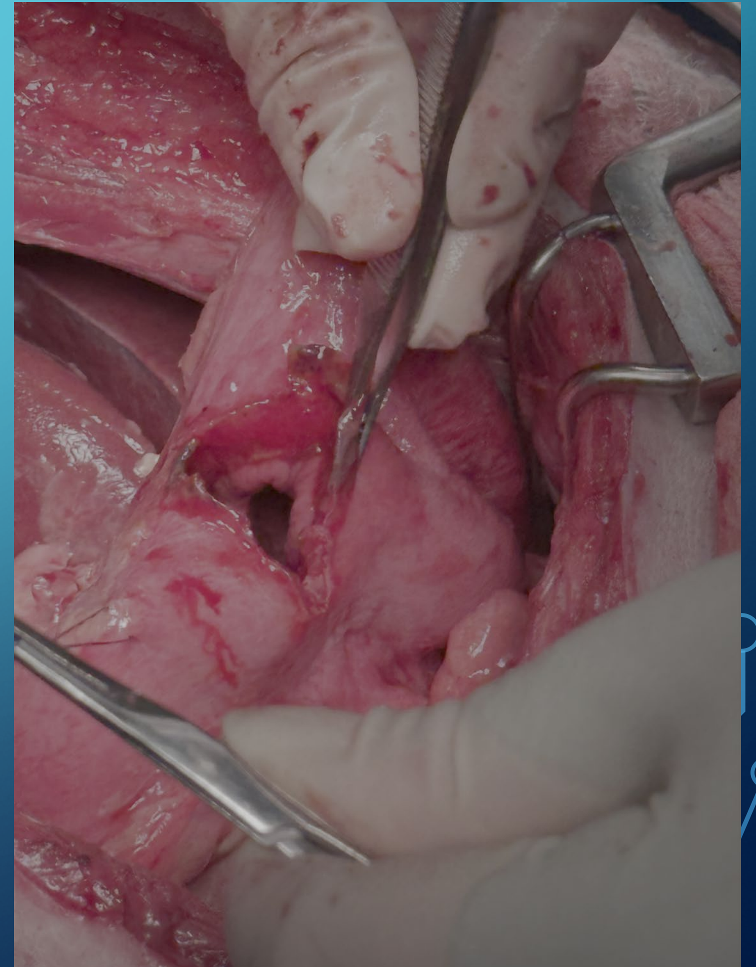


Stewart SD, Allen S. Antibiotic use in critical illness. *J Vet Emerg Crit Care*. 2019; 29: 227–238.

SURGERY







POST OP CARE

- Continued IVF, broad spectrum antibiotics, pain medications and GI support
- JP drain care and daily cytology
- BP/BG, BW monitoring as needed
- NG feedings to promote enterocyte health

Akc.org

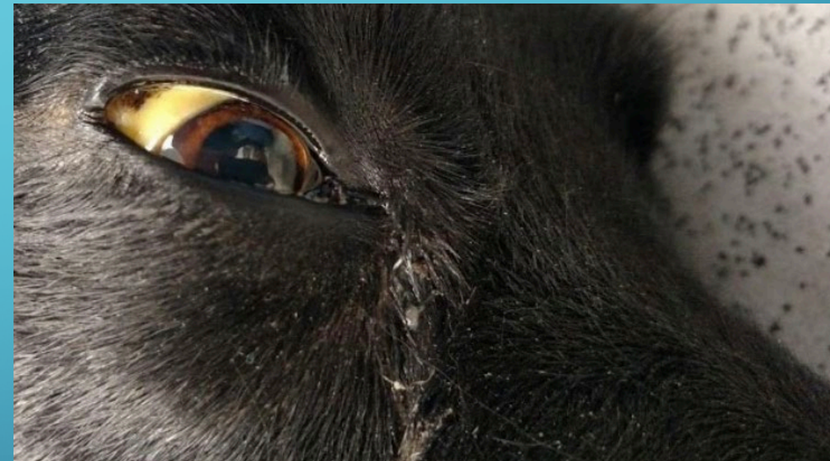
6 YO FS COCKER SPANIEL "BRANDY"

PRESENTING SIGNS: LETHARGY, VOMITING, WEAKNESS, INAPPETENCE, DIARRHEA

PE: T 103.2F, HR 180, HYPERDYNAMIC FEMORAL PULSES, 6-8% DEHYDRATED, ICTERIC SCLERA, YELLOW/ORANGE MM COLOR

BRANDY'S PROBLEM LIST

- Lethargy
- Weakness
- Vomiting
- Inappetence
- Diarrhea
- Icteric sclera
- Tachycardia/hyperdynamic pulses

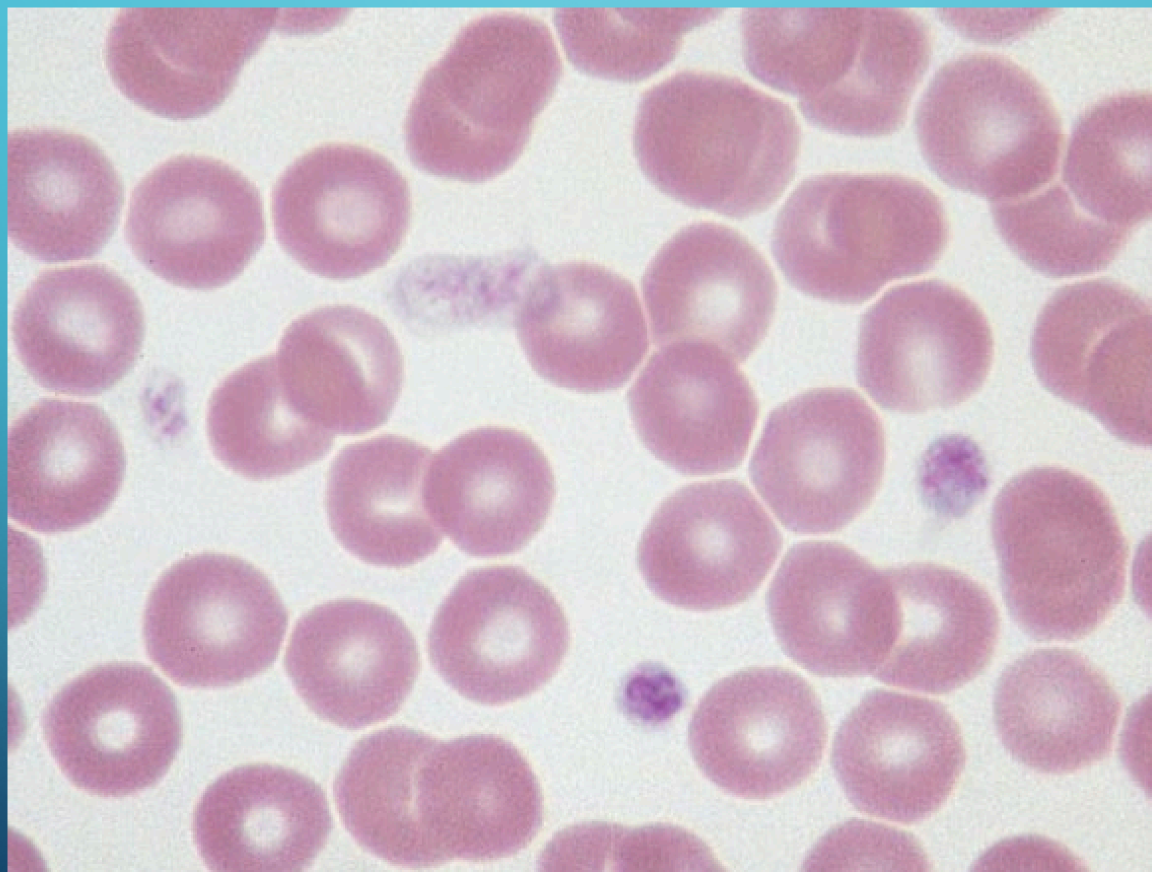


https://waww.mspca.org/

BRANDY'S DIAGNOSTICS

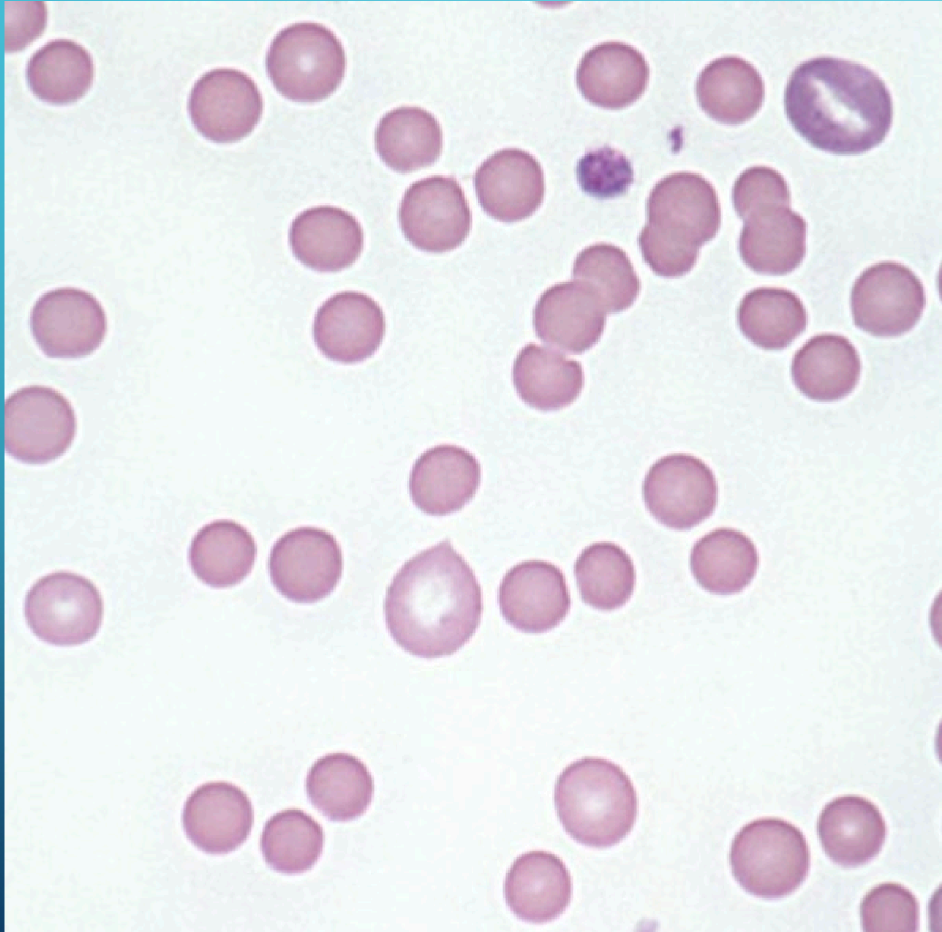
- BP 80
- BG 110
- PCV/TS 15/7.2, icteric serum
- CBC – HCT 14%, WBC 18k, Neu 15k, Plt 80k, Reticulocytes 25k
- Chem – BUN 28, Crea 1.2, Tbili 4.8
- Coombs - positive

BRANDY'S PATHOLOGY REVIEW



https://eclinpath.com/

BRANDY'S PATHOLOGY REVIEW



https://eclinpath.com/

BRANDY'S REVISED PROBLEM LIST

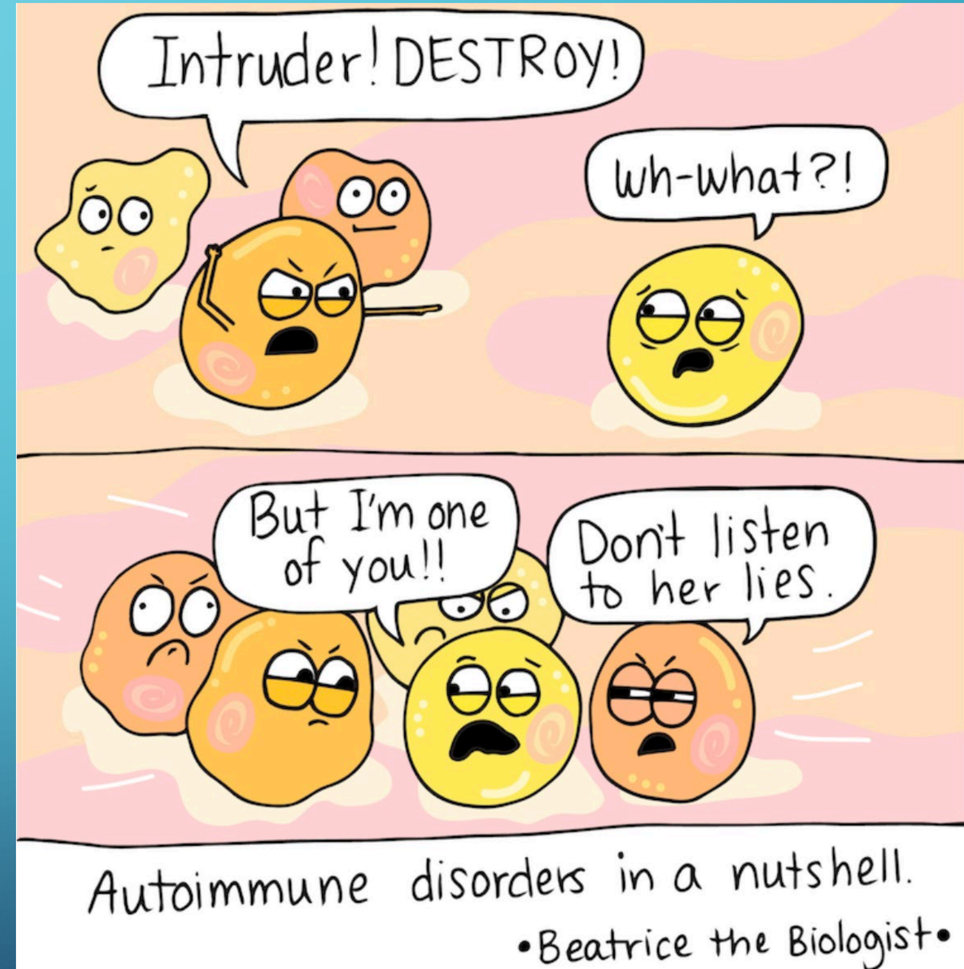
- Lethargy
- Weakness
- Vomiting
- Inappetence
- Diarrhea
- Icteric sclera
- Tachycardia/hyperdynamic pulses

- Anemia
    - Non-regnerative vs pre-regenerative?
- Hyperbilirubinemia
- Spherocytosis
- Polychromasia
- Autoagglutination
- Positive Coombs

What disease does Brandy have?

DIAGNOSING IMHA

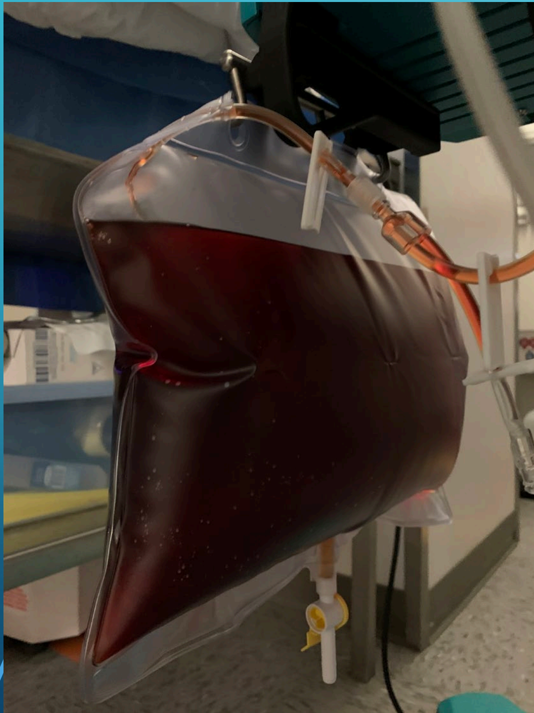
- Spherocytosis
- Positive saline agglutination test
- Positive Coomb's test
- Hyperbilirubinemia

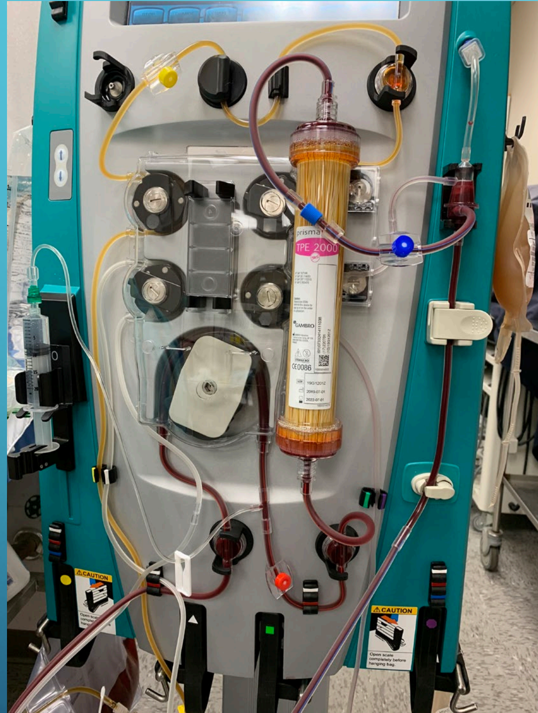


BRANDY'S TREATMENT

- pRBC transfusion over ~ 4 hours with a recheck PCV/TS post
  - How do you know when do administer a transfusion?
- IV fluids
- General supportive care
- Immunosuppressants
- Clopidogrel - why?
- Doxycycline course pending infectious disease testing

IMHA ADJUNCTIVE TREATMENT



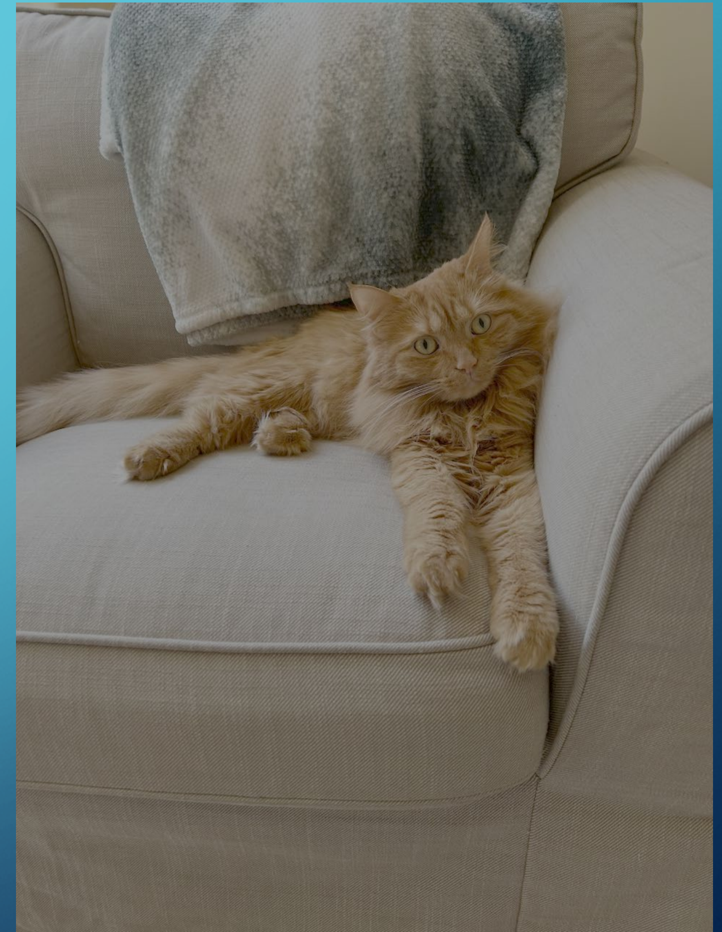


Courtesy Dr. Scott Taylor

4 YO MC DSH "STEVE"

PRESENTING SIGNS: LETHARGY, VOMITING, STRAINING TO URINATE

PE: 6-8% DEHYDRATED, HR 240, LARGE TURGID URINARY BLADDER



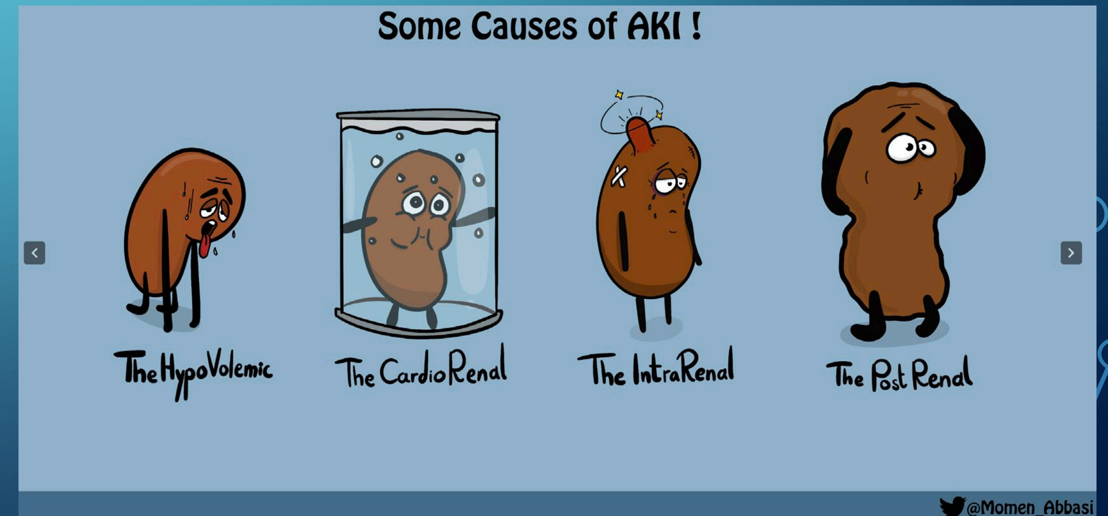
STEVE'S INITIAL PROBLEM LIST

- Vomiting
- Lethargy
- Stanguria
- Large turgid bladder

What are we concerned this patient has?

DIAGNOSTICS

- AFAST – large urinary bladder, scant effusion around bladder
- Chem – BUN > 140, Crea 14.2, K 7.2, Alb 4.8, Glu 110
- CBC – HCT 48, WBC 14k, Neu 10k, HCT 50/7.2
- ECG – sinus tachycardia



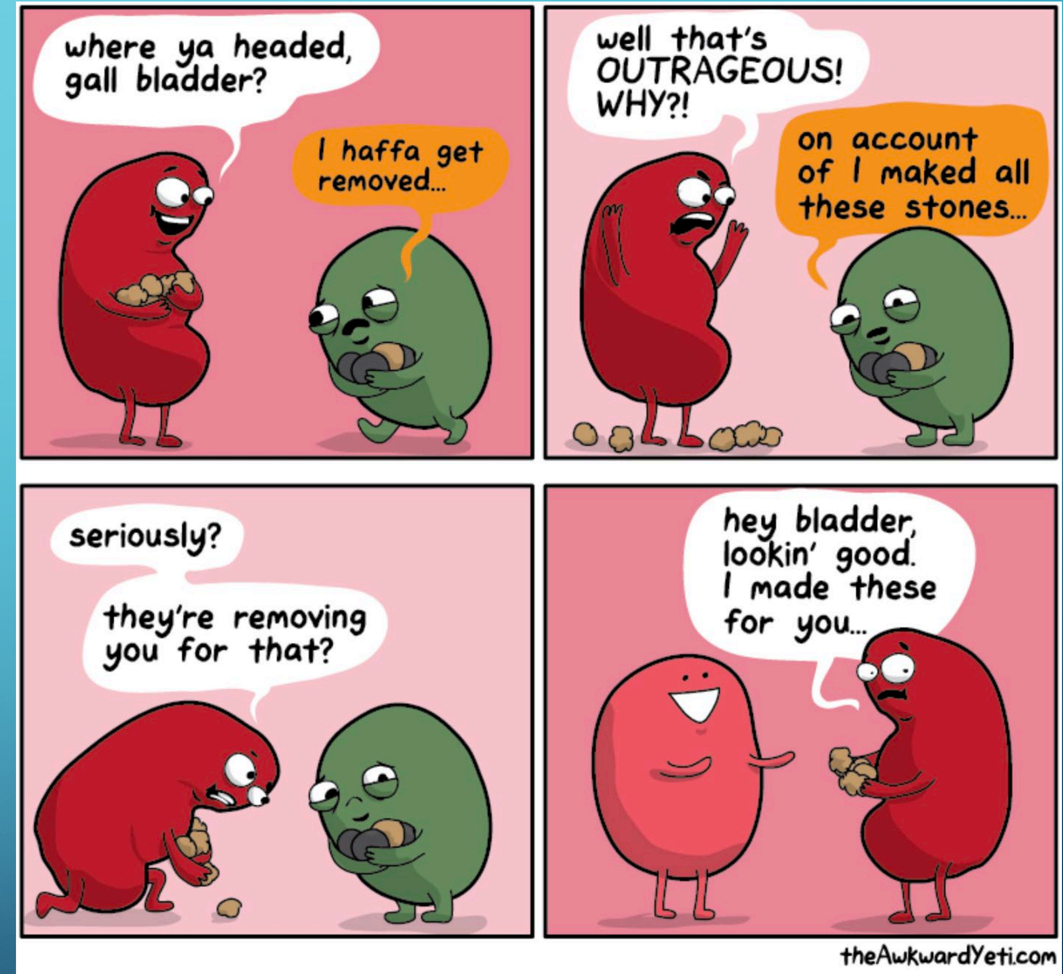
STEVE'S REVISED PROBLEM LIST

- Vomiting
- Lethargy
- Stanguria
- Large turgid bladder
- Severe azotemia
- Hyperkalemia
- Dehydration

What is Steve's diagnosis??

STEVE'S TREATMENT

- Pain medication
- For hyperkalemia
  - Calcium gluconate diluted
  - Dextrose
  - Insulin
- IV fluids
- Urinary catheter



UO MANAGEMENT

- IV fluids
  - Depending on degree of azotemia be cautious for post obstructive diuresis
- Pain medications
- Urinary catheter

THANKS! QUESTIONS??