



## **Cancer in the ER: Acute Care of the Chronic Patient**

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Session  
Sponsored By:



**Disclosure:**

Rebecca George and Bill Saxon are full-time employees of IDEXX\*



# Learning objectives

1. Understand common reasons cancer patients present to the ER
2. Logically assess emergency concerns for cancer patients
3. Prioritize diagnostic testing
  - a. ER related testing
  - b. Cancer-specific testing
4. Address immediate emergency concerns while minding impact on potential future diagnostics and treatments
5. Provide spectrum of care treatment options from palliative care to oncology referral

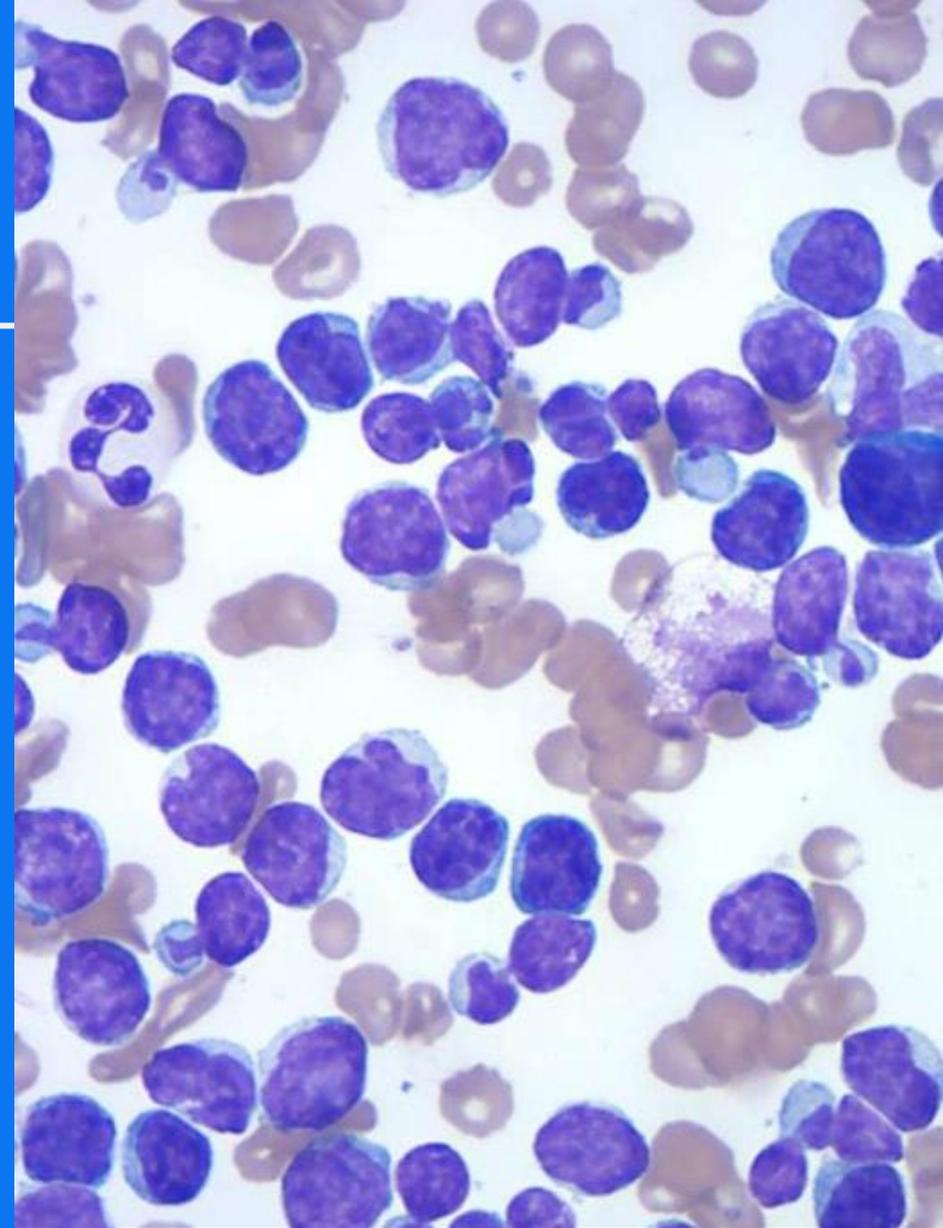
# Emergency is defined as a serious, unexpected event requiring immediate action

- Life-threatening
  - Cardiovascular
  - Respiratory
  - Neurologic
- Urgencies
  - GI
  - Pain
  - PU/PD/pollakiuria
  - Bleeding
  - Coughing



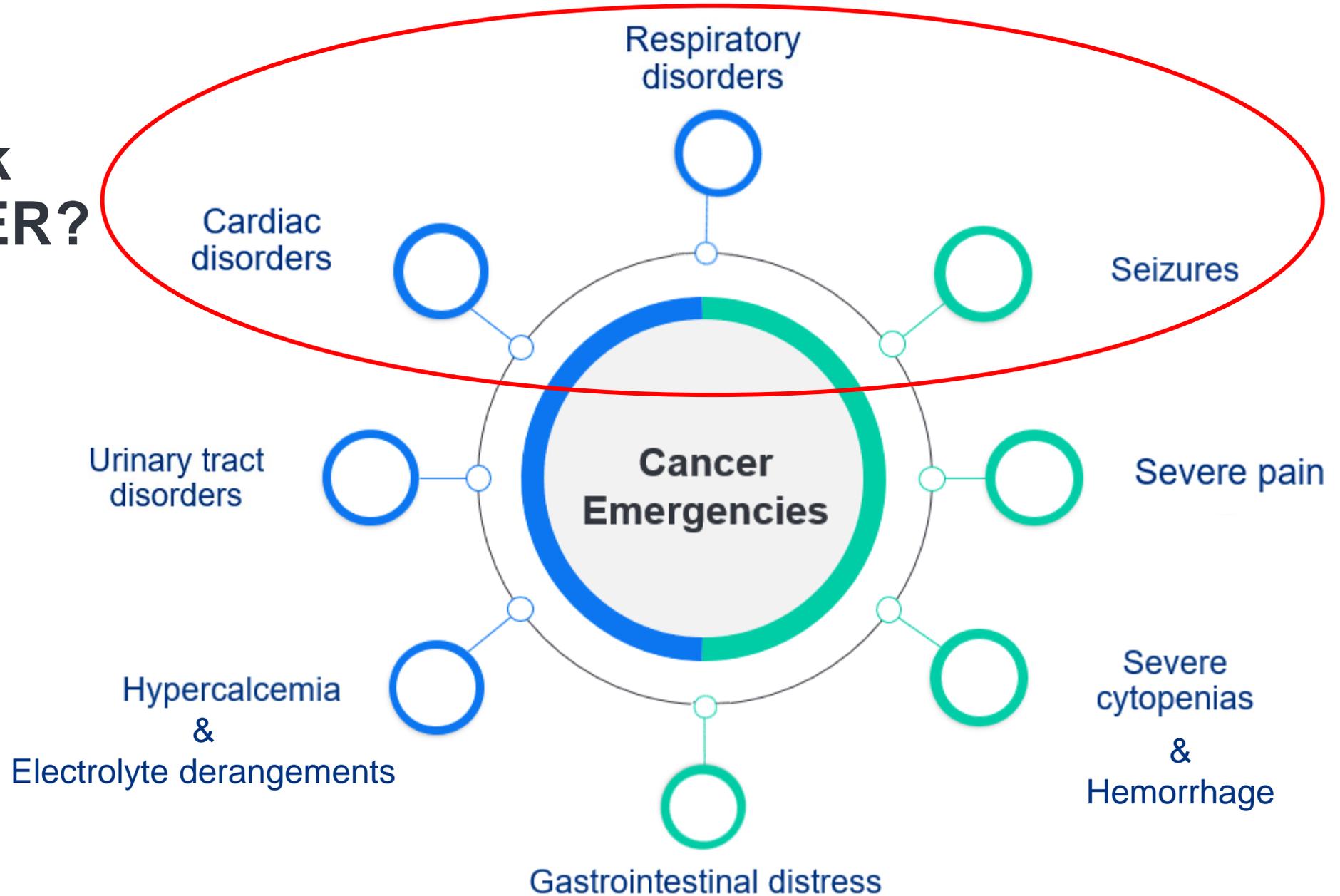


An oncological emergency is defined as an acute condition that is caused by cancer...or its treatment requiring rapid intervention to avoid death or severe permanent damage.



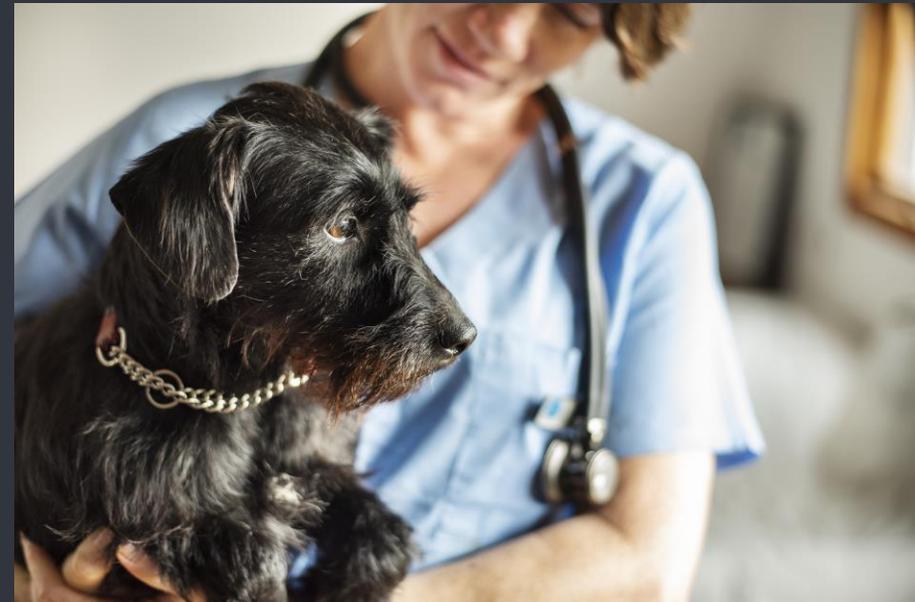
Cervantes A. and Chirivella I. Oncological emergencies. Ann Oncol. 2004;15 Suppl 4:iv299-306

# What does cancer look like in the ER?





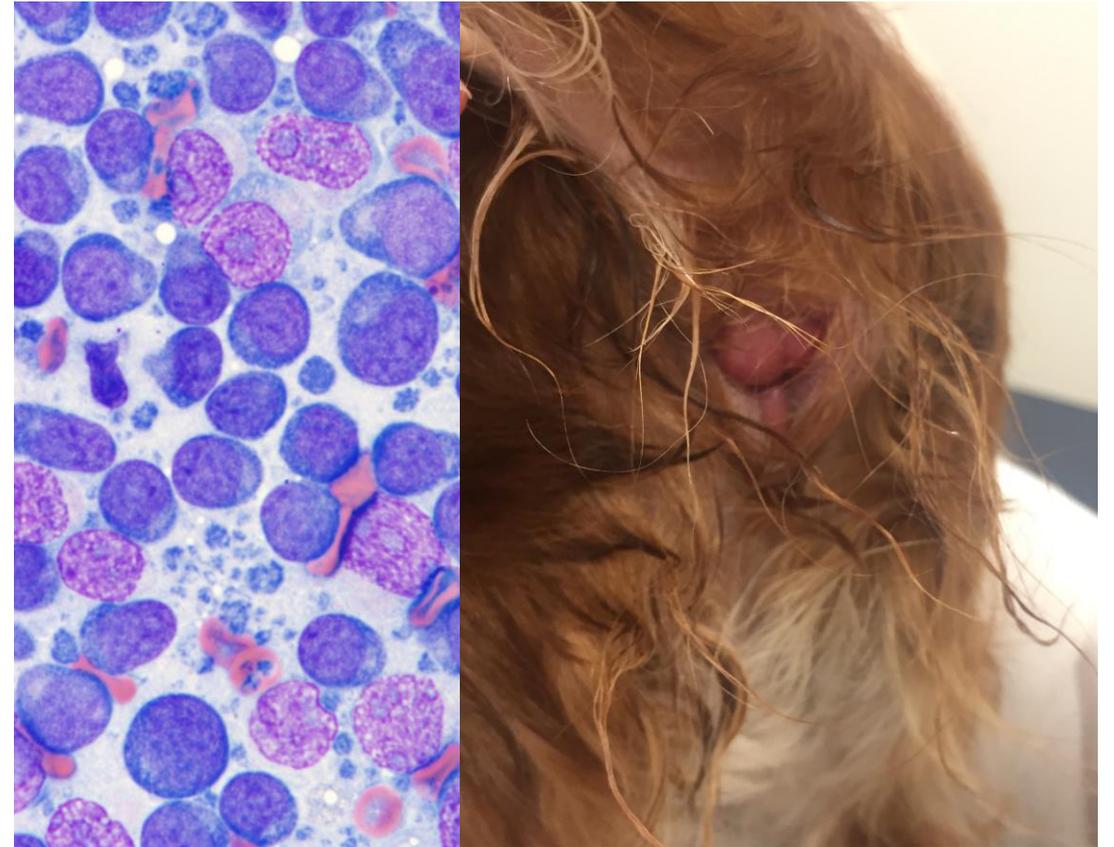
# ER patients presenting without a history of cancer



# Is it cancer?

## Physical Examination

- Palpate lymph nodes
  - Size (measure)
  - Shape and texture
- Fundic examination
- Oral examination
  - Don't forget the tonsils
- Rectal examination
- Bone pain
- Urinary tract palpation
- Cutaneous/subcutaneous masses
  - Don't forget the feet/toes
- Thoracic palpation
  - Compressible chest?



Courtesy of Dr. Ann Hohenhaus

# Is it cancer?

## Minimum Database

- CBC
- Chemistry with IDEXX SDMA

1

<b>Neutrophils</b>	<b>15.57</b>	<b>2.94 - 12.67 K/<math>\mu</math>L</b>
<b>Lymphocytes</b>	<b>119.37</b>	<b>1.06 - 4.95 K/<math>\mu</math>L</b>
<b>Monocytes</b>	<b>5.19</b>	<b>0.13 - 1.15 K/<math>\mu</math>L</b>
<b>Eosinophils</b>	<b>3.46</b>	<b>0.07 - 1.49 K/<math>\mu</math>L</b>
Basophils	0.00	0.00 - 0.10 K/ $\mu$ L
Nucleated RBC (Absolute)	20.76	10 <sup>9</sup> /L
Nucleated RBCs	<sup>b</sup> 12	per 100 WBC
<b>Atypical Lymphocytes</b>	<b>29.41</b>	<b>0.00 - 0.00 K/<math>\mu</math>L</b>
<b>Platelets</b>	<b>95</b>	<b>143 - 448 K/<math>\mu</math>L</b>

2

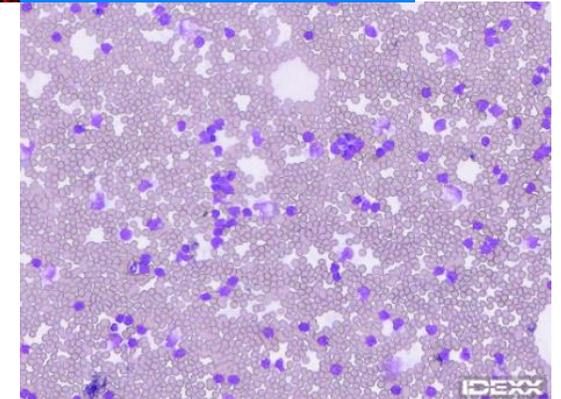
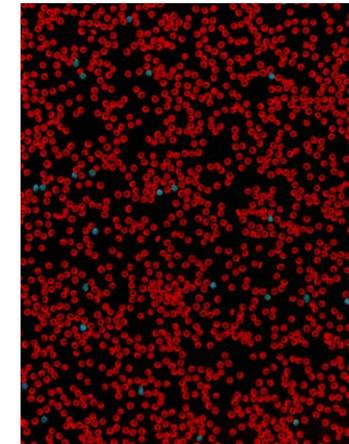
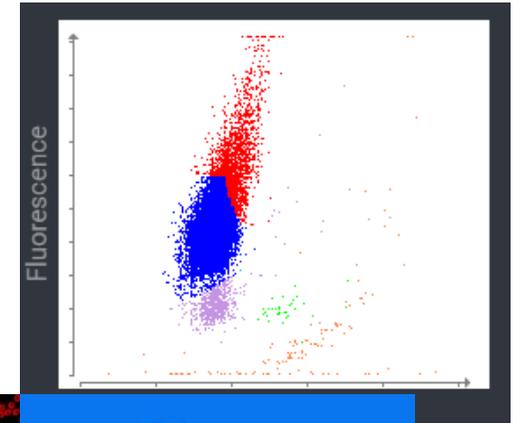
Glucose	101	72 - 175 mg/dL
<b>IDEXX SDMA</b>	<sup>a</sup> <b>20</b>	<b>0 - 14 <math>\mu</math>g/dL</b>
Creatinine	1.9	0.9 - 2.3 mg/dL
BUN	36	16 - 37 mg/dL
BUN: Creatinine Ratio	18.9	
Phosphorus	6.0	2.9 - 6.3 mg/dL
<b>Calcium</b>	<sup>b</sup> <b>15.3</b>	<b>8.2 - 11.2 mg/dL</b>

3

<b>ALT</b>	<b>722</b>	<b>18 - 121 U/L</b>
<b>AST</b>	<b>111</b>	<b>16 - 55 U/L</b>
<b>ALP</b>	<b>878</b>	<b>5 - 160 U/L</b>
<b>GGT</b>	<sup>c</sup> <b>40</b>	<b>0 - 13 U/L</b>
<b>Bilirubin - Total</b>	<b>1.7</b>	<b>0.0 - 0.3 mg/dL</b>

# Is it cancer?

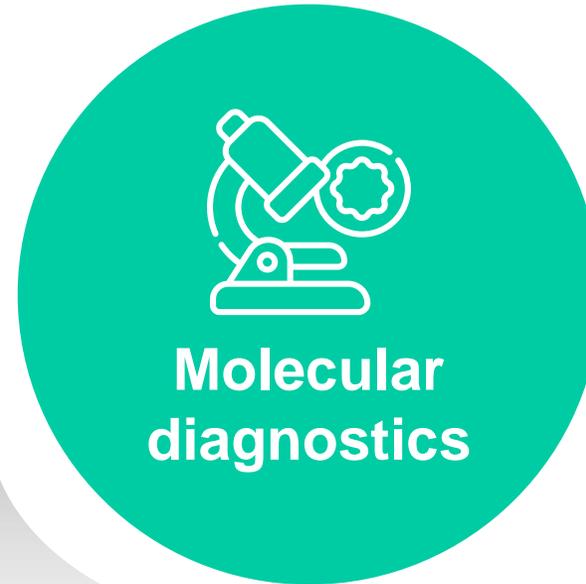
- CBC abnormalities that put cancer on the differential list
  - Anemia
  - Thrombocytopenia
  - Pancytopenia
  - Lymphocytosis
  - Unclassified cells
- Next diagnostic steps with the CBC sample
  - Look at a blood film/dot plot
  - IDEXX inVue Dx™
  - Submit for pathologist review
  - Save a blood film to send to the primary vet or oncologist
  - Save sample (along w/ serum) for IDEXX Cancer Dx™
  - Submit flow cytometry (lymphocytes)



# Is it cancer?

- Chemistry abnormalities that put cancer on the differential list
  - Hypercalcemia
  - Hyperglobulinemia
  - Increased IDEXX SDMA (normal BUN/creat/USPG)
  - Hypoalbuminemia
  - Elevated liver enzymes
- Next diagnostic steps with the serum/plasma sample
  - Save the sample for additional testing
    - IDEXX Cancer Dx™ (requires serum and whole blood)
    - Serum protein electrophoresis
    - Hypercalcemia of malignancy profile (EDTA plasma and serum)
  - Ionized calcium (bedside or send out)

IDEXX Cancer Dx™ is built from a panel of transformational biomarkers measured through multimodal techniques to support earlier diagnoses



What does this mean for the patient? An **accurate, affordable, and efficient** way to support a clinical diagnosis of lymphoma.

Sensitivity / Specificity **79% / 99%** ● **2–3 day\*** Turnaround time

\*Turnaround time in Canada 2–4 days

# “Sister Sue”

6-year-old FS Boston terrier

- History
  - One week of decreased energy
  - Reduced appetite for 4 days
  - Intermittent diarrhea
- Physical exam findings
  - Depressed
  - Generalized lymphadenopathy



# Sister Sue – screening lab results

## Hematology



TEST	RESULT	REFERENCE VALUE	
RBC	6.00	5.39 - 8.70 M/ $\mu$ L	
<b>Hematocrit</b>	<b>38.0</b>	<b>38.3 - 56.5 %</b>	L
<b>Hemoglobin</b>	<b>11.8</b>	<b>13.4 - 20.7 g/dL</b>	L
MCV	63	59 - 76 fL	
<b>MCH</b>	<b>19.7</b>	<b>21.9 - 26.1 pg</b>	L
<b>MCHC</b>	<b>31.1</b>	<b>32.6 - 39.2 g/dL</b>	L
% Reticulocytes	1.0	%	
Reticulocytes	60	10 - 110 K/ $\mu$ L	
<b>Reticulocyte Hemoglobin</b>	<b>23.5</b>	<b>24.5 - 31.8 pg</b>	L
WBC	13.1	4.9 - 17.6 K/ $\mu$ L	
% Neutrophils	83.4	%	
% Lymphocytes	8.4	%	
% Monocytes	8.0	%	
% Eosinophils	0.1	%	
% Basophils	0.1	%	
Neutrophils	10.925	2.94 - 12.67 K/ $\mu$ L	
Lymphocytes	1.1	1.06 - 4.95 K/ $\mu$ L	
Monocytes	1.048	0.13 - 1.15 K/ $\mu$ L	
<b>Eosinophils</b>	<b>0.013</b>	<b>0.07 - 1.49 K/<math>\mu</math>L</b>	L
Basophils	<sup>a</sup> 0.013	0 - 0.1 K/ $\mu$ L	
<b>Platelets</b>	<sup>b</sup> <b>67</b>	<b>143 - 448 K/<math>\mu</math>L</b>	L

## Chemistry



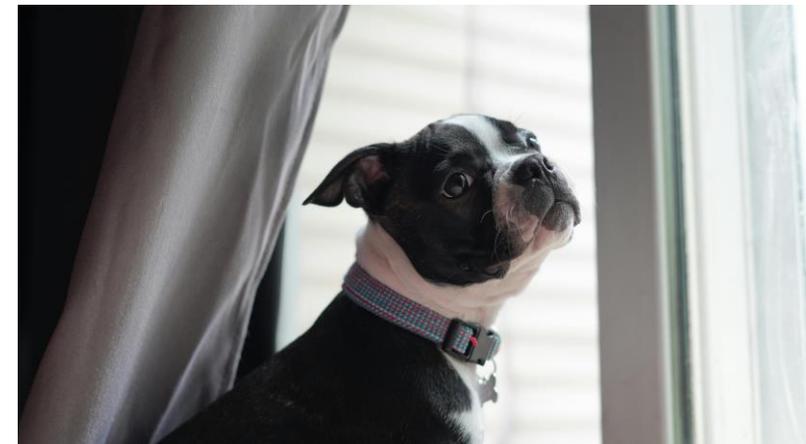
TEST	RESULT	REFERENCE VALUE	
Glucose	113	63 - 114 mg/dL	
<b>IDEXX SDMA</b>	<sup>a</sup> <b>28</b>	<b>0 - 14 <math>\mu</math>g/dL</b>	H
Creatinine	0.7	0.5 - 1.5 mg/dL	
BUN	17	9 - 31 mg/dL	
BUN: Creatinine Ratio	24.3		
Phosphorus	3.7	2.5 - 6.1 mg/dL	
Calcium	9.1	8.4 - 11.8 mg/dL	
<b>Sodium</b>	<b>141</b>	<b>142 - 152 mmol/L</b>	L
Potassium	4.6	4.0 - 5.4 mmol/L	
Na: K Ratio	31	28 - 37	
Chloride	110	108 - 119 mmol/L	
TCO2 (Bicarbonate)	19	13 - 27 mmol/L	
Anion Gap	17	11 - 26 mmol/L	
<b>Total Protein</b>	<b>5.1</b>	<b>5.5 - 7.5 g/dL</b>	L
<b>Albumin</b>	<b>2.3</b>	<b>2.7 - 3.9 g/dL</b>	L
Globulin	2.8	2.4 - 4.0 g/dL	
Albumin: Globulin Ratio	0.8	0.7 - 1.5	
ALT	33	18 - 121 U/L	
AST	55	16 - 55 U/L	
ALP	31	5 - 160 U/L	
GGT	2	0 - 13 U/L	
Bilirubin - Total	0.1	0.0 - 0.3 mg/dL	

# Sister Sue – IDEXX Cancer Dx™ results

## Molecular Diagnostics

6/17/25  
3:29 PM 

 <b>Cancer Dx Lymphoma</b>	a	<b>Consistent with lymphoma</b>
 Phenotype:	b	B cell



## “Spike” 4-year-old MC Pug

- History
  - Difficulty breathing/stertor
  - “Lumps” under chin
  - Lethargic
  - Decreased appetite

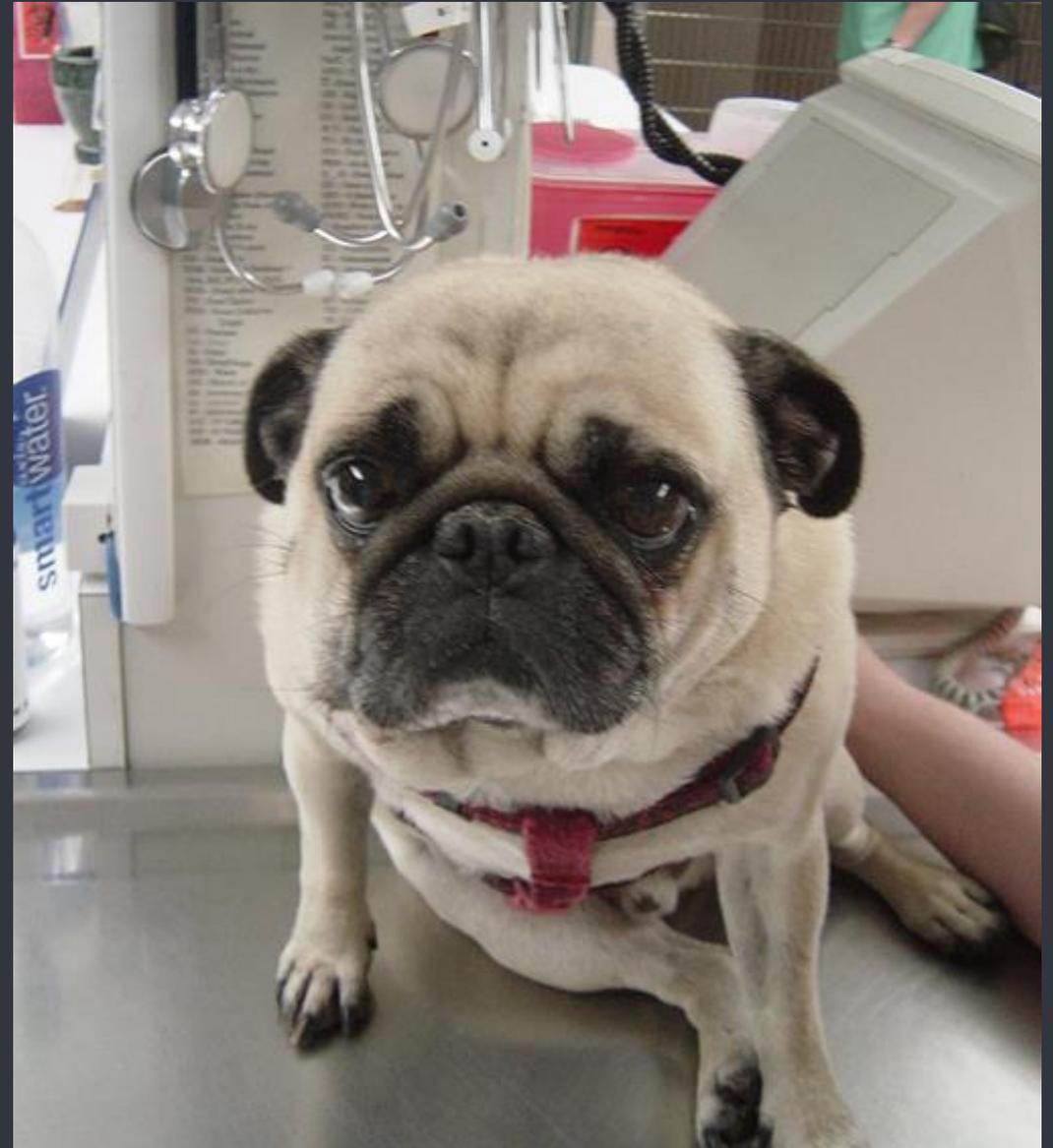


Image courtesy of Dr. Nancy Sanders



Image courtesy of Dr. Nancy Sanders

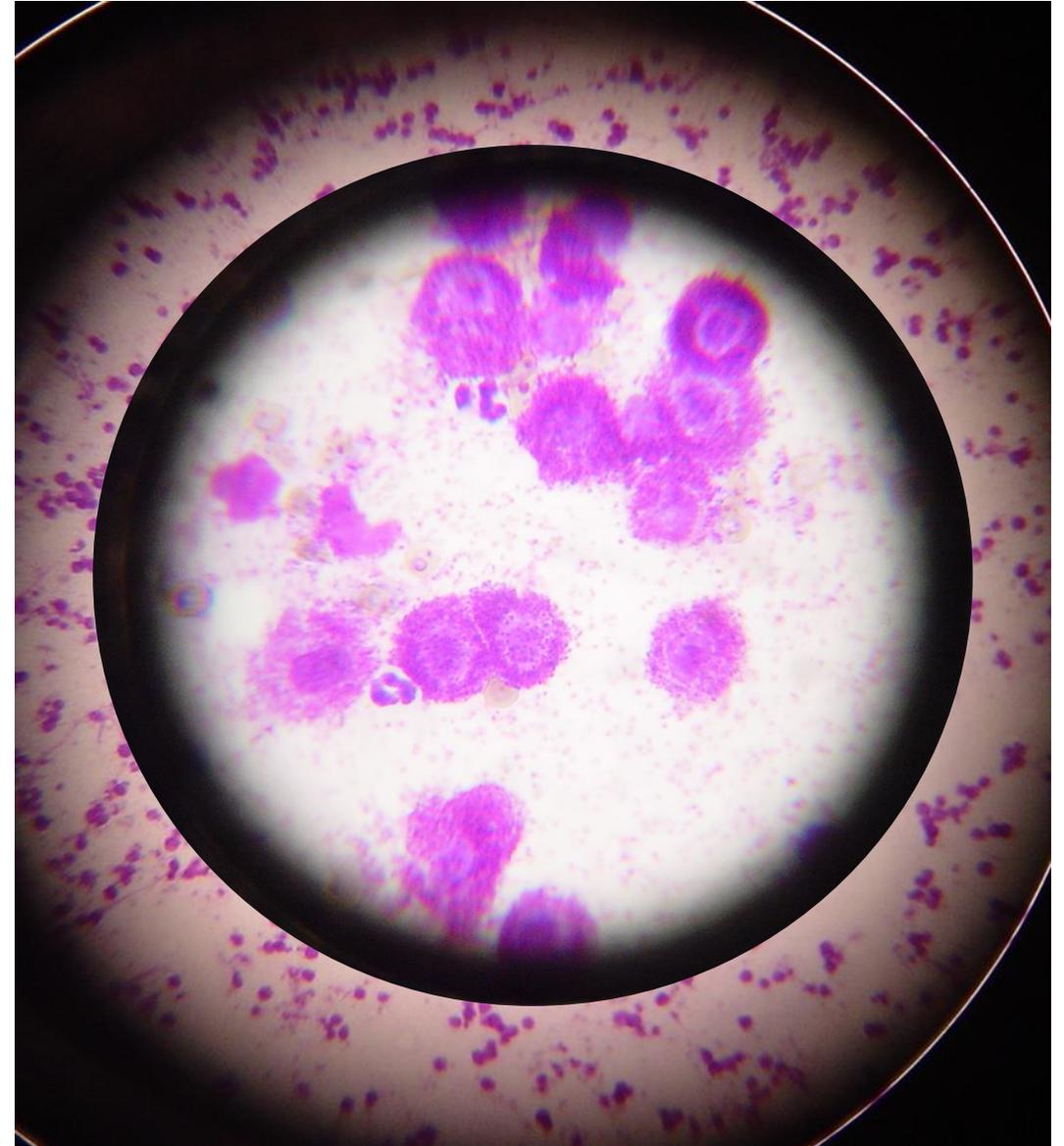
## Spike's physical examination

- TPR = 104F/128/pant & increased inspiratory effort
- Significant stertor with minimal excitement (more than “just a pug”)
- Bilaterally symmetrical, peri-mandibular, fairly fixed “masses”
- Mass-effect dorsal to the tracheal

**What do you see?**

**What are your concerns?**

**What do you do now??!!**



Images courtesy of Dr. Nancy Sanders

# Concerns and plans for Spike

- Upper airway obstruction AND mast cell degranulation!!!
- Immediate treatment (aka fire p
  - Anticipate (or treat) mast cell degranulation
    - Famotidine
    - Diphenhydramine
    - Steroids
  - Shrink swelling around upper airway
    - Surgery? Steroids? Dose?
  - Address anxiety and fever
    - Sedation?
    - Oxygen?
    - IV fluids?



# Additional patient assessment – should this be done in the ER?

- CBC/chemistry/urinalysis
- Lateral neck and chest rads
- Abdominal ultrasound
- FNA of spleen?
- Buffy coat smear?
- Official cytology by a pathologist? Biopsy?
- Refer to an oncologist!!



# Hypercalcemia

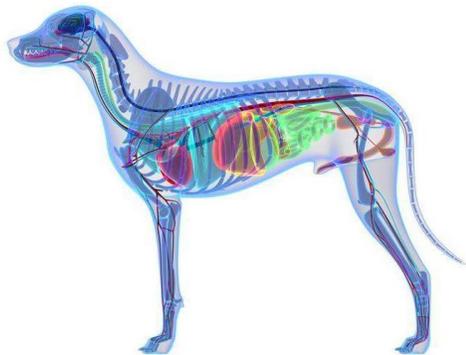


# Hypercalcemia – the differentials

- **H** - Hyperparathyroidism
- **A** - Addison's disease
- **R** - Renal disease
- **D** - Vitamin D toxicity
- **I** - Idiopathic (especially in cats)
- **O** - Osteolytic diseases
- **N** - Neoplasia (hypercalcemia of malignancy)
- **S** - Spurious or lab error

# Hypercalcemia of malignancy

**Physical  
examination**



**Lymphoma  
Anal gland adenocarcinoma  
Thymoma  
Thyroid carcinoma  
Mammary carcinoma  
Prostate carcinoma  
Oral squamous cell carcinoma  
Pulmonary carcinoma  
Nasal adenocarcinoma**

# ER treatment of hypercalcemia of malignancy

- Intravenous fluids - diuresis
  - Normal saline (0.9% NaCl)
  - Other isotonic solutions
  - Correct hydration deficit in 12-24 hours
  - K<sup>+</sup> supplementation
- Glucocorticoids
- Furosemide
- Bisphosphonates
- Long term view – *treat the cancer*

# Suspected lymphoma/leukemia – To pred or Not to pred?

**Owner goals**

**Treatment goals**

- Chemotherapy
- Palliative care

**Patient factors**

**Sick or stable?**

- Sick (substage b)
- Hypercalcemia

# Suspect lymphoma/leukemia – pre-prednisone sampling

Measure lymph nodes and aspirate

Cytology  
PARR  
Immunocytochemistry

Serum  
Whole blood  
Urine

CBC  
Chemistry with IDEXX SDMA  
Urinalysis  
IDEXX Cancer Dx™

Blood film

Look at the slide  
Pathology review

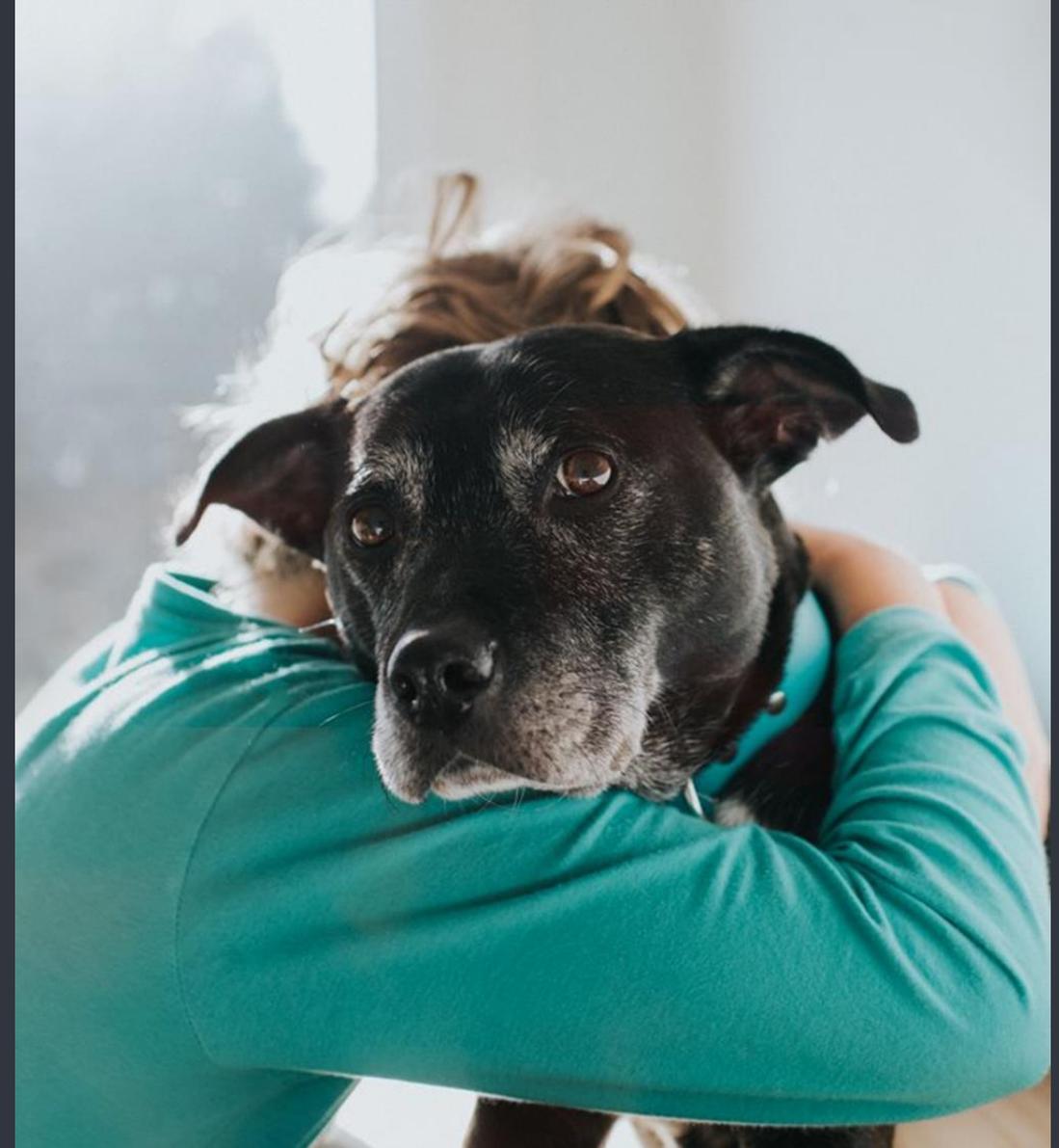
Imaging

Radiographs  
Abdominal Ultrasound

# Charlie

## 9-year-old MN mix

- Lethargy
- Hyporexia



# Charlie – presentation

- Physical examination
  - Dull mentation
  - Dehydrated
  - Tense abdomen
  - Suspect organomegaly
- Diagnostic Plan
  - CBC
  - Chemistry with IDEXX SDMA
  - Abdominal radiographs

# Charlie – screening lab work

## Hematology



7/4/25

3:53 PM

<b>WBC</b>	<b>79.73</b>	<b>5.05 - 16.76 K/μL</b>
% Neutrophils	* 5.3	%
% Lymphocytes	* 26.1	%
% Monocytes	* 68.6	%
% Eosinophils	0.0	%
% Basophils	0.0	%
Neutrophils	* 4.19	2.95 - 11.64 K/μL
Bands	* Suspected	
<b>Lymphocytes</b>	<b>* 20.79</b>	<b>1.05 - 5.10 K/μL</b>
<b>Monocytes</b>	<b>* 54.73</b>	<b>0.16 - 1.12 K/μL</b>
<b>Eosinophils</b>	<b>0.00</b>	<b>0.06 - 1.23 K/μL</b>
Basophils	0.02	0.00 - 0.10 K/μL
<b>Platelets</b>	<b>* 11</b>	<b>148 - 484 K/μL</b>
PDW	- ---	9.1 - 19.4 fL
<b>MPV</b>	<b>17.5</b>	<b>8.7 - 13.2 fL</b>

## Chemistry



7/4/25

4:12 PM

TEST	RESULT	REFERENCE VALUE
Glucose	98	74 - 143 mg/dL
<b>IDEXX SDMA</b>	<b>a 22</b>	<b>0 - 14 μg/dL</b>
Creatinine	1.1	0.5 - 1.8 mg/dL
BUN	12	7 - 27 mg/dL
BUN: Creatinine Ratio	11	
Phosphorus	3.8	2.5 - 6.8 mg/dL
Calcium	9.7	7.9 - 12.0 mg/dL
Sodium	157	144 - 160 mmol/L
Potassium	4.1	3.5 - 5.8 mmol/L
Chloride	115	109 - 122 mmol/L
Total Protein	7.1	5.2 - 8.2 g/dL
Albumin	2.9	2.3 - 4.0 g/dL
Globulin	4.2	2.5 - 4.5 g/dL
Albumin: Globulin Ratio	0.7	
ALT	55	10 - 125 U/L
ALP	135	23 - 212 U/L
GGT	0	0 - 11 U/L
Bilirubin - Total	0.2	0.0 - 0.9 mg/dL

## Charlie – diagnosis

- Working diagnosis lymphoma (stage V) or leukemia
- ER treatment plan
  - Prednisone 2mg/kg/d
  - Advised to follow-up with primary care DVM for additional work-up

## Charlie – follow up

- Follow-up appointment primary care veterinarian – 4 days later
- Presenting complaint
  - Feeling much better
  - Normal activity and appetite
  - Drinking more water
- Physical examination
  - Normal examination

# Charlie – CBC 3 days post pred

## Hematology



7/4/25

3:53 PM

<b>WBC</b>	<b>79.73</b>	<b>5.05 - 16.76 K/μL</b>
% Neutrophils	* 5.3	%
% Lymphocytes	* 26.1	%
% Monocytes	* 68.6	%
% Eosinophils	0.0	%
% Basophils	0.0	%
Neutrophils	* 4.19	2.95 - 11.64 K/μL
Bands	* Suspected	
<b>Lymphocytes</b>	<b>* 20.79</b>	<b>1.05 - 5.10 K/μL</b>
<b>Monocytes</b>	<b>* 54.73</b>	<b>0.16 - 1.12 K/μL</b>
<b>Eosinophils</b>	<b>0.00</b>	<b>0.06 - 1.23 K/μL</b>
Basophils	0.02	0.00 - 0.10 K/μL
<b>Platelets</b>	<b>* 11</b>	<b>148 - 484 K/μL</b>
PDW	- ---	9.1 - 19.4 fL
<b>MPV</b>	<b>17.5</b>	<b>8.7 - 13.2 fL</b>

## Hematology



7/8/25 (Order Received)

7/8/25 8:32 AM (Last Updated)

WBC	9.2	4.9 - 17.6 K/μL
% Neutrophils	58.0	%
% Lymphocytes	24.0	%
% Monocytes	8.0	%
% Eosinophils	0.0	%
% Basophils	0.0	%
% Unclassified	10.0	%
Neutrophils	5.336	2.94 - 12.67 K/μL
Lymphocytes	2.208	1.06 - 4.95 K/μL
Monocytes	0.736	0.13 - 1.15 K/μL
<b>Eosinophils</b>	<b>0</b>	<b>0.07 - 1.49 K/μL</b>
Basophils	0	0 - 0.1 K/μL
Nucleated RBCs	2	0 - 2 per 100 WBC
<b>Unclassified</b>	<b>0.92</b>	<b>&lt;= 0 K/μL</b>
<b>Platelets</b>	<sup>a</sup> <b>84</b>	<b>143 - 448 K/μL</b>

# Charlie – SDMA 3 days post-pred

## Chemistry



7/4/25 4:12 PM

TEST	RESULT	REFERENCE VALUE
Glucose	98	74 - 143 mg/dL
<b>IDEXX SDMA</b>	<sup>a</sup> <b>22</b>	<b>0 - 14 µg/dL</b>
Creatinine	1.1	0.5 - 1.8 mg/dL
BUN	12	7 - 27 mg/dL

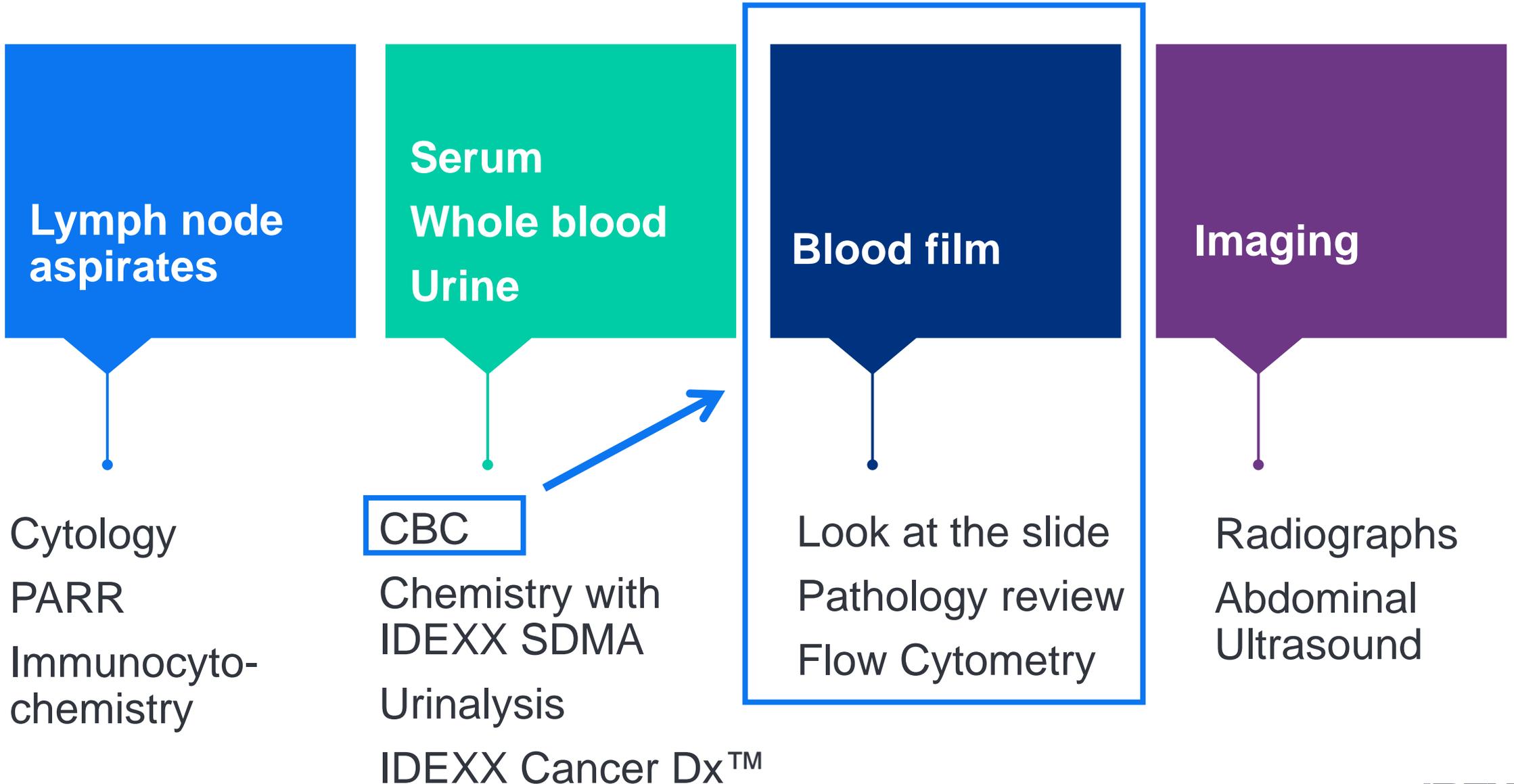
## Chemistry



7/8/25 (Order Received)  
7/10/25 2:00 PM (Last Updated)

TEST	RESULT	REFERENCE VALUE
Glucose	99	63 - 114 mg/dL
<b>IDEXX SDMA</b>	<sup>a</sup> <b>11</b>	<b>0 - 14 µg/dL</b>
Creatinine	0.7	0.5 - 1.5 mg/dL
BUN	20	9 - 31 mg/dL

# Pre-treatment samples - Charlie

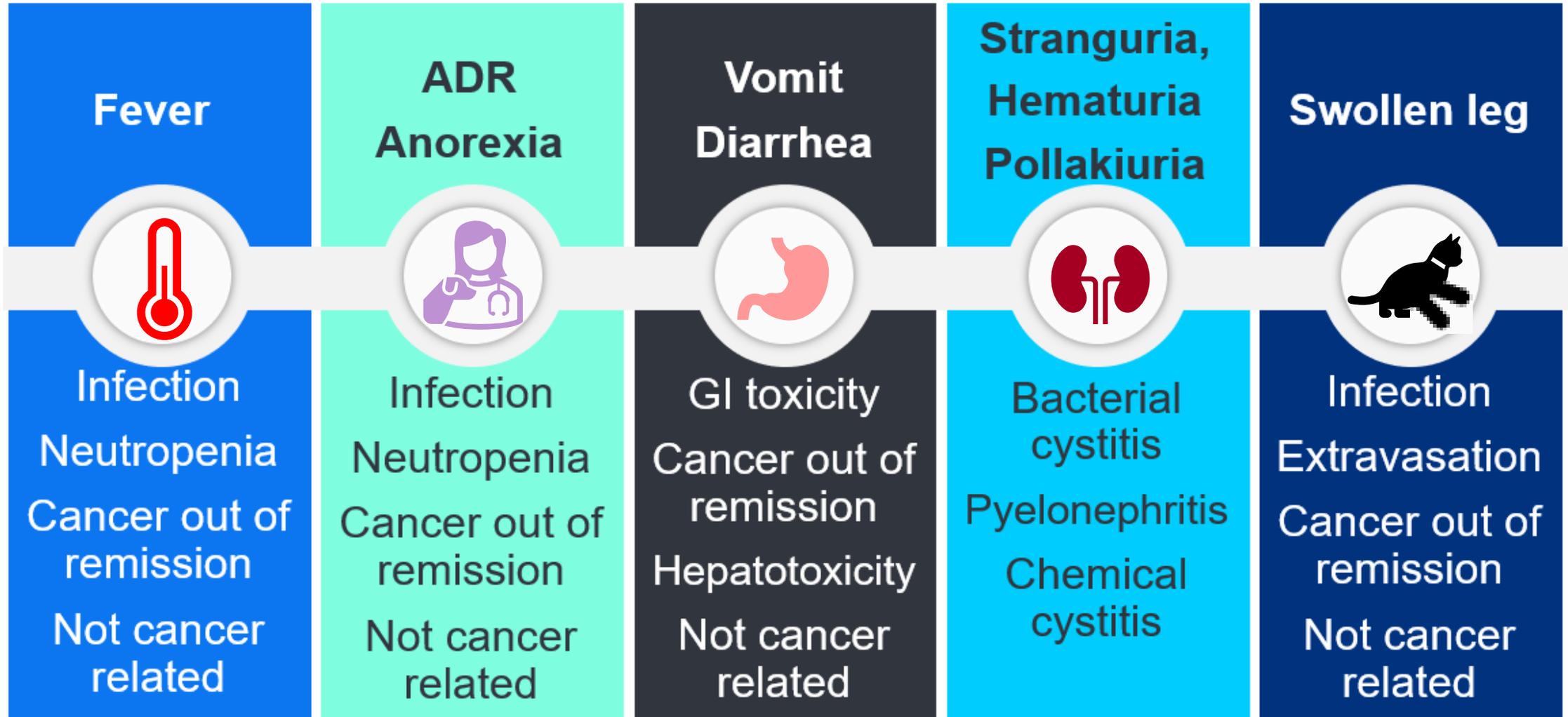




# Common patient presentations for complications of chemotherapy



# Chemotherapy patient presents to ER



# Effects of chemotherapy

- Chemotherapy kills rapidly dividing cells – tumor cells and normal cells
- General toxicities
  - Bone marrow suppression
  - Gastrointestinal problems
  - Alopecia
- Drug specific toxicities
  - Doxorubicin – cardiotoxicity (dogs); renal failure (cats)
  - Cyclophosphamide – sterile hemorrhagic cystitis (dogs>cats)
  - CCNU – hepatotoxicity (dogs>cats)
  - Rabacfosadine – dermatitis; pulmonary fibrosis
  - Toceranib – pancreatitis; PLN; hypertension
- Tumor lysis syndrome

# Myelosuppression – why does it happen?

- Normal bone marrow has a high growth fraction
- Normal blood cell life spans
  - Neutrophils 4-8 hours
  - Platelets 5-10 days
  - RBCs 120 days in dogs; 90 days in cats
- Cell life span correlates with myelosuppression
  - Neutropenia – most common and most serious consequences
  - Thrombocytopenia – occasionally
  - Anemia – rare

# Neutropenia and Chemotherapy

- Nadir – the time of the lowest neutrophil count following chemotherapy
  - Most drugs - nadir day 5 to 10 days post treatment
  - Exceptions – double nadirs (carboplatin); delayed neutropenia (CCNU- cats)

- Severity of neutropenia

**Grade 1 – 1500 - 3000  $\mu$ L**

**Grade 2 – 1000 - 1499  $\mu$ L**

**Grade 3 – 500 - 999  $\mu$ L**

**Grade 4 – <500 $\mu$ L**

- Neutrophil counts usually rebound in 1-3 days
- Immature granulocytes indicate return of granulocytes
  - Look at blood film
  - IDEXX inVue Dx™



## Hematology



5/7/24

10:19 AM

TEST	RESULT	REFERENCE VALUE	
RBC	6.27	5.65 - 8.87 M/ $\mu$ L	
Hematocrit	42.2	37.3 - 61.7 %	
Hemoglobin	14.4	13.1 - 20.5 g/dL	
MCV	67.3	61.6 - 73.5 fL	
MCH	23.0	21.2 - 25.9 pg	
MCHC	34.1	32.0 - 37.9 g/dL	
RDW	16.2	13.6 - 21.7 %	
% Reticulocytes	0.7	%	
Reticulocytes	44.5	10.0 - 110.0 K/ $\mu$ L	
Reticulocyte Hemoglobin	24.6	22.3 - 29.6 pg	
<b>WBC</b>	<b>3.01</b>	<b>5.05 - 16.76 K/<math>\mu</math>L</b>	L
% Neutrophils	34.6	%	
% Lymphocytes	34.6	%	
% Monocytes	5.6	%	
% Eosinophils	21.9	%	
% Basophils	3.3	%	
<b>Neutrophils</b>	<b>1.04</b>	<b>2.95 - 11.64 K/<math>\mu</math>L</b>	L
<b>Lymphocytes</b>	<b>1.04</b>	<b>1.05 - 5.10 K/<math>\mu</math>L</b>	L
Monocytes	0.17	0.16 - 1.12 K/ $\mu$ L	
Eosinophils	0.66	0.06 - 1.23 K/ $\mu$ L	
Basophils	0.10	0.00 - 0.10 K/ $\mu$ L	

Treatment decisions are based on the *absolute neutrophil* count not the total white blood cell count

# Treating the chemotherapy patient with neutropenia

- **Afebrile/minor symptoms** - <1000 neutrophils (gr 3/gr 4)
  - Broad spectrum oral antibiotics – 5-7 days
  - Discharge for at home care
  - Owner to monitor temperature twice daily
  - Follow-up with oncologist or primary care in 5-7 days
- **Febrile/symptomatic** - <1000 neutrophils (gr 3/gr 4)
  - Hospitalization
  - Broad spectrum intravenous antibiotics
  - Intravenous fluids
  - Other supportive medications
  - Avoid antipyretics
  - Expectations – fever to resolve in 12-24 hours

# What if we suspect infection?

- Potential source = resident flora
  - *E. coli*, *Pseudomonas*, *Staphylococcus epidermidis*, and *Staphylococcus aureus*
- Broad spectrum intravenous antibiotics
  - Ampicillin/Enrofloxacin
  - Unasyn/Enrofloxacin
  - Cefazolin/Enrofloxacin
- Oral antibiotics
  - Enrofloxacin
  - Amoxicillin/clavulanate potassium
  - Trimethoprim sulfonamide



ISCAID – [www.iscaid.org](http://www.iscaid.org) antimicrobial guidelines

International Society for Companion Animal Infectious Diseases

# When to discharge the neutropenic patient

- Improved clinical signs
  - Afebrile
  - Patient is eating
- Do not need to resolve the neutropenia prior to discharge
- Discharge with oral antibiotics until recheck
- Re-iterate - do not resume oral chemotherapy or tyrosine kinase inhibitors
- Owner to monitor rectal/aural temperature twice daily
- Recheck CBC in 5-7 days

# Gastrointestinal toxicities - patients on chemotherapy

- Chemotherapy kills rapidly dividing cells – tumor cells and normal cells
- Crypt epithelial cells of the intestines are most vulnerable
- Clinical signs typically start 2-5 days post chemotherapy
- Clinical signs of nausea, vomiting, diarrhea until the epithelial cells can repopulate
- If GI signs develop >5 days post chemotherapy treatment
  - It may not be the chemotherapy! Check for unrelated cause
  - Ileus from vinca alkaloids (vincristine and vinblastine)

# Common chemotherapy culprits for GI toxicities

## Vomiting

Cisplatin  
Streptozotocin  
Dacarbazine

Doxorubicin  
Carboplatin  
Vincristine/Vinblastine

Chlorambucil  
Lomustine  
Cyclophosphamide  
L-asparaginase  
Toceranib

## Diarrhea

Doxorubicin  
Rabacfosadine  
Toceranib  
Vincristine/vinblastine

All chemotherapies



**Urgency**

# Chemotherapy-induced gastrointestinal toxicity

- Acute nausea and vomiting
  - GI rest – nothing per os
  - Injectable anti-emetics
  - Hydration support
    - Subcutaneous fluids
    - Intravenous fluids
  - Manage as an outpatient unless signs are severe
    - Oral antiemetics
- Chronic nausea and vomiting
  - Supportive care including anti-emetics
  - Has the patient received vincristine/vinblastine? – metoclopramide

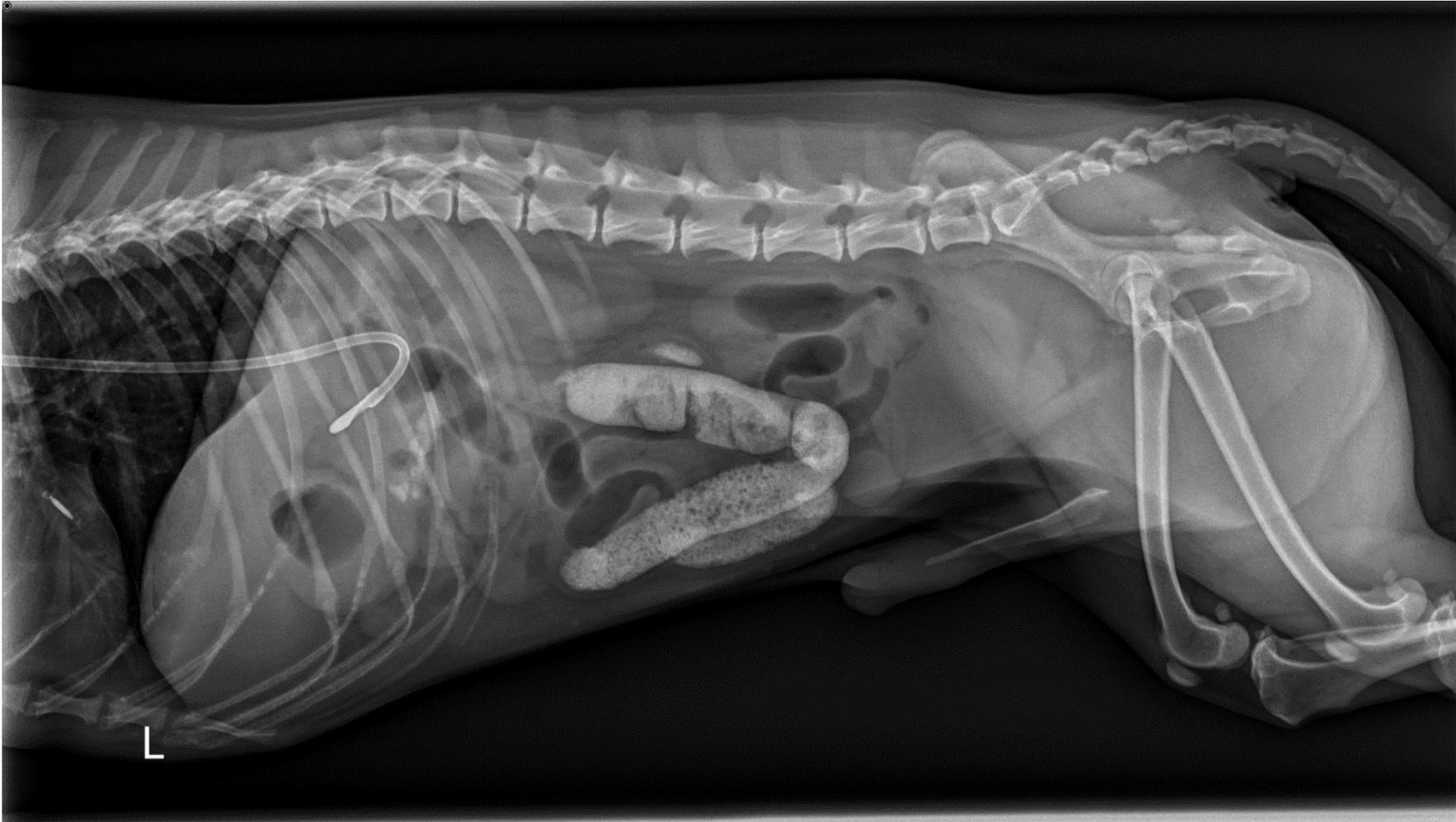


Maropitant  
Ondansetron  
Metoclopramide

# Treatment of chemotherapy-induced diarrhea

- Metronidazole
- Crofelemer
- Increase fiber
- Probiotics
- Kaolin, Pectin and *Enterococcus faecium*
- Loperamide
- RxClay
- Bland diet

# It's not always the chemotherapy!



Courtesy of Dr. Ann Hohenhaus

# Sterile hemorrhagic cystitis

- Cyclophosphamide
  - Cytotoxic dosing (IV or PO)
  - Metronomic dosing (daily PO)
- Acrolein
  - metabolite of cyclophosphamide
  - potent uroepithelial irritant
- More common in dogs than cats
- Clinical signs mimic urinary tract infection
  - stranguria, hematuria, and dysuria
- Urinalysis and culture

# Sterile hemorrhagic cystitis - treatment

- **STOP!** the cyclophosphamide
  - ***Forever***
- Various treatment options – limited responses
  - Analgesics
  - Anti-inflammatories - NSAID
  - Antispasmodics – oxybutynin
  - MSM (methyl sulfonyl methane)
  - Pentosan polysulfate (PPS)
  - Hyperbaric oxygen therapy
  - Instillation of DMSO into the bladder - extreme cases
  - Tincture of time - weeks to months

# Tumor Lysis Syndrome

- When to suspect
  - Symptomatic hours to days post initial chemotherapy
- Physical examination
  - Largely non-descript, often severe
  - Occasionally muscle twitching
- Common lab abnormalities
  - Hyperphosphatemia
  - Hyperkalemia
  - Hyperlactatemia
  - High anion gap metabolic acidosis
  - Hyperuricemia
  - Hypocalcemia (rare)

# Tumor Lysis Syndrome - management

- Complications
  - Shock
  - AKI
  - DIC
  - Cardiac arrhythmias
- Treatment
  - IV fluid therapy - 0.9% NaCl or other replacement fluids
  - +/- Dialysis
  - +/- Supplements (Calcium, dextrose, bicarb)
  - Postpone next treatment
  - Allopurinol
- Prognosis
  - Can be rapidly fatal
  - Recovery possible with prompt, aggressive therapy

# Cancer in the ER - Take home

- Emergency management of patients with cancer is no different from other cases:
  - Often, you do not know the definitive diagnosis
  - Address the life-threatening issues
  - Avoid medications that may interfere with diagnosis or long-term therapy but don't withhold life-saving therapy
  - Think ahead, get pre-treatment samples
- Definitive cancer therapy is rarely an emergency; there ARE exceptions
- Assessment of neutropenia is based upon the absolute neutrophil count
- Be familiar with common complications of cancer therapy and how to treat them



# Thank you!

Please complete an evaluation for this session

