


CAVITY EFFUSIONS

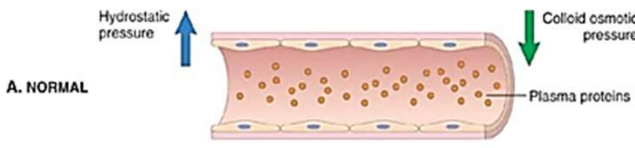
TIPS TO MAKE THE MOST OF THAT "TAP"

Meredeth McEntire, DVM, MS, DACVP (clinical pathology)
Pathologist with Heska Telecytology

April 20, 2023



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A. NORMAL

Hydrostatic pressure

Colloid osmotic pressure

Plasma proteins

Oncotic pressure

Hydrostatic pressure

Vascular permeability


Lymphatic drainage

3



WHAT IS A "FLUID?"

2



Transudate

Modified Transudate

Exudate

4

Table 1. Classification of effusions based on physical-chemical characteristics, total protein and cell count

Type of effusion	Transudate	Modified transudate	Exudate
Colour	Pale	Yellow to red	Turbid
Total protein	<2.5g/dl	2.5–7.5g/dl	>3.0g/dl
Total nucleated cell count	<1500 cells/ μL	1000–7000 cells/ μL	>7000 cells/ μL
Specific gravity	<1015	1015–1025	>1025

Murgia, 2014

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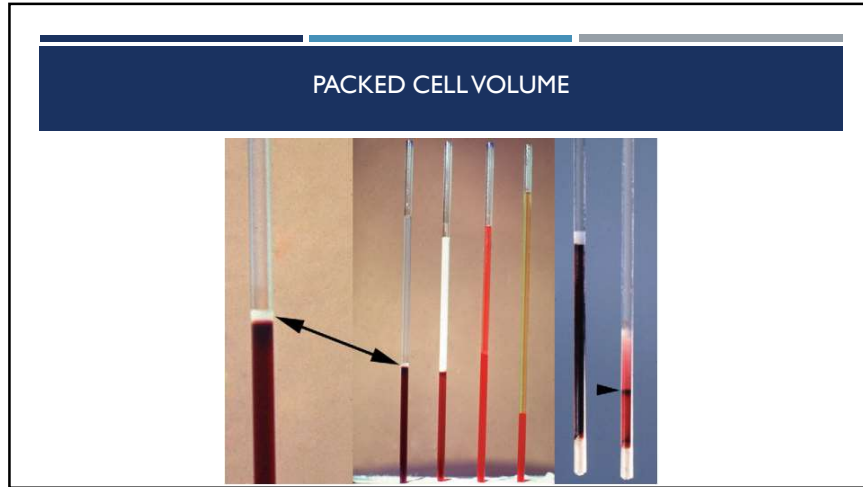
**FLUID ANALYSIS:
BASIC COMPONENTS**

- Gross appearance
- Packed cell volume
- Total protein concentration
- Total nucleated cell count
- Cytologic review

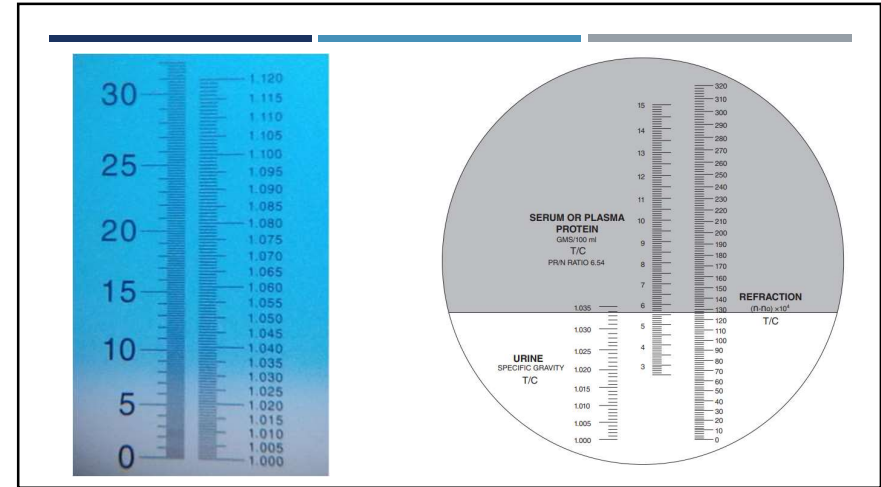
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<u>Color</u>	<u>Clarity</u>	<u>Other Characteristics</u>
Colorless	Clear	Blood Clot
Straw	Hazy	Fibrin Clot
Yellow	Opaque	Milky
Amber	Turbid	Uniform
Brown	Cloudy	Bloody
Tan		Mucoid
Orange		Viscous
Red		Smelly
Pale Red		Chunky
Pink		Iridescent
White		
Green		

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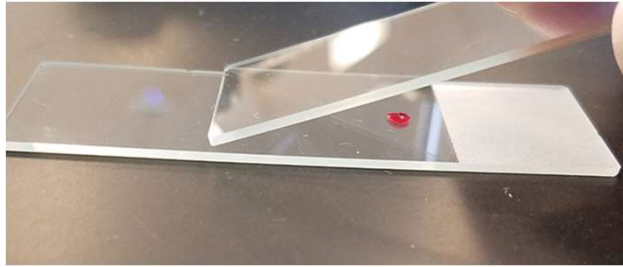
TOTAL NUCLEATED CELL COUNT

- Qualitative
 - Experienced review of a well-prepared direct smear
- Quantitative
 - In-house hematology analyzers
 - Hemacytometer

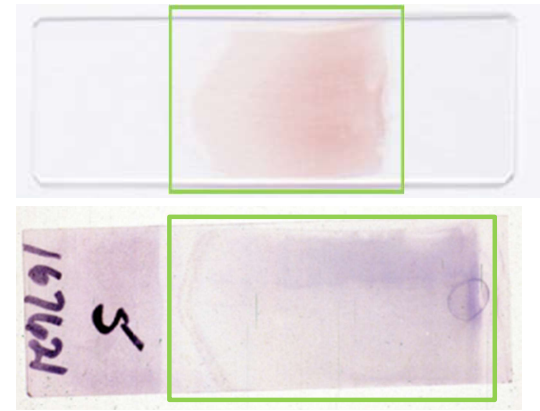
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QUALITATIVE CELL COUNT ASSESSMENT

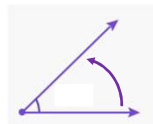
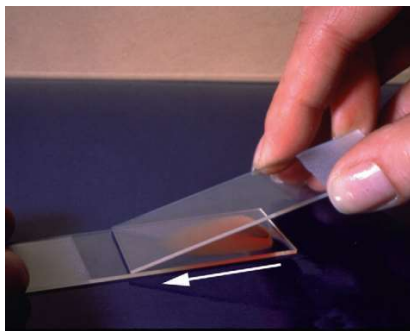
Experienced review of a direct preparation slide



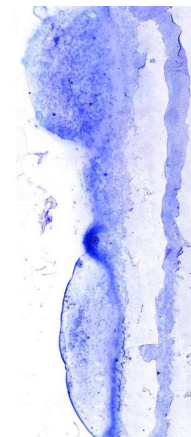
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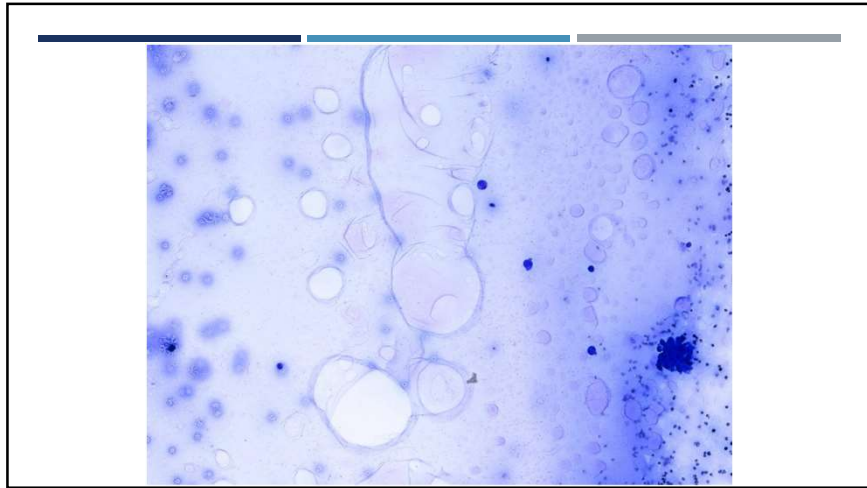
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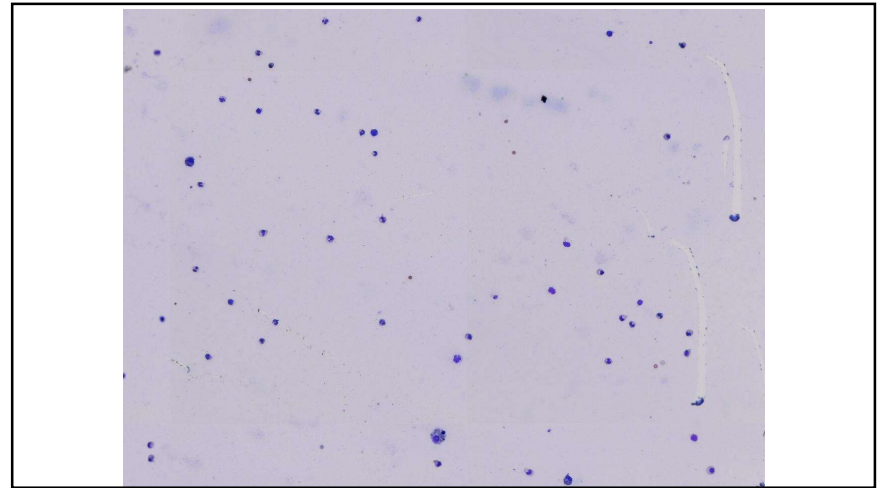
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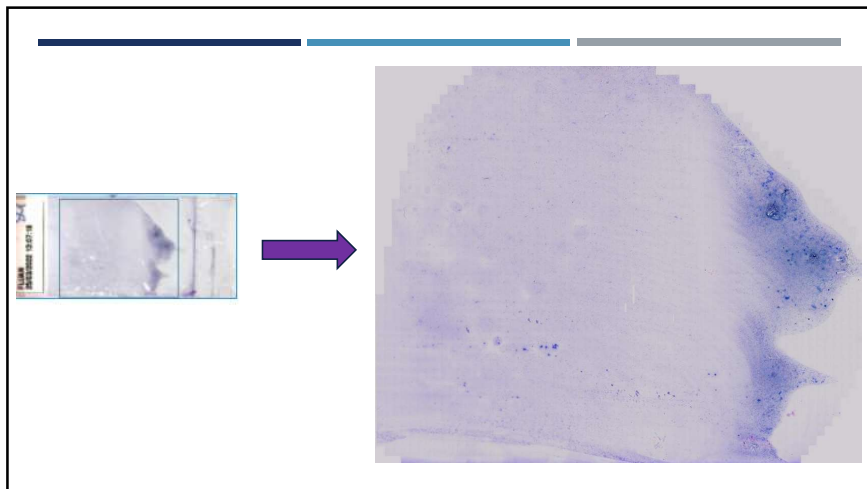
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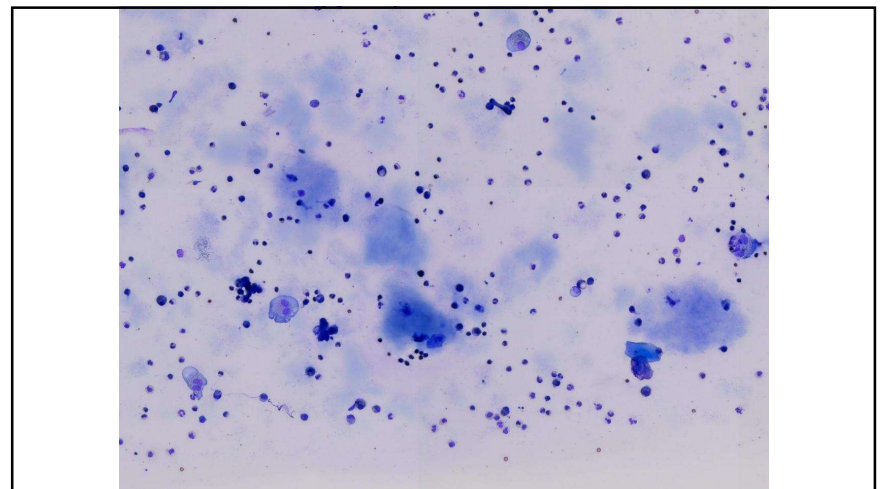
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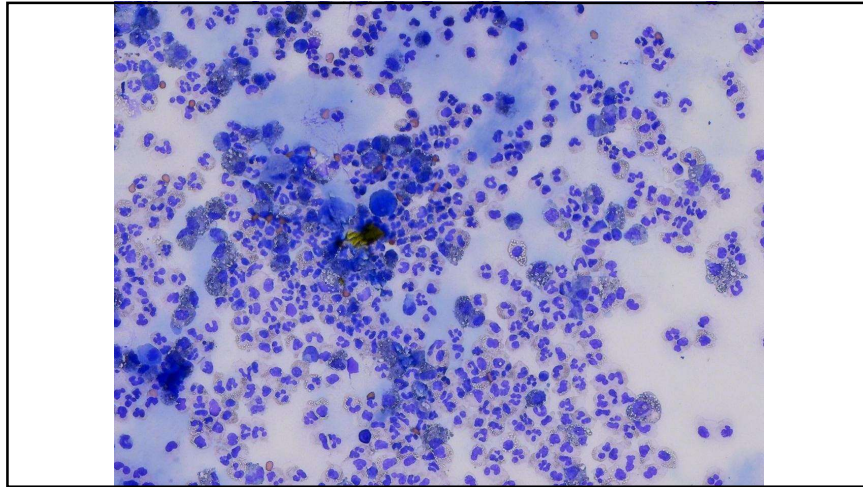
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QUANTITATIVE CELL COUNT ASSESSMENT

In-house hematology analyzers

A white, compact in-house hematology analyzer. It features a color touchscreen display on the front showing various data points and graphs. Below the screen is a sample slot. The brand name 'element HTS' is visible on the front panel.

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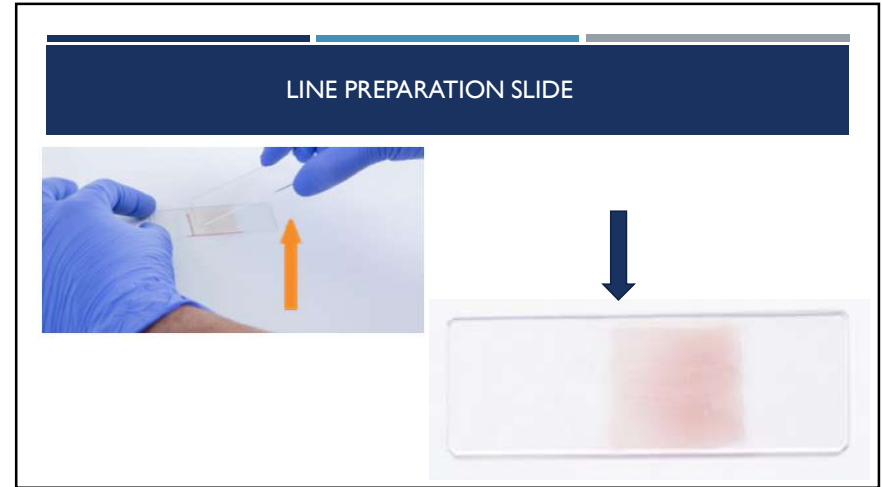
QUANTITATIVE CELL COUNT ASSESSMENT

A Neubauer Improved hemacytometer slide. The slide is white with blue text and a grid. Technical specifications include '0,100mm Tiefe / Depth / Profondeur' and '0,0025mm²'. The brand 'NEUBAUER IMPROVED' and 'Loptik LABOR' are also visible. To the right of the slide is a separate grid image.

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CYTOLOGIC REVIEW

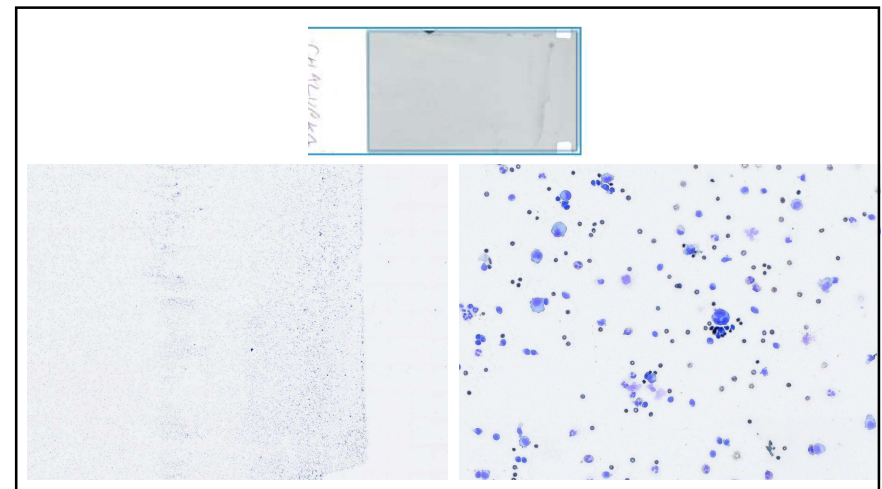
Types of Preparations

- Direct preparation slides
- Concentrated preparation slides
 - Line prep
 - Spun (sediment)
 - Gravity sedimentation*
 - Cytospin*



* Contact me for more details!

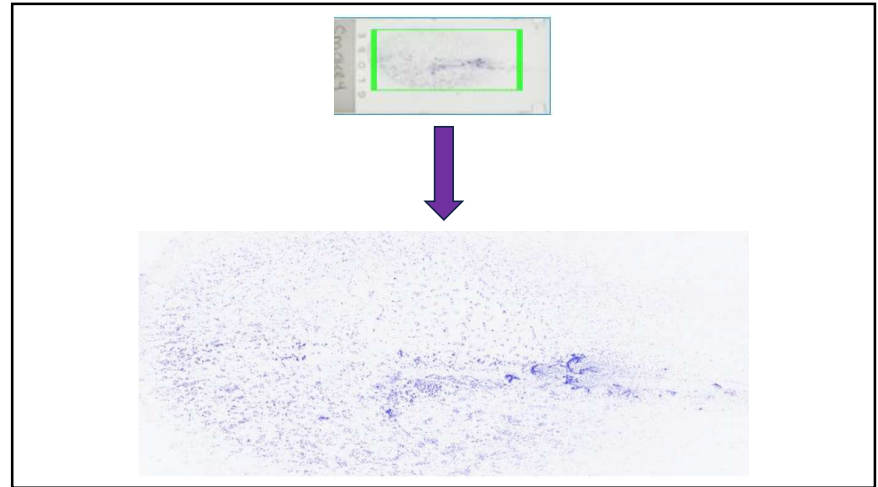
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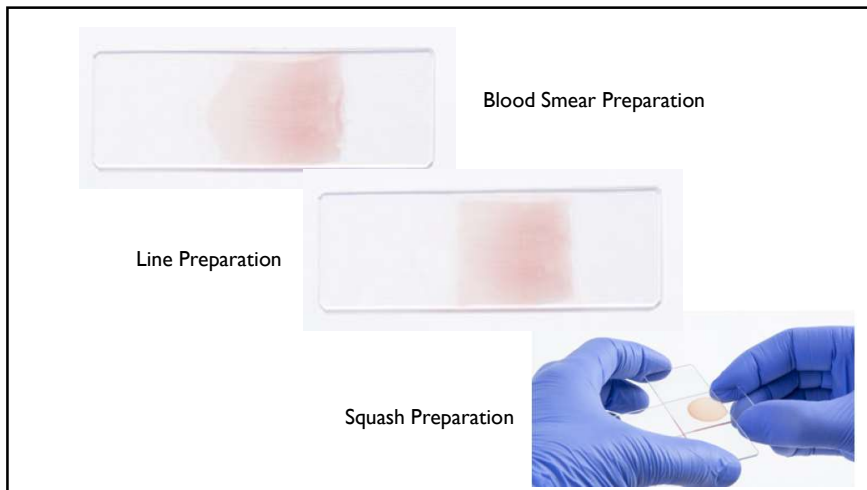
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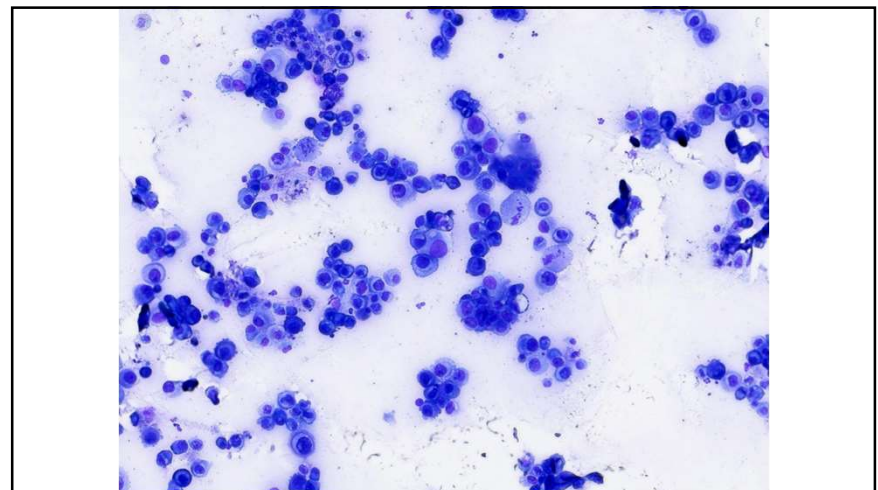
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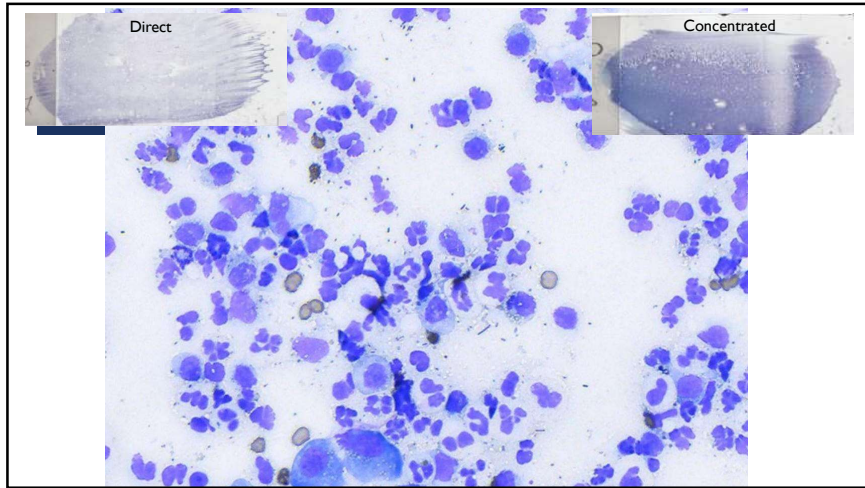
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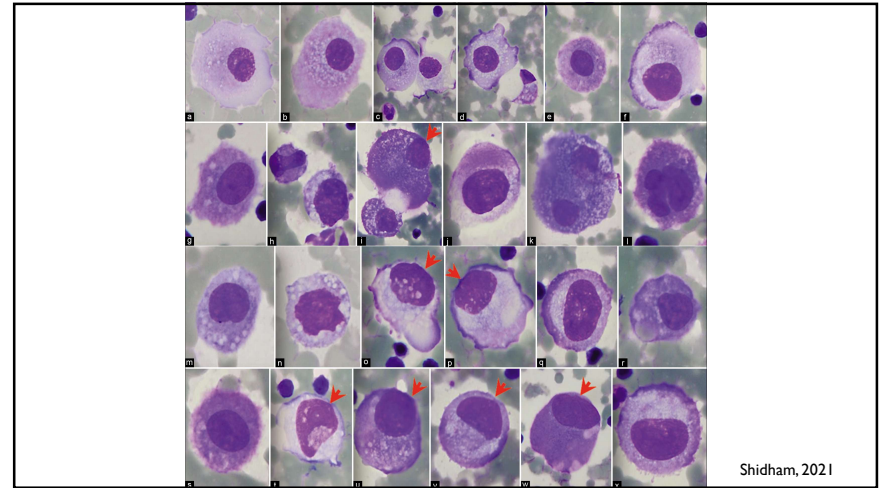
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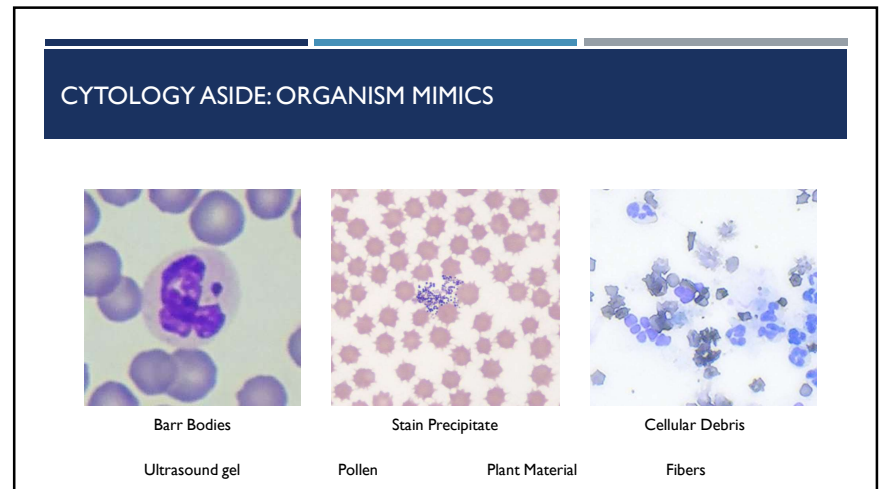
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CYTOLOGY ASIDE: LOW PROTEIN EFFUSIONS

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BIOCHEMICAL EVALUATION

- Glucose → ■ Serum-to-effusion glucose difference > 20 mg/dL*
- Lactate → ■ Serum-to-effusion lactate difference > -2.0 mmol/L

Bonczynski, 2003

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BIOCHEMICAL EVALUATION

- Triglyceride
- Bilirubin
- Creatinine

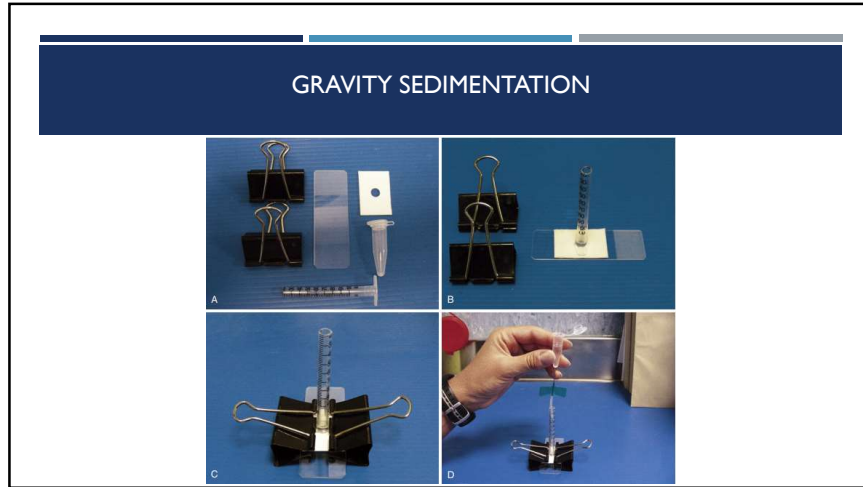
Effusion-Serum Ratio > 2.0 →

- Chylous effusion
- Bile peritonitis*
- Uroabdomen

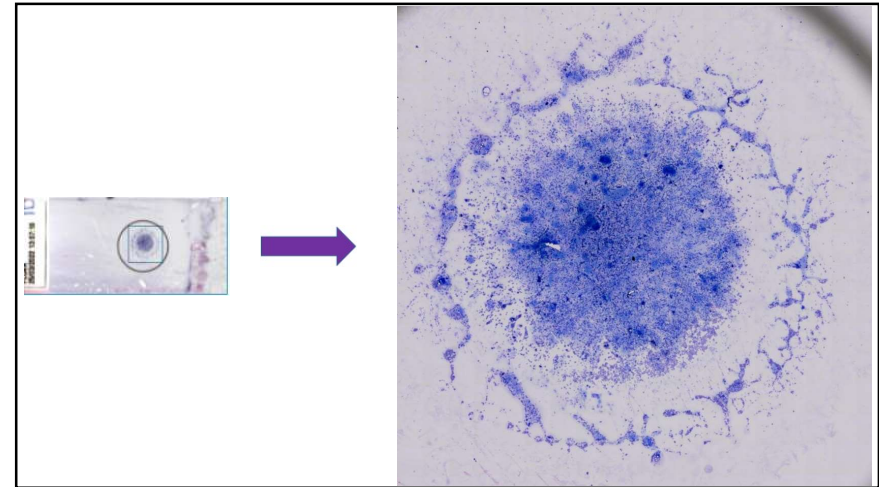
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BODY CAVITY FLUID WORKSHEET																																																																					
Patient ID#:	Date:	Tech Initials:																																																																			
Type of Fluid: (circle one)	Abdominal/Peritoneal	Thoracic/Pleural	Pericardial																																																																		
Sample(s):	LTT: _____ (all)	BTT: _____ (all)	Other (indicate type): _____ / _____ (all)																																																																		
<p>Appearance: Circle color and clarity for each sample received (if not the same). Fill in the "Spun" section if it differs from the original sample.</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 15%;">Color:</td> <td style="width: 15%;">Colorless</td> <td style="width: 15%;">Clarity:</td> <td style="width: 15%;">Clear</td> <td style="width: 40%;">Characteristics:</td> <td>Blood Clot (red)</td> </tr> <tr> <td></td> <td>Straw</td> <td></td> <td>Hazy</td> <td></td> <td>Fibrin Clot (white/tan)</td> </tr> <tr> <td></td> <td>Yellow</td> <td></td> <td>Cloudy</td> <td></td> <td>Flocculent</td> </tr> <tr> <td></td> <td>Amber</td> <td></td> <td>Opaque</td> <td></td> <td>Milky</td> </tr> <tr> <td></td> <td>Brown</td> <td></td> <td>Turbid</td> <td></td> <td>Uniform</td> </tr> <tr> <td></td> <td>Tan</td> <td></td> <td></td> <td></td> <td>Bloody</td> </tr> <tr> <td></td> <td>Orange</td> <td></td> <td></td> <td></td> <td>Stained</td> </tr> <tr> <td></td> <td>Pale Red</td> <td></td> <td></td> <td></td> <td>Viscous</td> </tr> <tr> <td></td> <td>Pink</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td>White</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td>Green</td> <td></td> <td></td> <td></td> <td></td> </tr> </table>				Color:	Colorless	Clarity:	Clear	Characteristics:	Blood Clot (red)		Straw		Hazy		Fibrin Clot (white/tan)		Yellow		Cloudy		Flocculent		Amber		Opaque		Milky		Brown		Turbid		Uniform		Tan				Bloody		Orange				Stained		Pale Red				Viscous		Pink						White						Green				
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<p>Total Protein (g/dL): _____ (From spun sample if not clear)</p>		<p>Packed Cell Volume (%): _____</p>																																																																			
<p>Nucleated Cell Count (cells/μL): _____</p>																																																																					
<p>Slides Made (#): Direct: _____ Line: _____ Spun: _____</p>		<p>Additional Notes: _____</p>																																																																			

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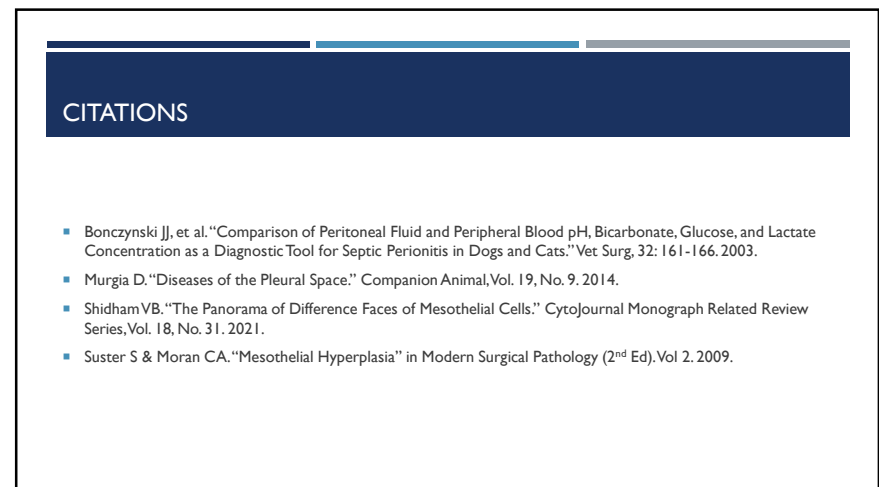
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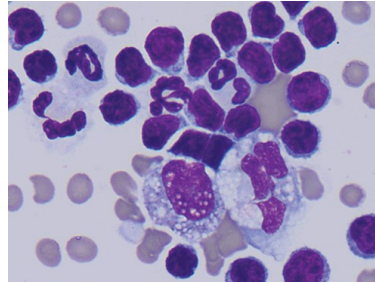
QUESTIONS?

Remember to **download the CE certificate** in the handouts panel of the webinar control panel.
NOTE: CE certificate not available for watching the recording.

Questions about CE?
Events@heska.com

Questions about topic?
Meredeth.McEntire@Heska.com

Thank you for joining us!



Chylous effusion in a cat



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