

## Practice Questions for Interpreting Labs



### QUESTIONS (SELECT ALL THAT APPLY)

1- A patient in the Pacific NW presents to the ED in February with s/s of muscle spasms. His wife reports that he had his thyroid removed in January, has been staying inside all winter and has not been drinking very much water. When looking at the MAR, what lab values would the nurse expect to see?

- A- Hyperphosphotemia
- B- Hypophosphotemia
- C- Hypercalcemia
- D- Hypocalcemia

2- My friend Michael just accomplished the Guinness Book of World Records for burpees. He did 7,295 burpees in 12 hours (*yes, this really just happened here in Eugene, Oregon*). Even though he worked with a team of sports doctors during this 12 hours, he was still extremely dehydrated by the end. As his nurse, what lab values would you expect to see affected by his dehydration?

- A- Calcium, Sodium, Chloride, Creatinine, Albumin, Hemoglobin, BUN
- B- Sodium, Chloride, ALT, Calcium, Hematocrit
- C- Chloride, Sodium, Hematocrit, Hemoglobin
- D- Sodium, Chloride, Albumin, Serum Proteins

3- The nurse begins his shift at 0700 and logs in to review the lab reports from the night shift's blood draws for a 67-year-old female patient with a history of migraines, has a fever, appeared agitated and had a foley catheter for the past two days. The lab results show WBC at 12,000, negative nitrates and positive leukocyte esterase. Which medication from the doctor will the nurse question:

- A- Acetaminophen
- B- Vancomycin IV
- C- Heparin
- D- Ondansetron

4- Marissa is working the night shift and while drinking a cup of herbal tea she reviews the recent lab results for the cellulitis patient in Room 2013. She notices that the sodium is at 119, what will she ask her fellow RN to help her do?

- A- Get some bone broth to help increase the patient's sodium levels.
- B- Hang an IV of NS and get it into the patient as rapidly as possible.
- C- Get the seizure pads ready.
- D- Administer aspirin to address the patient's headache.

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5- Hannah is caring for a 42-year-old patient in her clinical rotation. Earlier in the shift her CNA told her that the patient was all cramped up in bed, had abnormal looking urine and appeared to be breathing with difficulty. Hannah calmly walked to her computer to look at the patient's recent bloodwork and noticed an unexpected increase in potassium (hyperkalemia). She calls the doctor and knows that he will order:

- A- EKG
- B- Reflex test
- C- Banana-Coconut Water Smoothie
- D- DC of his diuretics

6- A "normal" GFR in the hospital is:

- A- > 30
- B- > 60
- C- > 90
- D- > 125

7- Ida is working with an enthusiastic patient who also happens to be in nursing school. The patient states she has a hard time remembering the difference between aPTT and PT/INR. Ida responds by saying "don't worry, I can help you with this difference" and proceeds to say this:

*(answer in your own words)*

8- The anion gap is a clinical indicator of:

- A- Metabolic alkalosis
- B- Metabolic acidosis
- C- Respiratory alkalosis
- D- Respiratory acidosis
- E- None of the above

9- When working with a patient with a chronic wound that is failing to heal, all of the labs would be expected except:

- A- BUN 30
- B- Creatinine 1.7
- C- Prealbumin 7
- D- Calcium 8.9

10- Which patient below will have the most optimal results in healing their wound?

- A- The 23-year-old male with an A1C of 5.7
- B- The 81-year-old female with an A1C of 5.7
- C- The 42-year-old obese male with an A1C of 5.7

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D- The 23-year-old male with an A1C of 9.1

### ANSWERS:

1- A patient in the Pacific NW (low Vit. D) presents to the ED in February with s/s of muscle spasms (low calcium = CATS: convulsions, arrhythmias, tetany, spasm). His wife reports that he had his thyroid removed (possibly also removed parathyroid so would be hypo-para-thyroid and hypocalcemic) in January, has been staying inside all winter (again, no Vit. D) and has not been drinking very much water (\*dehydration can l/t hypocalcemia but is one of many things that will do this).

#### \* A- Hyperphosphotemia

(remember that the s/s of Hypocalcemia = same as Hyperphosphotemia)

B- Hypophosphotemia

C- Hypercalcemia

#### \* D- Hypocalcemia

#### \* 2- All of the labs in these answers will be affected by dehydration

A- Calcium, Sodium, Chloride, Creatinine, Albumin, Hemoglobin, BUN

B- Sodium, Chloride, ALT, Calcium, Hematocrit

C- Chloride, Sodium, Hematocrit, Hemoglobin,

D- Sodium, Chloride, Albumin, Serum Proteins



#### Mnemonic - BAG: CCC-HH-SS

3- Which medication from the doctor will the nurse question:

A- Acetaminophen (standard pain control)

\* **B- Vancomycin IV. This antibiotic has not been confirmed necessary yet. While it is likely she has a UTI, there need to be 3 tests to prove it:**

1- Increased WBC (normal range 5,000-10,000)

2- Nitrates positive (bacteria colonize and cause the nitrates)

3- Leukocyte esterase (detects WBC)

#### Mnemonic:

WNL (usually mean “within normal limits” but also the 3 letters for UTI labs)

C- Heparin (standard for bed bound hospital patients)

D- Ondansetron (standard hospital N/V protocol HT3 anti-emetic)

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4- Na<sup>+</sup> 119

A- Get some bone broth to help increase the patient's sodium levels. - maybe if it was the zombie apocalypse and that is all you had.

B- Hang an IV of NS and get it into the patient as rapidly as possible. **NO! NEVER adjust Na+ quickly!!!**

\* **C- Get the seizure pads ready. YES - Na<sup>+</sup> < 120 is a seizure risk**

D- Administer aspirin to address the patient's headache. Possibly, low sodium creates near issues and HA is possible. This level is critical and HA is probably not the first priority.

5- Hyperkalemia: **Mnemonic - MURDER** (muscle cramps, urine abnormalities, respiratory distress, decreased cardiac contractility, EKG changes, reflexes)

\* **A- EKG - YES! Priority since potassium = cardiac**

B- Reflex test - maybe?

C- Banana-Coconut Water Smoothie, no this is too much potassium and the patient is already hyperkalemic.

D- DC of his diuretics - probably yes since spironolactone is K<sup>+</sup> sparing it can cause hyperkalemia.

6- A normal GFR is:

A- > 30

\* **B- > 60**

C- > 90

D- > 125

7- Ida is working with an enthusiastic patient who also happens to be in nursing school. The patient states she has a hard time remembering the difference between aPTT and PT/INR. Ida responds by saying "don't worry, I can help you with this difference" and proceeds to say this: **See Chart Below**

8- **(This is a weird question and the answer is not listed in the A-D)** The anion gap is a clinical indicator of: \* **None of the above.** The anion gap measures the distance between anions (negative charge) and cations (positive charge).

- **INCREASED** anion gap means metabolic acidosis (i.e. lactic or ketoacidosis)
- **DECREASED** anion gap mean metabolic alkalosis (i.e. excessive vomiting)

9- When working with a patient with a chronic wound that is failing to heal, all of the labs would be expected except:

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- A- BUN 30 (Increased BUN indicates delayed wound healing)
- B- Creatinine 1.7 (Increased Cr. indicates delayed wound healing)
- C- Prealbumin 7 (Decreased prealbumin indicates delayed wound healing d/t not having the raw building blocks to create new tissue).

**\* D- Calcium 8.9 (This is WNL)**

10- Which patient below will have the most optimal results in healing their wound?

**\* A- The 23-year-old male with an A1C of 5.7**

- B- The 81-year-old female with an A1C of 5.7 (age delays wound healing)
- C- The 42-year-old obese male with an A1C of 5.7 (obesity delays wound healing)
- D- The 23-year-old male with an A1C of 9.1 (High BS delays wound healing)





<b>(audrey) aPTT</b>	<b>PT/INR</b>
<b>60-70</b>	<b>PT: 11-12.5 seconds INR: 0.8-1.1</b>
Intrinsic	Extrinsinsic
Heparin ( <i>Hepburn</i> )	Coumadin (Warfarin)
	
Increased r/f bleeding	Increased r/f bleeding
<b>Heparin</b>	<b>Coumadin (Warfarin)</b>
Liver disease	ASA
Vit. K deficient	Vit. K deficient
Biliary obstruction	Biliary obstruction
DIC	Liver disease (ETOH)
	
Early DIC	Diet (high fat, leafy veg.)
extensive CA	Oral contraceptives
	Digitalis, Anabolic steroids



**\*Labs affected by dehydration:**

- 1- Sodium
- 2- Chloride
- 3- Creatinine (not on our sheet, but will be affected by dehydration)
- 4- Calcium
- 5- BUN
- 6- GFR
- 7- Serum Proteins
- 8- Albumin
- 9- Hemoglobin
- 10- Hematocrit

**Mnemonic:**

BAG: CCC - HH - SS

## “Chronic Class Has Me Depressed”

These labs have a depressant effect when they are elevated:

**Chronic =**

**Class =**

**Has =**

**Me =**

Sodium - Neuro

Potassium - Cardiac

Chloride - Acid/Base & Fluid Volume

Calcium - Bones, PTH, Kidneys

CO<sub>2</sub> - Most misunderstood. This means bicarbonate (metabolic base) and not carbon dioxide so it is “perfectly opposite” in how we may have misunderstood this. Sick kidneys l/t low bicarb.

Serum/Plasma Glucose - < 70 = hypoglycemia protocol, > 200 call the Dr.

BUN - Nitrogenous waste product formed during protein catabolism by the liver and excreted by the kidneys.

Creatinine - Nitrogenous end-product of skeletal muscle breakdown, excreted by the kidneys. Main indicator of kidney function.

GFR - Kidney function

Bilirubin - Bile

ALP - Liver, Bone

## Practice Questions for Interpreting Labs



AST - Liver

ALT - think "Acute Liver Trouble"

Serum protein = Albumin + Globulins

Albumin - Formed in the liver, maintains oncotic pressure

Globulins - Increase = Infection (immunoGLOBULINS)

Anion Gap - Measures difference between anions and cations

Lactic Acid - Formed during anaerobic glucose metabolism.

BNP - Indicates severity of HF

Troponins - Ischemic heart disease

PT/INR - Clotting (Coumadin, Warfarin)

aPTT - Clotting (Heparin)

Urinalysis - Know what indicates an infection

Increased WBC = Acute Infx

Decreased WBC = Chronic Infx

Hemoglobin - Measures O<sub>2</sub> carrying capacity of RBC

Hematocrit - Measures RBC %

PLT - Building blocks of clotting factors

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