

# USMLE PREP LECTURE SERIES Lecture 2.2



ELITE MEDICAL PREP

Elite Medical Prep Guide for Technion  
Students from Day 1 to Test day

# Objectives

- 🍎 Small Group Update
- 🍎 Road Map to Success
- 🍎 Challenge Questions
- 🍎 Takeaways
- 🍎 Follow up to questions/issues following Lecture 2.1:
  - What should I be doing right now?



# Group Tutoring USMLE Step1



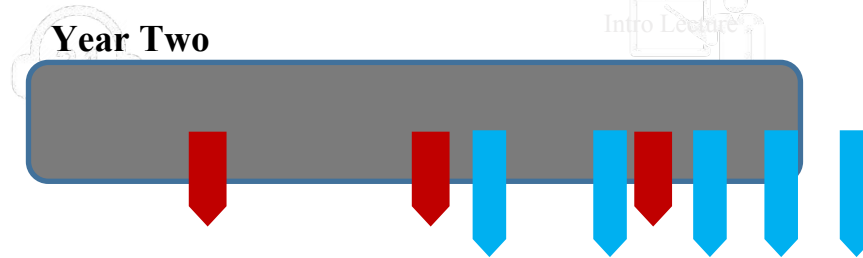
for

## 10 hours

Online Small Group  
Tutoring for Step 1

5 tutoring sessions  
x 2 hr each

## Step 1 Outline



1hr Didactic USMLE  
Prep lectures  
delivered by Elite  
Medical Prep



2hr Intensive Online  
Small Group  
sessions offered by  
Elite Medical Prep

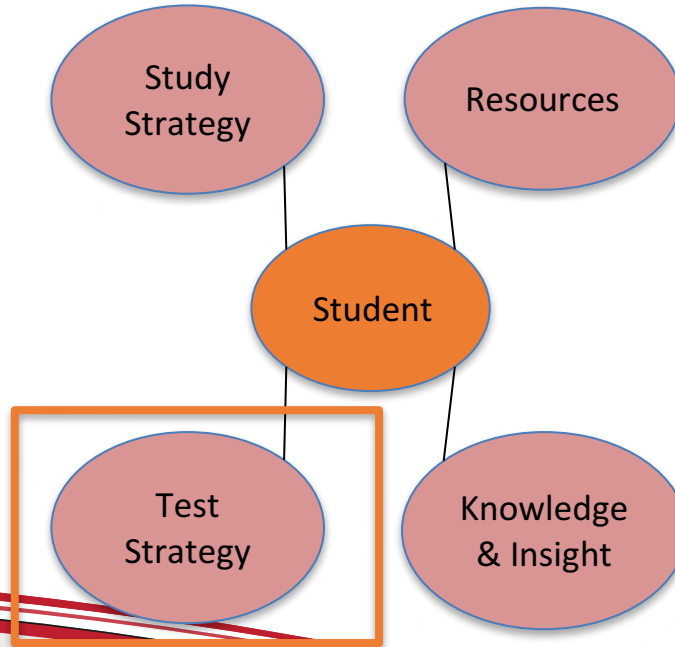
*As of today, all  
but one student  
who has signed  
up for small  
group tutoring  
has submitted  
their paperwork  
and payment*



# Roadmap to Step 1 Success: Overview

- What Resources to Use, and when
- How to Allocate Study Time
- When to take an Assessment

- Structured Approach to tackling Questions / Prompt
- Highlight key phrases to help “decode” the exam language
- Choosing the “best” answer by summarizing to avoid distractors

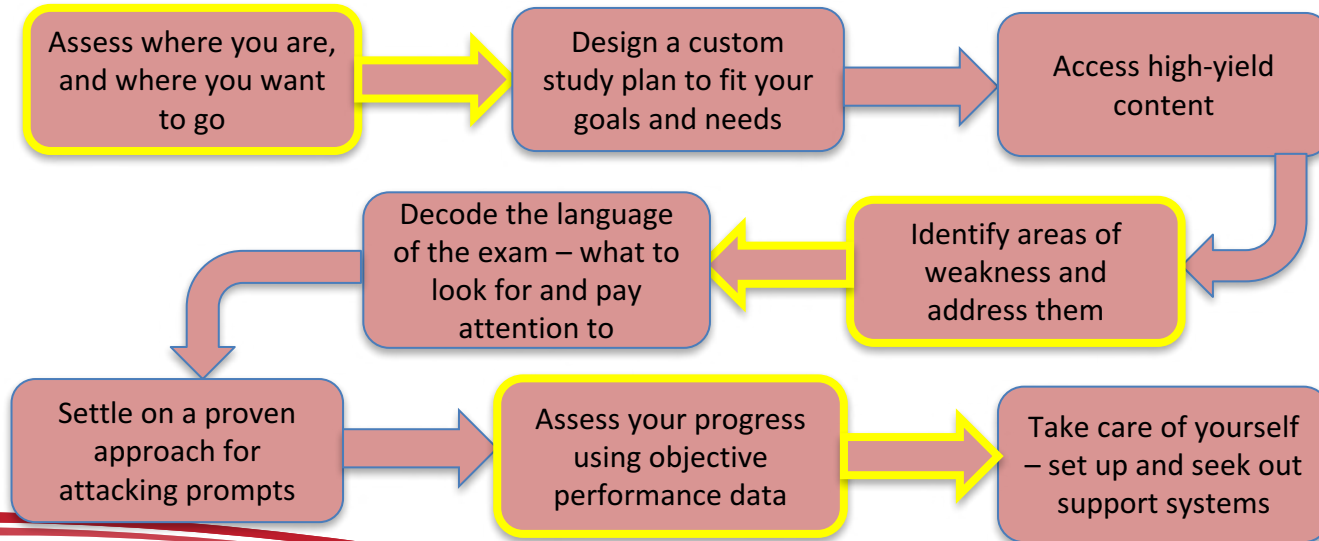


- Determine what's High Yield, and what's not
- Provide insight on how the exam asks important topics
- Push thinking and knowledge to the level of detail required
- Seek advice from experienced and trusted sources (e.g. faculty, upperclassmen, tutors)
- Diagnose and Correct weaknesses
- Assess Exam Day readiness



# Roadmap to Step 1 Success: Continued

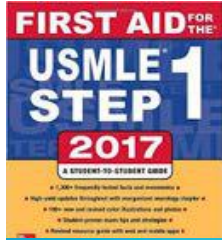
You are on a study journey ...



Create a plan and STICK TO IT!

# Limit Your Resources

Primary Resources



National Board of Medical Examiners  
National Board of Medical Examiners (NBME®)  
SELF-ASSESSMENT SERVICES



- ❶ First Aid and the Qbank should comprise **>90%** of your study efforts
- ❷ Get through Qbank **at least 2x** before taking the exam
  - 1<sup>st</sup> Pass: mixture of TUTOR mode & TIMED mode
  - Reset the Qbank
  - 2<sup>nd</sup> Pass: TIMED MODE
- ❸ NBMEs and UWorld Self Assessments: 2 PURPOSES
  1. Objective assessment of where you are, and if you are ready to sit for the exam
  2. Exposes you to question prompts from the actual test writers

We recommend taking notes or making flashcards on missed questions

Test questions and question prompts are frequently recycled with minor adjustments

2ndary



Second year students should have both First Aid and the Qbank, and a pathology resource

First year students should have First Aid and the Qbank

# USMLE Practice Question Breakdown

3

A 26 year old woman is brought to the emergency department by her roommate because of vomiting for 4 hours. She also has a 2 day history of fatigue and dizziness on standing. She has had severe heartburn for 3 months; treatment with over-the-counter antacids has provided some relief. The vital signs of the patient are T 35.6C (96F), pulse 110/min, and blood pressure 80/55 mm Hg. Physical examination shows marked pallor. Laboratory studies show a hemoglobin concentration of 6 g/dL and hematocrit of 18%. A chest x-ray is obtained (shown) and a pulmonary catheter is inserted and laboratory values are measured.

4



1

The patient is most likely experiencing which of the following types of shock?

2

- A) Anaphylactic.
- B) Cardiogenic.
- C) Hypovolemic.
- D) Neurogenic.
- E) Septic.

1

The question stem – tells you what the question is asking

2

The answer choices – Given you some context as to what the question is about

3

The prompt – Summarize key information as it's given in your own words; ensure that the answer matches ALL of the information given, not just some

4

Labs and images. EVAL the labs. IGNORE the images.

EMP's SUGGESTED ORDER.

There is no one right way to do this.

# Challenge Questions and breakdowns





A 58 year old female with a 30 pack year smoking history presents to her physician for a check up. Her blood pressure is 150/90, pulse 80, BMI is 26.1. Serum studies show hypokalemia, increased plasma renin activity, and increased serum aldosterone concentrations. A right abdominal bruit is heard on physical examination.

Recall that HTN is defined as 140/90 or greater

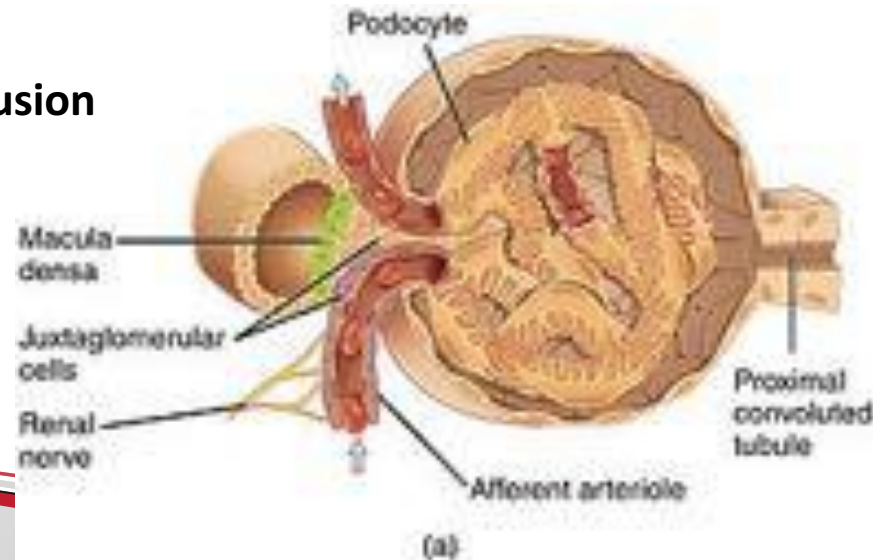
Part A

Which of the following is the most likely cause of these abnormal laboratory findings in this patient?

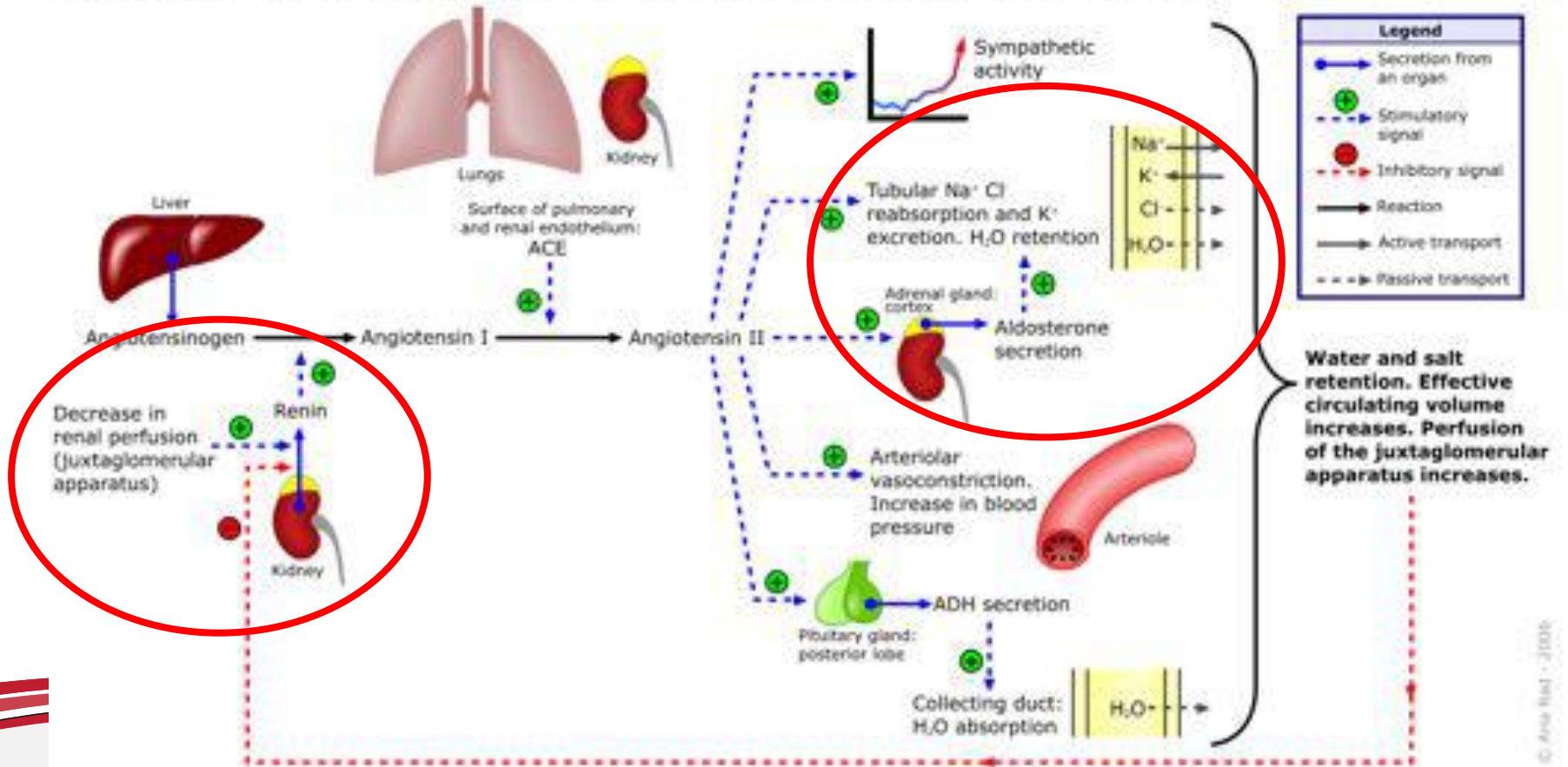
- A. Aldosterone-secreting adrenal tumor
- B. Chronic glomerulonephritis
- C. Cushing syndrome
- D. Essential hypertension
- E. Catecholamine-secreting tumor
- F. Renal artery stenosis
- G. Cholesterol embolization syndrome

# RAAS Activation

- ❶ Hypokalemia ( $\downarrow$ K) +  $\uparrow$ Renin +  $\uparrow$ Aldosterone
- ❷ General fxn of kidney: keep Na<sup>+</sup>, dump K<sup>+</sup>, H<sup>+</sup>
  - Aldosterone potentiates these effects
- ❸ RAAS activation
  - Low circ. Volume, **Low renal perfusion**
    - Dehydration, blood loss, shock
  - Normal circulating volume, **Low renal perfusion**
    - Kidney dysfunction



# Renin-angiotensin-aldosterone system



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**Pheochromocytoma**

**Renal Artery Stenosis**

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**Pheochromocytoma**

Genetic, 10% in kids

**Renal Artery Stenosis**

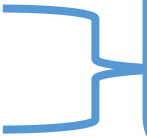
Athero + Smoking

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<b>Pheochromocytoma</b>	<b>Renal Artery Stenosis</b>
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Metanephrines in urine	Abdominal bruit (noise)

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Genetic, 10% in kids

Metanephrines in urine

#### Renal Artery Stenosis

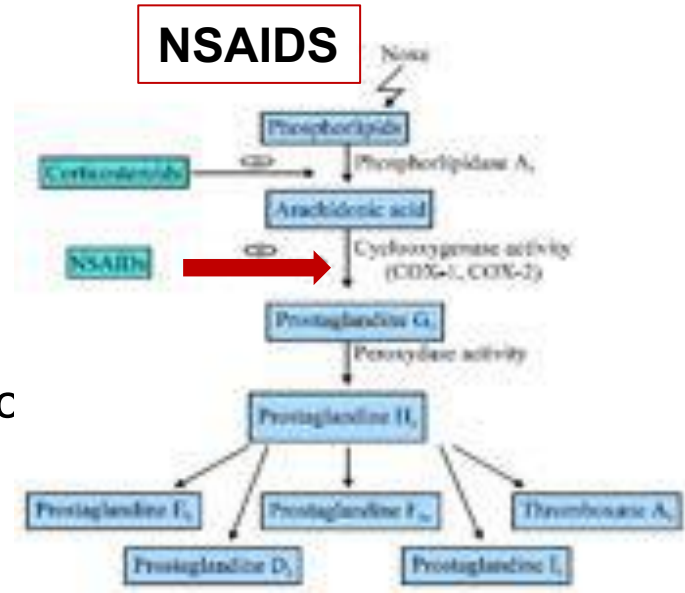
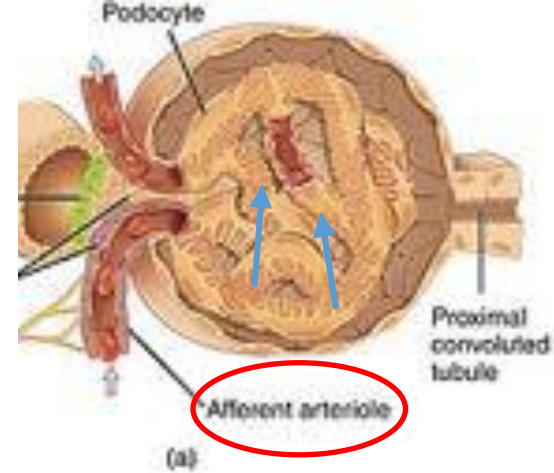
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Abdominal bruit (noise)

## Part B

The patient begins taking a non-opioid drug for lower back pain. Over the next week, her serum creatinine concentration increases from 1.5 to 3.5 mg/dL. Catheter angiogram of the abdominal aorta is performed (right side image). The most likely cause of this finding is the drug's ability to inhibit which of the following?

- A. Inflammation in the glomerular capillaries
- B. Inflammation in the renal interstitium
- C.  $\text{Na}^+/\text{K}^+/\text{2Cl}^-$  ion cotransport at the Loop of Henle
- D. Vasoconstricting prostaglandins at the efferent arteriole
- E. Vasodilating prostaglandins at the afferent arteriole
- F. Urea reabsorption at the proximal tubule and collecting duct

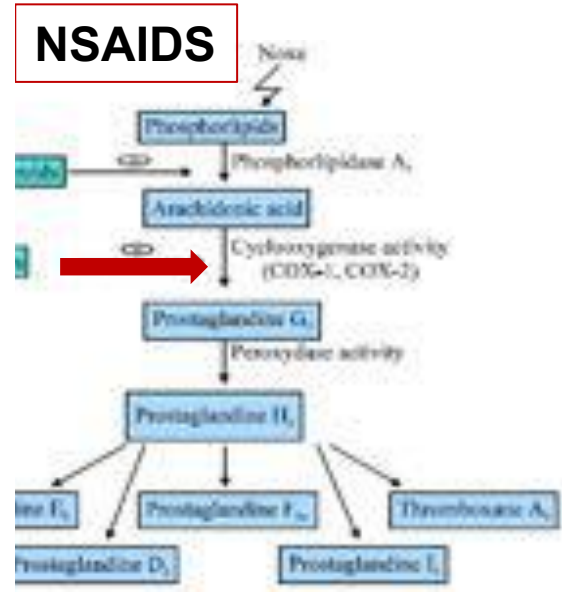
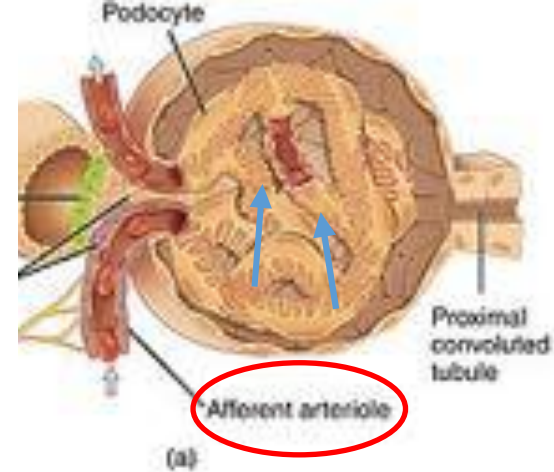




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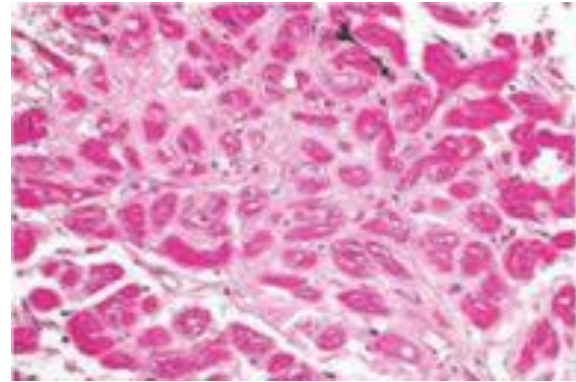


# Oncology/General Path Q

## Part A

A 67 year old woman comes to the physician because of a 1-month history of low back pain. She has hypertension well controlled with a thiazide diuretic. Her pulse is 140, blood pressure is 140/85 mm Hg. Exam shows tenderness to palpation over the L2-3 vertebrae. Serum electrophoresis shows a monoclonal spike and IgG kappa. Chest x-ray shows cardiomegaly with bilateral pleural and pericardial effusions. An x-ray of the spine shows a lytic lesion. Echocardiography shows and echodense, thickened left ventricle and poor diastolic compliance. A photomicrograph of a myocardial biopsy is shown. Which of the following is the most likely cause of the cardiac finding in this patient?

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- B. Acute myocarditis.
- C. Amyloid infiltration.
- D. Cardiomyopathy.
- E. Plasma cell infiltration

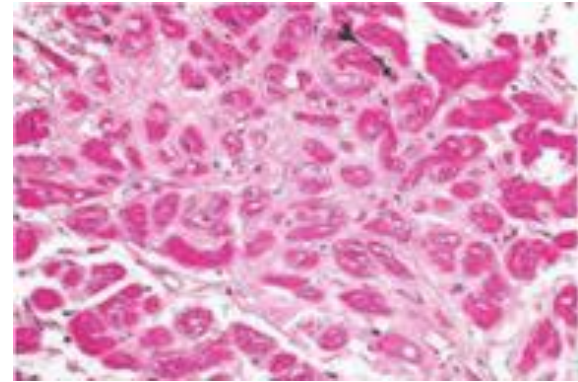


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- D. Cardiomyopathy. **Genetic/Intrinsic**
- E. Plasma cell infiltration **Immune**

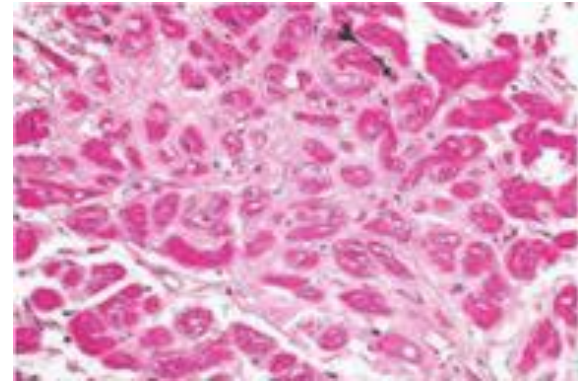


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# Multiple Myeloma

- ❶ Malignancy of plasma cells
  - BM is >10% plasma cells ( <10% is MGUS)
  - multiple organ systems:
    - Renal (nephrotic syndrome),
    - Cardiac (restrictive CM, arrhythmia),
    - Heme (easy bruising, splenomegaly)
    - GI (hepatomegaly)
    - Neuro (neuropathy).
    - Bone (lytic lesions & fractures)
- ❷ **Hyperproteinemic state** 2/2 excess immune cell proliferation
  - ↑ protein → ↑ blood viscosity → ↑ peripheral resistance
- ❸ Sticky RBCs → stacked appearance on histology → ↑ ESR
- ❹ High Level Points
  - assoc w/ Fanconi syndrome
  - protein spike either IgG or IgA



# Amyloid:

abnormally folded proteins → deposit in various tissues

All of this is in *First Aid*

- ❶ NEURO: Alzheimer disease due to deposition of  $\beta$ -amyloid protein cleaved from amyloid precursor protein (APP)
- ❷ ENDO: Islet amyloid polypeptide (IAPP) in DM2 → deposition of amylin in pancreatic islets.
- ❸ CARDIO: Atrial natriuretic peptide → Restrictive CM, increased risk of atrial fibrillation.
- ❹ RENAL: B2 microglobulin in ESRD
- ❺ ONC: Calcitonin deposition in tumor cells in medullary carcinoma of the thyroid

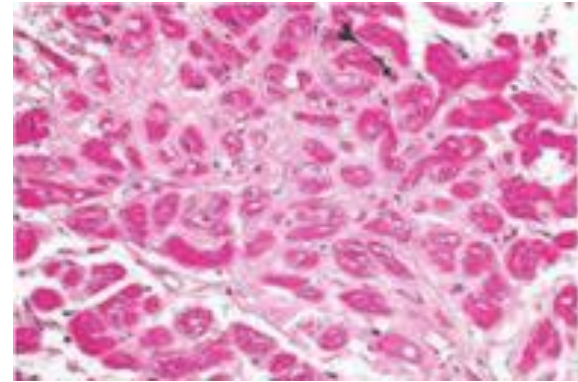


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## Part B

The patient's primary physician wants to confirm the diagnosis. In order to be efficient with medical resources the physician wants to carefully consider which **laboratory** tests to order based on the **likelihood** of it returning a **positive result**. Which of the following **additional findings** is most likely to be present?

- A. Antinuclear antibodies
- B. Heterophile antibodies
- C. Increased leukocyte alkaline phosphatase activity
- D. Kappa light chain proteinuria
- E. Atypical lymphocytes with plentiful basophilic cytoplasm
- F. Reciprocal chromosomal translocations (9;22)

Lupus

Mononucleosis

Leukemoid reaction in Neutrophils

Amyloidosis

EBV

Philadelphia chromosome CML





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# Leveraging Qbank and First Aid as a supplement to regular studying

## *How you can get the most out of every question*

- A. Acute infarction. Ischemia
- B. Acute myocarditis. Inflammatory
- C. **Amyloid infiltration.** Amyloid
- D. Cardiomyopathy. Genetic/Intrinsic
- E. Plasma cell infiltration Immune

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- F. Reciprocal chromosomal translocations (9;22) Philadelphia chromosome CML

Practice decoding the answer choices on every question

# Milestones

- 📌 **By today, ~ 5 months from test day**
  - Use ~ **20-30%** or more of the UWorld Q Bank Questions
- 📌 **By end of February, ~4 months from test day**
  - Use ~ **50-60%** or more of UWorld Q Bank Questions
- 📌 **By end of March, ~3 months from test day**
  - Use **> 90%** or more of UWorld Q Bank Questions
- 📌 **During at/before Dedicated Study Period**
  - Redo all/most of UWorld Q Bank Questions
  - Incorporate NBMEs
  - Avoid using new materials

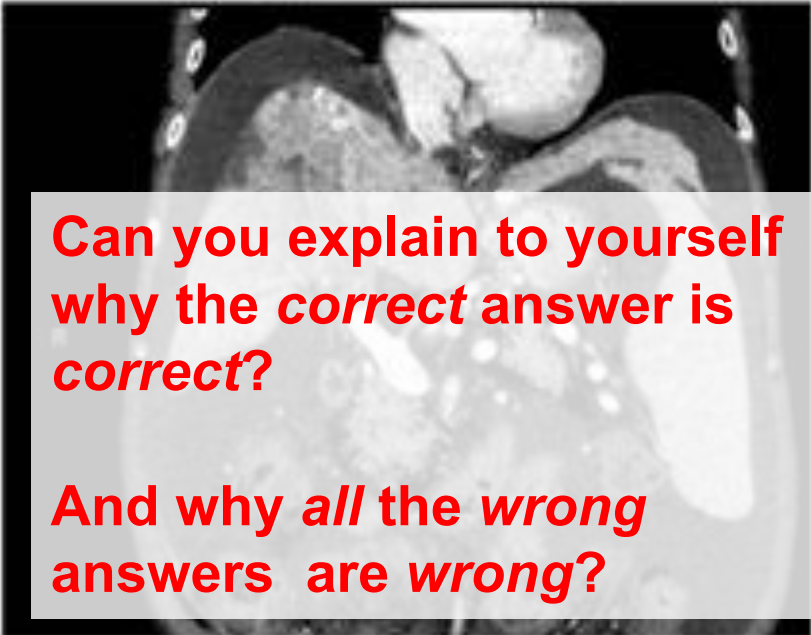


# 'Why' is more important than 'What.'

A 55 year old man comes to the emergency department because of sudden onset acute abdominal pain, nausea, vomiting, and bloody diarrhea 3 hours ago. He has a long-standing history of cirrhosis. His blood pressure is 95/48. His abdominal wall is rigid and tender to palpation with loss of bowel sounds. CT of the abdomen reveals:

During surgical intervention, a third of the small intestine is found to have a dark purple-red hemorrhagic appearance. Which of the following is the most likely diagnosis?

- A) Necrotizing enterocolitis
- B) Ulcerative colitis
- C) Pseudomembranous colitis
- D) Wilson's disease
- E) Bacterial enteritis
- F) Acute mesenteric arterial thrombosis
- G) Mesenteric venous thrombosis
- H) Acute pancreatitis
- I) Whipple disease



**Can you explain to yourself why the *correct* answer is *correct*?**

**And why *all* the *wrong* answers are *wrong*?**

## Next Steps in our engagement

- ❶ We are available for feedback and questions. A dedicated email has been created for students in your class year at Technion.  
*[technionstep1@elitemedicalprep.com](mailto:technionstep1@elitemedicalprep.com)*
- ❷ Please send questions and comments after the sessions to this email. Responses will be prompt and questions relevant to the group will be summarized and shared
- ❸ Collect feedback from you and the students regarding our service, so that we may better serve you all moving forward



*Thank You.*

