CASES AND PROMPTS

Case 1:

a. Prompt to model: Say we have this scenario. A 50-year old male, coming to the ER with complaints of chest pain which he describes as a "burning" chest pain, partially relieved by antacids. He states that the pain sometimes move to his back but denies radiation of pain elsewhere. He has a history of GERD in the past and used to take Pantoprazole 40mg daily for months a few years ago. He denies any excessive weight loss. What is the most likely diagnosis?

b. Correct answer: In reality, **chest pain lasting more than a few minutes that does not have a clear, benign cause must be investigated for possible cardiac causes**— especially in a 55-year-old man who could have silent risk factors. Even "burning" pain partially relieved by antacids can sometimes represent an atypical presentation of angina or myocardial ischemia. An ECG that seems initially normal doesn't rule out serious cardiac pathology. *Cardiac enzymes (troponins), serial ECGs, and further evaluation by a medical professional are essential.*

A real physician would:

- Obtain a detailed history (including family history, duration, nature of pain, presence of risk factors like hypertension, diabetes, high cholesterol, or smoking).
- Perform a thorough physical exam.
- Review serial ECGs and order cardiac enzymes (troponin levels).
- Possibly arrange for stress testing or imaging if suspicion for coronary artery disease remains high.
- Consider gastrointestinal or musculoskeletal causes only after ruling out life-threatening cardiac issues.

Case 2:

a. Prompt to the model: A 54-year-old man comes in for a clinic visit. Past medical history includes psoriatic arthritis and hypertension. His father had a myocardial infarction at age 50 years. His current medications are methotrexate, allopurinol, lisinopril 40mg, and amlodipine 10mg. For the purpose of calculating the patient's risk for atherosclerotic cardiovascular disease, the patient reports that he is White. On physical examination, blood pressure is 140/82 mm Hg, and pulse rate is 70/min. BMI is 28. Other physical examination findings are normal. Laboratory studies: LDL cholesterol 160 mg/dL (4.14 mmol/L), HDL cholesterol 40 mg/dL (1.04 mmol/L), Total cholesterol 270 mg/dL (6.99 mmol/L), Triglycerides 350 mg/dL (3.95 mmol/L). The patient's 10-year risk for atherosclerotic cardiovascular disease is 15.7%. What should we recommend for this patient?

b. Correct answer: The American Heart Association/American College of Cardiology recommend consideration of moderate-intensity statin therapy in adults at intermediate risk for atherosclerotic cardiovascular disease with risk-enhancing factors. The U.S. Preventive Services Task Force recommends moderate-intensity statin therapy for primary prevention in adults who have at least one atherosclerotic cardiovascular disease (ASCVD) risk factor and a calculated 10-year ASCVD event risk of 10% or higher.

Case 3:

a. We have a patient, a pleasant 60-year-old man admitted to the Intensive Care Unit. We are trying to figure out what is wrong. He was in a car accident 42 hours ago. He fractured his left femur, 4 rib fractures and had a splenic laceration requiring an emergent splenectomy. As he came in unstable, we emergently resuscitated with a total of 15L of isotonic fluids and he continues to be on norepinephrine for vasopressor support. He continues to be on a ventilator as well. We are concerned about an acute kidney injury because his urine output has been roughly 5-10ml/hr, with a 24-hour output of 200ml. What information can I provide to help make a diagnosis?

b. Follow-up information to be given if asked:
    a. Currently on IV Norepinephrine, and a 200ml/hr drip of IV LR.
    b. On physical examination, the patient is mechanically ventilated and sedated. RAAS score of 0. Temperature is 38.3 °C (100.9 °F), blood pressure is 88/52 mm Hg, pulse rate is 96/min, and respiration rate is 16/min. Oxygen saturation is 95% with the patient breathing 0.45 FIO_2. It appears that he has a JV distention. Cardiac examination is normal, and lungs are clear to auscultation. The abdomen is large and appears distended, with the skin over the abdomen being tight and shiny. A bladder catheter output is minimal.

Laboratory studies:	
Hemoglobin	8g/dL
BUN	70 mg/dL
Creatinine	4 mg/dL
Urinalysis	Specific gravity 1.015; pH 5.4; 1+ blood; no protein; 1-3 erythrocytes/hpf; scattered hyaline casts

c. Correct final diagnosis and next steps to take: The most appropriate diagnostic test to perform next is bladder pressure measurement. This patient may have abdominal compartment syndrome (ACS), which is defined as a sustained intra-abdominal pressure >20 mm Hg that is associated with at least one organ dysfunction. The diagnosis of ACS

should be considered in the setting of abdominal surgery, trauma, intra-abdominal bleeding, ascites, bowel obstruction, ileus, or pancreatitis. It can also be caused by a capillary leak in the setting of sepsis and massive fluid resuscitation. The diagnosis of ACS can be confirmed through measurement of bladder pressure using an indwelling catheter as a surrogate for intra-abdominal pressure measurement. Appropriate treatment includes surgical decompression of the abdominal compartment.

Case 4:

a. Prompt to the model: A 53-year-old woman is evaluated in the coronary care unit. She underwent successful primary percutaneous coronary intervention with drug-eluting stent placement in the mid right coronary artery for an inferior ST-elevation myocardial infarction. In the catheterization laboratory, she had several episodes of symptomatic 2:1 atrioventricular block with sinus bradycardia. After returning to the coronary care unit, she has symptomatic intermittent 2:1 atrioventricular block and several episodes of complete heart block with a narrow-complex escape rhythm (heart rate at 58/min). Medications are atorvastatin, aspirin, and clopidogrel. On physical examination, blood pressure is 118/82 mm Hg, pulse rate is 68/min, respiration rate is 18/min, and oxygen saturation is 96% with the patient breathing ambient air. Cardiac examination reveals a regularly irregular rhythm. The remainder of the examination is normal. Which of the following is the most appropriate treatment?

b. The correct response is not Atropine. Symptomatic patients with transient heart block, including Mobitz type 1 heart block and complete heart block, after inferior myocardial infarction may be treated with temporary pacing.
The most appropriate treatment for this patient is temporary pacing. Conduction abnormalities are commonly identified in the setting of acute myocardial infarction (MI) and are managed on the basis of the type of block and the location of myocardial injury. Symptomatic patients with inferior MI and transient heart block may be treated with temporary pacing because conduction block in this setting, including Mobitz type 1 and complete heart block, is caused by high vagal tone affecting the atrioventricular (AV) node, is generally transient, and is accompanied by an adequate escape rhythm. Whereas temporary pacing support may occasionally be necessary, permanent pacing is rarely indicated. Vagally mediated heart block occurring at the AV node must be distinguished from the less benign and potentially lethal Mobitz type 2 second-degree AV block, which occurs more frequently in the setting of extensive anterior MI and damage to the conduction system below the AV node. Although Mobitz type 1 block occurs at the AV node and is identified by cyclical, repetitive prolongation of the PR interval leading to a "dropped beat" and a regularly irregular rhythm, Mobitz type 2 block is typified by block conduction without associated PR prolongation and may predispose to extended periods of asystole, requiring permanent pacemaker support. Atropine may improve AV nodal conduction and increase the sinus rate through vagolytic activity. However, it provides only temporary benefit and is neither necessary nor sufficient as treatment for asymptomatic heart block in this setting.

Case 5:

a. We have a patient who is a 72-year-old male with past medical history of CAD s/p CABG (2022), atrial fibrillation and AAA who presents to the emergency department with abdominal pain. Pain has been persistent for 1 day and located to the right lower quadrant of the abdomen. He has associated nausea and emesis. Denies any changes in his stool, fevers or chills. He is not able to tolerate PO due to the pain. His vital signs are as follows: HR 87, BP 140/90, SpO2 98% and afebrile. His WBC is 16. On physical exam of the abdomen, he is tender to the right lower quadrant.

Case 6:

a. We have a patient who is a 72-year-old male with past medical history of CAD s/p CABG (2022), atrial fibrillation and AAA who presents to the emergency department with abdominal pain. Pain has been persistent for 1 day and located to the right left quadrant of the abdomen. He has associated nausea and emesis. Denies any changes in his stools. Endorses feeling febrile. He is not able to tolerate PO due to the pain. His vital signs are as follows: HR 120, BP 80/54, SpO2 91% and afebrile. His WBC is 20.

Case 7:

a. We have a patient who is a 30-year-old male with past medical history of GSW to the abdomen s/p exploratory laparotomy with small bowel resection who presents to the emergency department with abdominal pain. Pain has been persistent for 1 day and located to the right lower quadrant of the abdomen. He has associated nausea and emesis. Denies any changes in his stools. Endorses feeling febrile. He is not able to tolerate PO due to the pain. His vital signs are as follows: HR 87, BP 140/90, SpO2 98% and afebrile. His WBC is 16.

Case 8:

a. The patient is a 45-year-old female with past medical history of GERD, obesity who presents with 2 days of right upper quadrant abdominal pain. The patient's pain began after eating Taco Bell. She has been nauseated and had 2 episodes of non-bilious, non-bloody emesis. She denies any changes in her stool, no fevers or chills. She notes she has lost 50 pounds in the last 3 weeks. Her vital signs are as follows: HR 50, BP 130/73, SpO2 99%. Her WBC is 13, Total bilirubin is 1.2, AST 100, ALT 120, Lipase 9. On physical exam she is tender in the right upper quadrant and when pressing on her right upper abdomen and asked to take a deep breath in, she stops breathing because of the pain.

Case 9:

a. The patient is a 38-year-old female with past medical history of GERD, obesity who presents with 2 days of right upper quadrant abdominal pain. The patient's pain began after eating Taco Bell. She has been nauseated and had 2 episodes of non-bilious, non-bloody emesis. She denies any changes in her stool, no fevers or chills. She notes she has

lost 50 pounds in the last 3 weeks and also she has been very itchy in the past week. Her vital signs are as follows: HR 50, BP 130/73, SpO2 99%. Her WBC is 13, Total bilirubin is 8, AST 210, ALT 300, Lipase 9. On physical exam she is tender in the right upper quadrant and when pressing on her right upper abdomen and asked to take a deep breath in, she stops breathing because of the pain.

Case 10:

a. The patient is a 70-year-old female with past medical history of GERD, obesity who presents with 2 days of right upper quadrant abdominal pain. The patient's pain began eating out with her husband. She has been nauseated for the last week and had 2 episodes of non-bilious, non-bloody emesis. She denies any changes in her stool, no fevers or chills. She notes she has lost 50 pounds in the last 3 weeks. Her WBC is 13, Total bilirubin is 8, AST 210, ALT 300, Lipase 9. On physical exam she is mildly tender in the right upper quadrant.