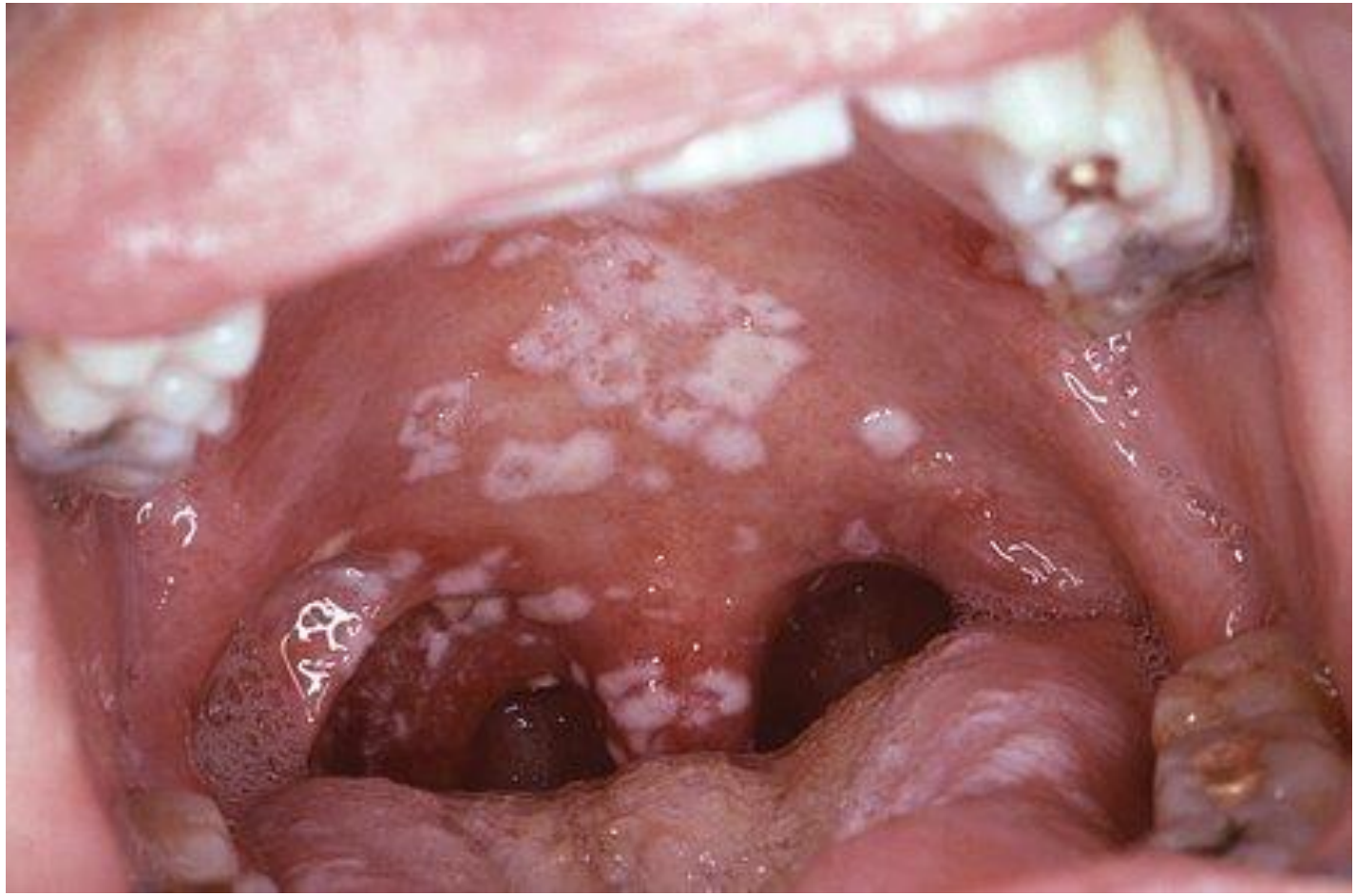
Endocrine Test Review

Question #19



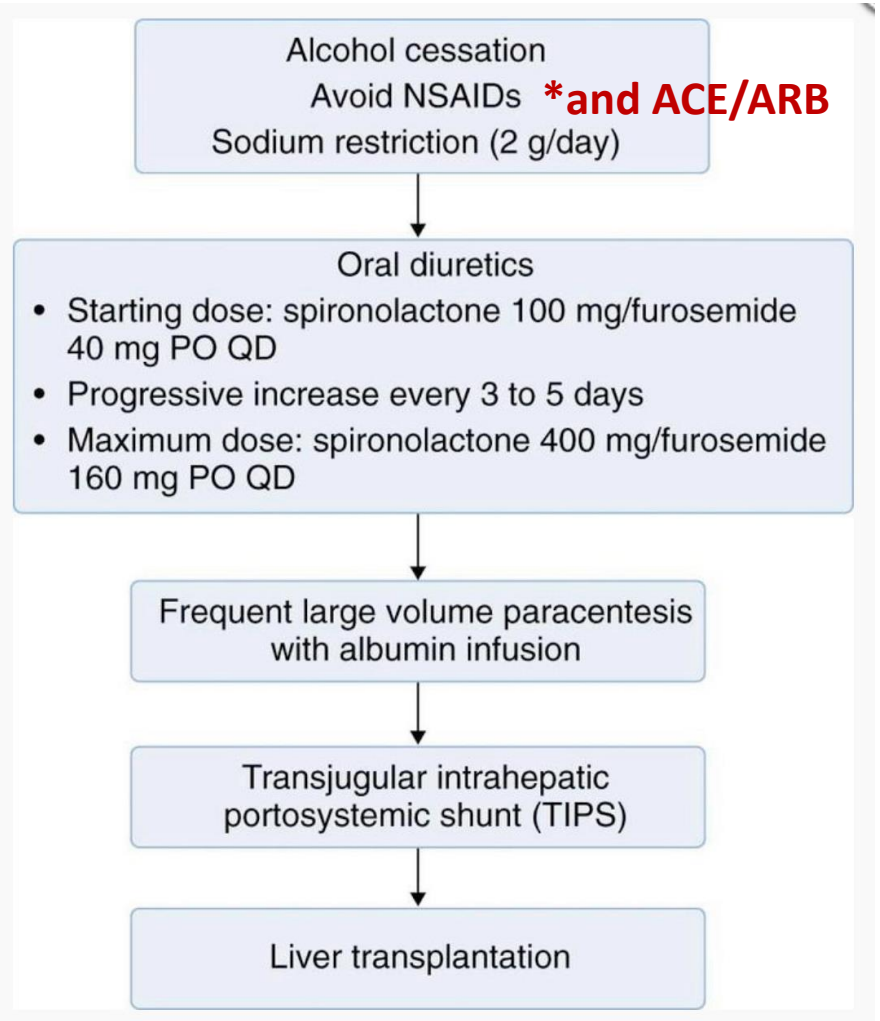
Question 1

- A 50-year-old man is evaluated for newly developed ascites. He has cirrhosis due to nonalcoholic steatohepatitis. Paracentesis confirms cirrhosis as a cause of the ascites and excludes infection, and a low-sodium diet is implemented. Medical history includes type 2 diabetes mellitus, hypertension, and dyslipidemia. Current medications are metformin, lisinopril, and atorvastatin.
- On physical examination, vital signs are normal. The abdomen is nontender and mildly distended, with normal bowel sounds.
- Serum creatinine level is 1.1 mg/dL (97.2 µmol/L). Random urine protein-creatinine ratio is 16 mg/g.
- Which of the following is the most appropriate additional treatment?
  A. Discontinue atorvastatin
  B. Discontinue lisinopril
  C. Initiate lactulose
  D. Initiate low-protein diet

Question 1

- A 50-year-old man is evaluated for newly developed ascites. He has cirrhosis due to nonalcoholic steatohepatitis. Paracentesis confirms cirrhosis as a cause of the ascites and excludes infection, and a low-sodium diet is implemented. Medical history includes type 2 diabetes mellitus, hypertension, and dyslipidemia. Current medications are metformin, lisinopril, and atorvastatin.
- On physical examination, vital signs are normal. The abdomen is nontender and mildly distended, with normal bowel sounds.
- Serum creatinine level is 1.1 mg/dL (97.2 µmol/L). Random urine protein-creatinine ratio is 16 mg/g.
- Which of the following is the most appropriate additional treatment?
  - A. Discontinue atorvastatin
  - **B. Discontinue lisinopril**
  - C. Initiate lactulose
  - D. Initiate low-protein diet

Treat ascites in a patient with cirrhosis by stopping an ACE inhibitor



- Ascites results from portal hypertension and functional renal impairment -> ineffective natriuresis and retention of sodium
- Medications that decrease renal perfusion pressures, such as ACE inhibitors and angiotensin receptor blockers, can worsen ascites in patients with portal hypertension
- NSAIDs, can reduce urinary sodium excretion in patients with cirrhosis and can induce azotemia

Guidance Statements

- Nonsteroidal anti-inflammatory drugs, angiotensin-converting enzyme inhibitors, and angiotensin receptor blockers should be avoided in patients with cirrhosis and ascites.

AASLD, 2021

Other answers

- A, the overall benefits of statins typically outweigh the potential harms, especially in patients with risk factors for coronary artery disease
- C, lactulose is initiated for the management of hepatic encephalopathy, but should not be initiated in a patient without symptoms of hepatic encephalopathy
- D, the dietary protein needs of patients with decompensated cirrhosis exceed those of healthy persons, and dietary protein supplementation is indicated in this patient population

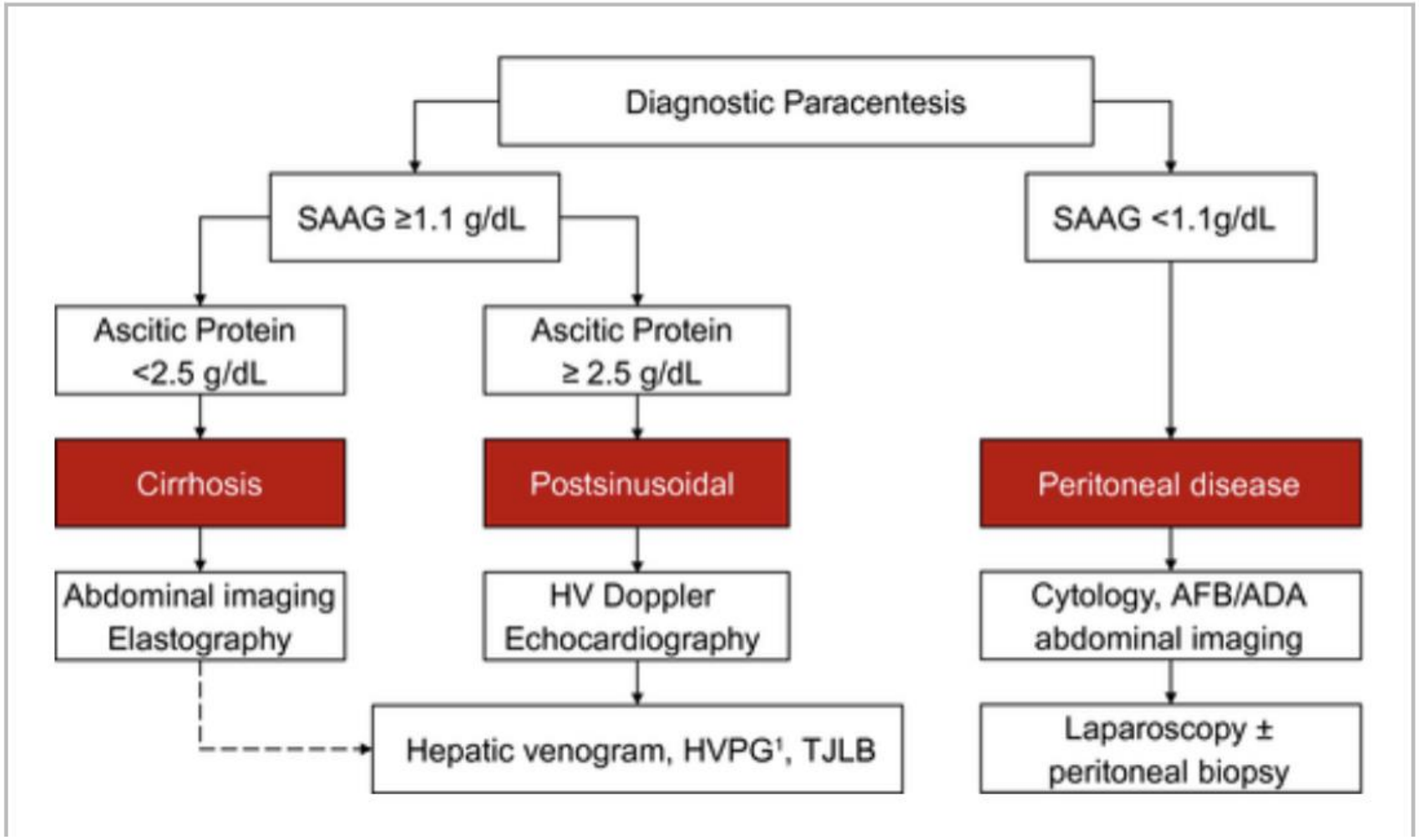
Question 2

- A 64-year-old man is evaluated in the emergency department for ascites. He has diabetes mellitus and cirrhosis associated with hemochromatosis, as well as a history of hepatic encephalopathy. Current medications are metformin, canagliflozin, lactulose, and rifaximin.
- On physical examination, blood pressure is 106/76 mm Hg and pulse rate is 60/min; other vital signs are normal. The patient is alert. Jaundice, spider telangiectasia, and palmar erythema are present. Jugular venous distension and peripheral edema are present. Cardiac sounds are indistinct and lung sounds are diminished. Ascites is present.
- Abdominal ultrasound shows a cirrhotic liver, splenomegaly, and abdominal ascites.
- Paracentesis with analysis of ascitic fluid shows a leukocyte count of 100/µL (100×10^9/L), albumin level of 2.2 g/dL (22 g/L), and total protein level of 2.6 g/dL (26 g/L). Serum albumin level is 3.5 g/dL (35 g/L).
- Which of the following is the most appropriate management?
  A. Ascitic fluid cytology
  B. Ascitic fluid triglyceride measurement
  C. Echocardiography
  D. Liver biopsy

Question 2

- A 64-year-old man is evaluated in the emergency department for ascites. He has diabetes mellitus and cirrhosis associated with hemochromatosis, as well as a history of hepatic encephalopathy. Current medications are metformin, canagliflozin, lactulose, and rifaximin.
- On physical examination, blood pressure is 106/76 mm Hg and pulse rate is 60/min; other vital signs are normal. The patient is alert. Jaundice, spider telangiectasia, and palmar erythema are present. Jugular venous distension and peripheral edema are present. Cardiac sounds are indistinct and lung sounds are diminished. Ascites is present.
- Abdominal ultrasound shows a cirrhotic liver, splenomegaly, and abdominal ascites.
- Paracentesis with analysis of ascitic fluid shows a leukocyte count of 100/µL (100×10^9/L), albumin level of 2.2 g/dL (22 g/L), and total protein level of 2.6 g/dL (26 g/L). Serum albumin level is 3.5 g/dL (35 g/L).
- Which of the following is the most appropriate management?
  - A. Ascitic fluid cytology
  - B. Ascitic fluid triglyceride measurement
  - **C. Echocardiography**
  - D. Liver biopsy

Evaluate cause of ascites



Ascites evaluation

HIGH VALUE CARE PEARL:
Initial work up new-onset ascites should include:
1. cell count + culture
2. ascitic fluid albumin (+ serum albumin level)
3. ascitic fluid protein

AND THAT IS ALL!

Question 3

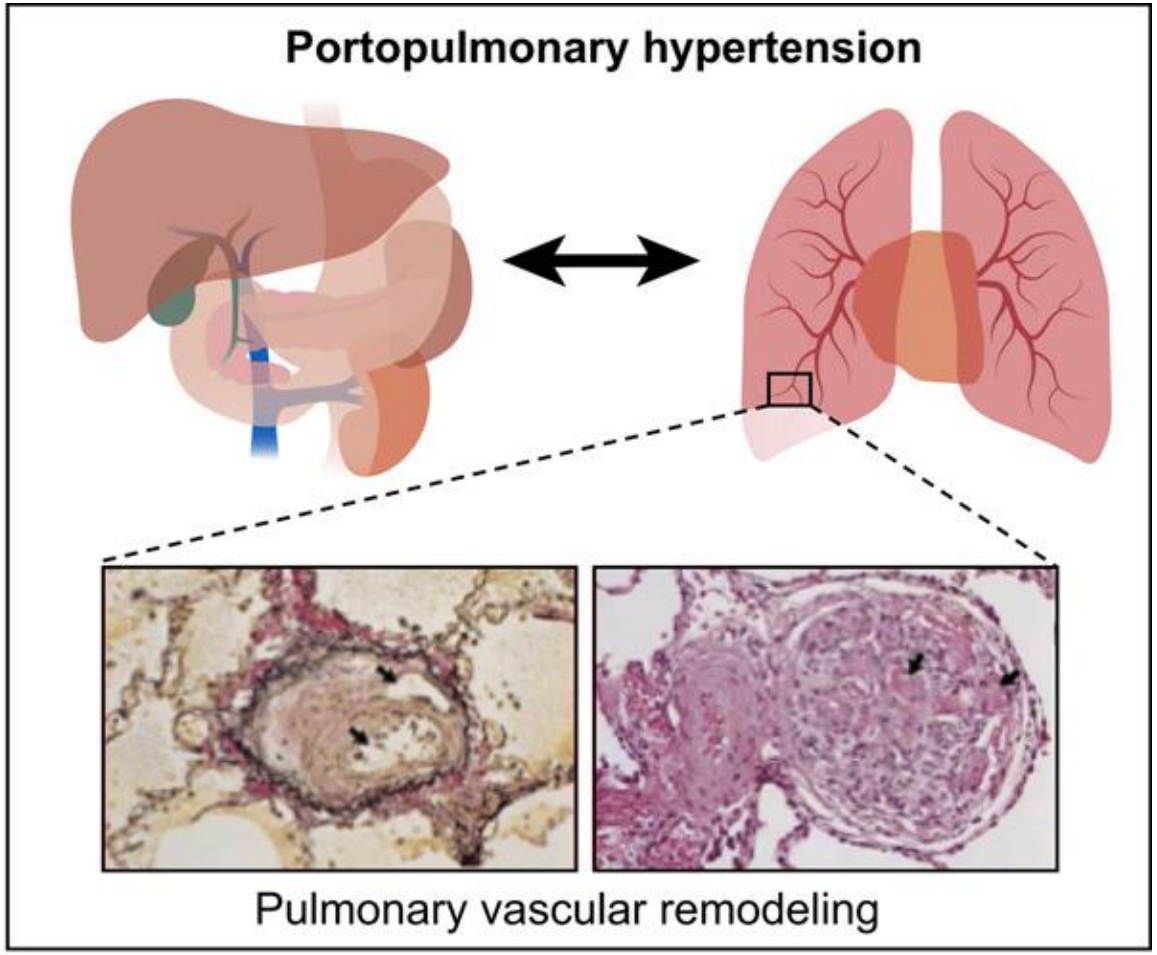
- A 60-year-old woman is evaluated for 6 months of progressive symptoms of dyspnea on exertion. She has cirrhosis due to nonalcoholic steatohepatitis complicated by ascites and esophageal varices. Current medications include propranolol, furosemide, and spironolactone.
- On physical examination, vital signs are normal. Oxygen saturation is 99% with the patient breathing ambient air. On cardiac examination, central venous pressure is elevated. The pulmonic component of S_2 is increased in intensity. The lungs are clear to auscultation. The liver is enlarged and tender, and ascites is present.
- Posteroanterior and lateral radiographs of the chest are normal.
- Which of the following is the most appropriate diagnostic test to perform next?
  A. CT of chest
  B. Echocardiography
  C. Echocardiography with agitated saline
  D. Ventilation-perfusion scanning

Question 3

- A 60-year-old woman is evaluated for 6 months of progressive symptoms of dyspnea on exertion. She has cirrhosis due to nonalcoholic steatohepatitis complicated by ascites and esophageal varices. Current medications include propranolol, furosemide, and spironolactone.
- On physical examination, vital signs are normal. Oxygen saturation is 99% with the patient breathing ambient air. On cardiac examination, central venous pressure is elevated. The pulmonic component of S_2 is increased in intensity. The lungs are clear to auscultation. The liver is enlarged and tender, and ascites is present.
- Posteroanterior and lateral radiographs of the chest are normal.
- Which of the following is the most appropriate diagnostic test to perform next?
  A. CT of chest
  B. Echocardiography
  C. Echocardiography with agitated saline
  D. Ventilation-perfusion scanning

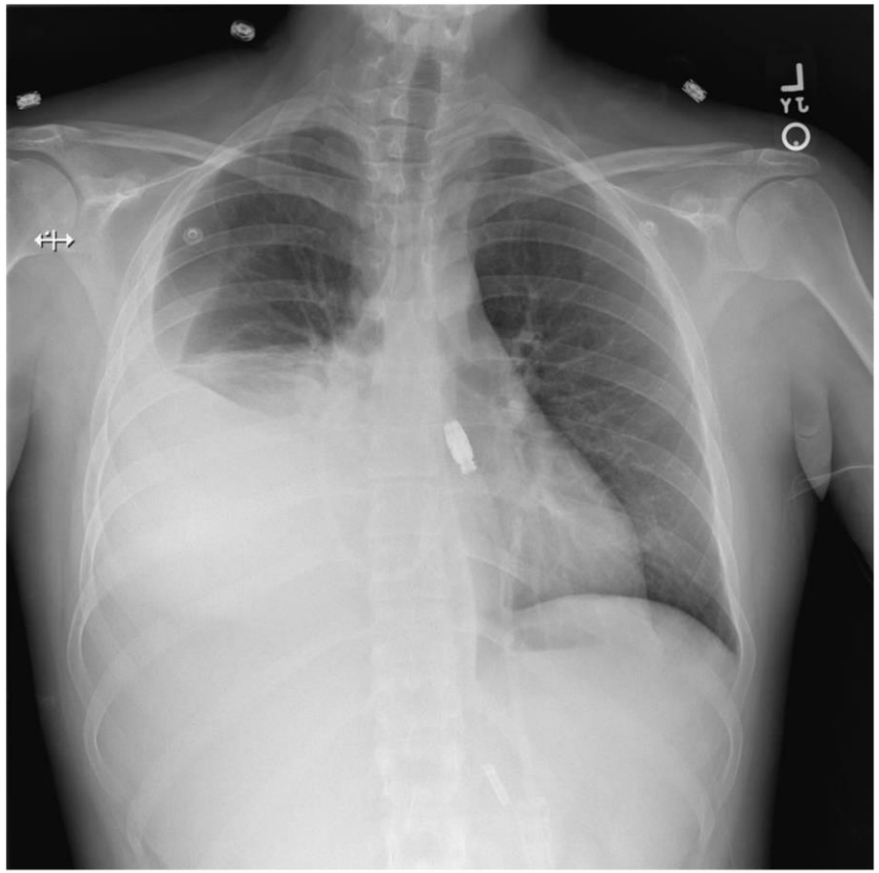
Evaluate dyspnea in a patient with cirrhosis

- 3 pulmonary complications of cirrhosis:
  - Portopulmonary HTN
  - Hepatopulmonary syndrome
  - Hepatic hydrothorax
- Portopulmonary HTN
  - Dyspnea on exertion
  - Group 1
  - Least common of the pulmonary complications of cirrhosis, ~2-16%
  - Treat like other causes of PAH



Hepatic hydrothorax

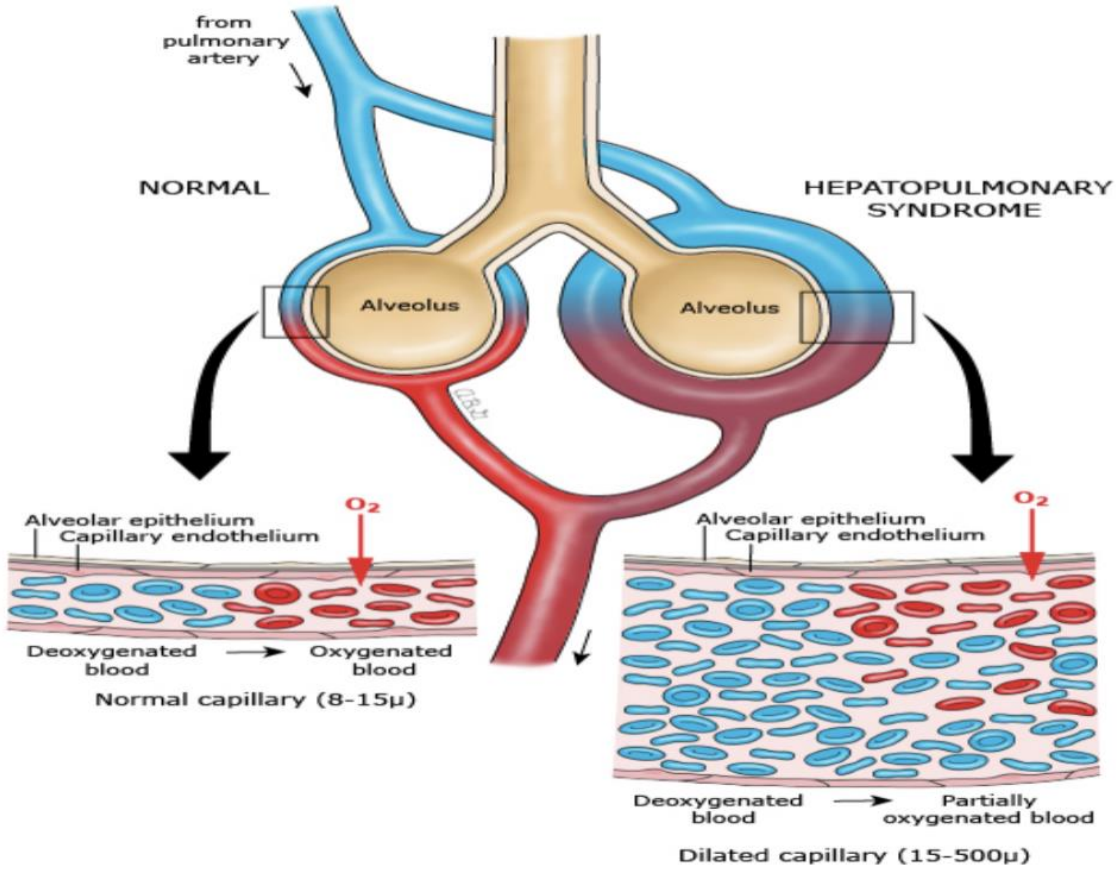
- r/o other reasons for pleural effusion
- 5-15% of pts with cirrhosis
- Passage of ascites from peritoneal -> pleural cavity through small diaphragmatic defects
- Thoracentesis – similar to ascitic fluid with serum-to-pleural albumin gradient > 1.1 g/dL and TP < 2.5 g/dL
- Patients can develop SBEM
  - PMN count > 250 cells/mm^3 with + culture
  - PMN count > 500 cells/mm^3 without + culture
  - No e/o pneumonia
- Management
  - ETOH abstinence
  - Na restriction
  - Diuretics
  - Thoracenteses (avoid chest tubes)



Source: Allaham H, Hudhud D, Salzer W. Right-sided hydrothorax: a peritoneal dialysis dilemma. BMJ Case Rep. 2018.

Hepatopulmonary syndrome

- Abnormal arterial oxygenation cause by intrapulmonary vascular dilatations in setting of liver disease, portal HTN of congenital portosystemic shunts
- Platypnea and orthodeoxia
- ABG and TTCE (contrast/bubble ECHO)
- Liver transplant



Question 4

- A 36-year-old woman is evaluated for a 3-day history of constant right-upper-quadrant abdominal discomfort and abdominal distention. She has no significant medical history. Her only medication is a combined oral contraceptive pill.
- On physical examination, vital signs are normal. Palpation reveals a tender, enlarged liver. Ascites is present. Bowel sounds are normal.
- Laboratory evaluation shows an alanine aminotransferase level of 152 U/L and aspartate aminotransferase level of 138 U/L.
- Which of the following is the most appropriate diagnostic test to perform next?

  A. Abdominal Doppler ultrasonography

  B. Abdominal radiography

  C. Hepatobiliary iminodiacetic acid scintigraphy

  D. Noncontrast abdominal CT

Question 4

- A 36-year-old woman is evaluated for a 3-day history of constant right-upper-quadrant abdominal discomfort and abdominal distention. She has no significant medical history. Her only medication is a combined oral contraceptive pill.
- On physical examination, vital signs are normal. Palpation reveals a tender, enlarged liver. Ascites is present. Bowel sounds are normal.
- Laboratory evaluation shows an alanine aminotransferase level of 152 U/L and aspartate aminotransferase level of 138 U/L.
- Which of the following is the most appropriate diagnostic test to perform next?

A. Abdominal Doppler ultrasonography

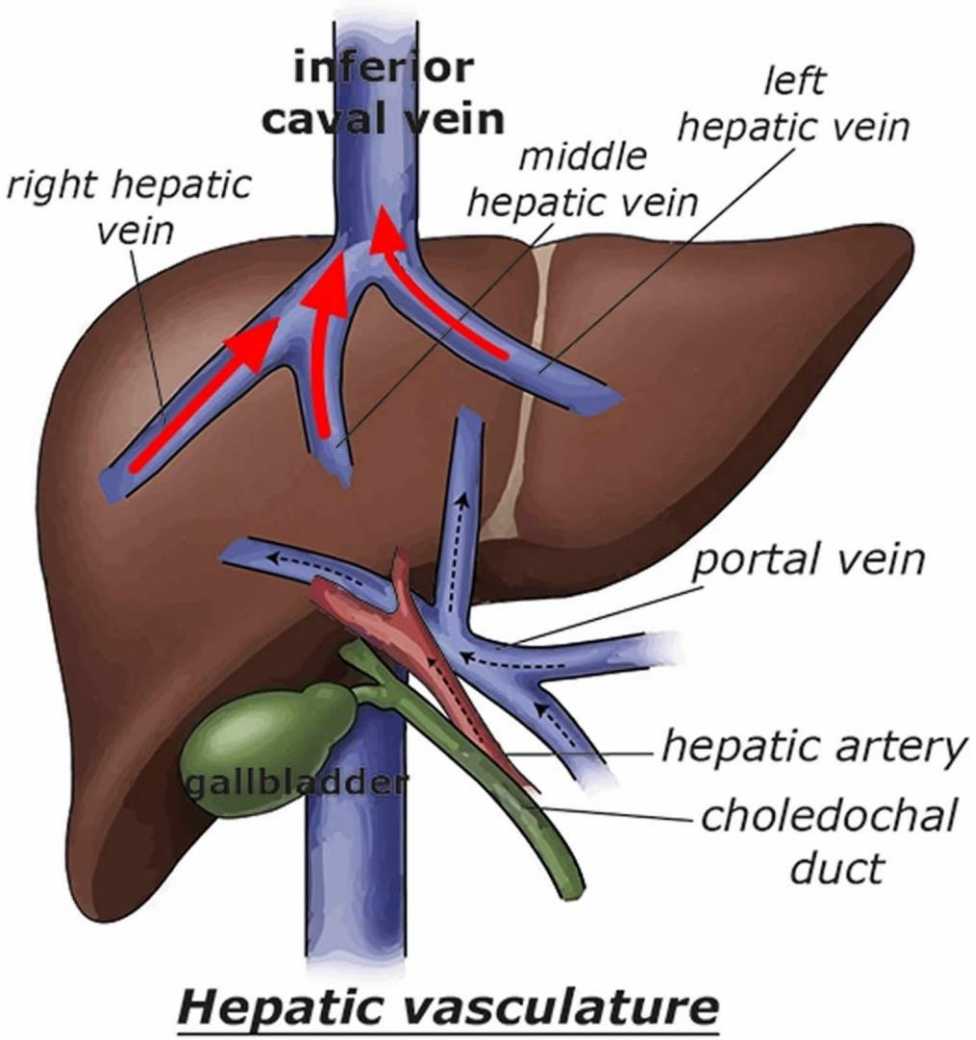
B. Abdominal radiography

C. Hepatobiliary iminodiacetic acid scintigraphy

D. Noncontrast abdominal CT

Diagnose Budd-Chiari syndrome

- Thrombosis of the hepatic veins
- RUQ abdominal pain, hepatic congestion and ascites
- RFs: hypercoagulable states (myeloproliferative neoplasms, pregnancy, OCPs)
- Diagnose with doppler US
- Treatments:
  - Long-term AC
  - Angioplasty/TIPS
  - Liver transplant



Question 5

- A 43-year-old woman is evaluated in the emergency department for confusion and a 1-week history of yellow skin. She consumes 12 beers daily.
- On physical examination, temperature is 38.5 °C (101.3 °F); blood pressure is 120/50 mm Hg, pulse rate is 100/min, and respiration rate is 24/min. Her sclerae are icteric and skin is jaundiced. Tender hepatomegaly is present. She has asterixis and is oriented to person only. No source of infection has been identified. Maddrey discriminant function score is 35.
  - Leukocyte count 14,000/μL, Prothrombin time 14.0 s, Alkaline phosphatase 200 U/L, Alanine aminotransferase 30 U/L, Aspartate aminotransferase 62 U/L, Total bilirubin 17.0 md/dL
- Ultrasound of the right upper quadrant shows hepatomegaly, minimal ascites, liver echogenicity, and no biliary stones or ductal dilation.
- Which of the following is the most appropriate management?

A. Cefepime

B. Liver biopsy

C. Pentoxifylline

D. Prednisolone

Question 5

- A 43-year-old woman is evaluated in the emergency department for confusion and a 1-week history of yellow skin. She consumes 12 beers daily.
- On physical examination, temperature is 38.5 °C (101.3 °F); blood pressure is 120/50 mm Hg, pulse rate is 100/min, and respiration rate is 24/min. Her sclerae are icteric and skin is jaundiced. Tender hepatomegaly is present. She has asterixis and is oriented to person only. No source of infection has been identified. Maddrey discriminant function score is 35.
  - Leukocyte count 14,000/μL, Prothrombin time 14.0 s, Alkaline phosphatase 200 U/L, Alanine aminotransferase 30 U/L, Aspartate aminotransferase 62 U/L, Total bilirubin 17.0 md/dL
- Ultrasound of the right upper quadrant shows hepatomegaly, minimal ascites, liver echogenicity, and no biliary stones or ductal dilation.
- Which of the following is the most appropriate management?

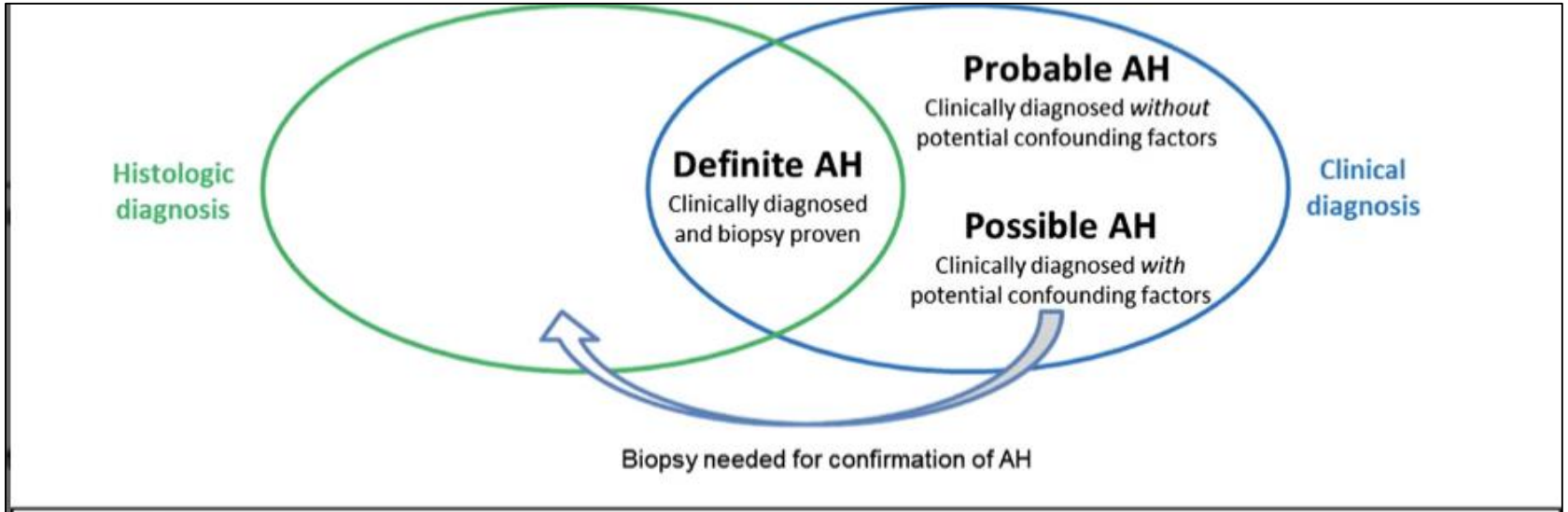
A. Cefepime

B. Liver biopsy

C. Pentoxifylline

D. Prednisolone

Treat alcoholic hepatitis



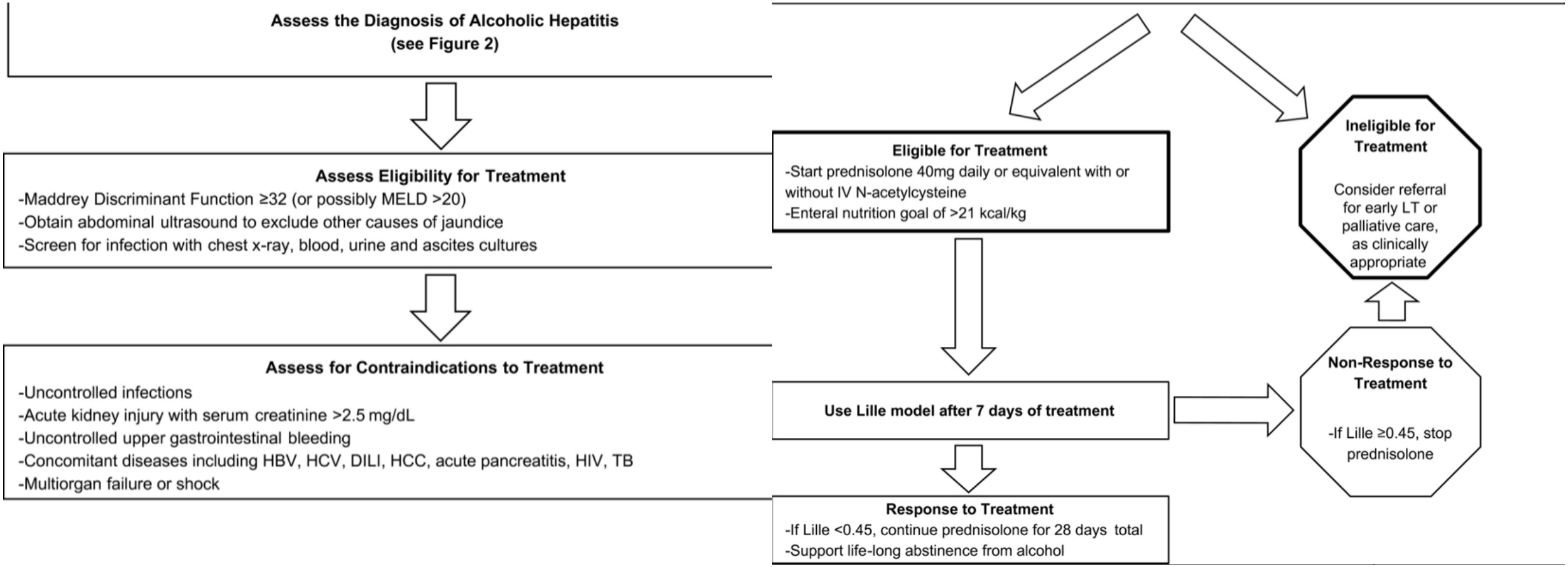
Clinical diagnosis of AH

- Onset of jaundice within prior 8 weeks
- Ongoing consumption of >40 (female) or 60 (male) g alcohol/day for ≥6 months, with <60 days of abstinence before the onset of jaundice
- AST >50, AST/ALT >1.5, and both values <400 IU/L
- Serum total bilirubin >3.0 mg/dL

Potential confounding factors

- Possible ischemic hepatitis (e.g., severe upper gastrointestinal bleed, hypotension, or cocaine use within 7 days) or metabolic liver disease (Wilson disease, alpha 1 antitrypsin deficiency)
- Possible drug-induced liver disease (suspect drug within 30 days of onset of jaundice)
- Uncertain alcohol use assessment (e.g., patient denies excessive alcohol use)
- Presence of atypical laboratory tests (e.g., AST <50 or >400 IU/L, AST/ALT <1.5), ANA >1:160 or SMA >1:80.

Treat alcoholic hepatitis



Question 6

- A 25-year-old woman is evaluated for a 6-month history of dyspepsia associated with early satiety, occasional epigastric burning, rare nausea, and postprandial bloating and belching. She has no melena or weight loss. She was born in the United States, has not recently traveled outside the country, and has no family history of gastrointestinal cancer.
- On physical examination, vital signs are normal. Mild diffuse tenderness to palpation of abdomen is noted.
- Complete blood count and results of liver function tests are normal.
- Which of the following is the most appropriate management?

A. Abdominal CT

B. Daily proton pump inhibitor

C. Helicobacter pylori serology

D. Stool antigen testing for *H. pylori*

E. Upper endoscopy

Question 6

- A 25-year-old woman is evaluated for a 6-month history of dyspepsia associated with early satiety, occasional epigastric burning, rare nausea, and postprandial bloating and belching. She has no melena or weight loss. She was born in the United States, has not recently traveled outside the country, and has no family history of gastrointestinal cancer.
- On physical examination, vital signs are normal. Mild diffuse tenderness to palpation of abdomen is noted.
- Complete blood count and results of liver function tests are normal.
- Which of the following is the most appropriate management?

A. Abdominal CT

B. Daily proton pump inhibitor

C. Helicobacter pylori serology

D. Stool antigen testing for *H. pylori*

E. Upper endoscopy

Diagnose *Helicobacter pylori* infection

- For patients with dyspepsia, a "test and treat" strategy for *Helicobacter pylori* infection is recommended
- Diagnosis:
  - Gastric biopsies during upper endoscopy or noninvasively by ^{13}C-urea breath, stool antigen, or serologic testing
  - ^{13}C-urea breath test and the monoclonal stool antigen test are preferred noninvasive tests because sensitivity and specificity both exceed 95% for active infection
  - Serologic cannot distinguish between active and previous infection
- Other answers
  - B, PPI should be trialed if *h. pylori* negative or if symptoms persist after *h. pylori* eradication
  - C, serologic testing does not distinguish b/w past and present infection
  - E, EGD not warranted as no alarm features
  - A, CT would be low yield and cost and radiation exposure not warranted

Question 7

- A 45-year-old man is evaluated after a positive result on fecal antigen testing for *Helicobacter pylori,* obtained 2 months after he completed eradication therapy for *H. pylori* gastritis, and duodenal ulcer documented by upper endoscopy. The patient was adherent to the initial eradication therapy, consisting of clarithromycin, amoxicillin, and omeprazole for 10 days. He is asymptomatic.
- Which of the following is the most appropriate next step in management?

A. Bismuth, tetracycline, metronidazole, and omeprazole for 14 days

B. Clarithromycin, amoxicillin, and omeprazole for 14 days

C. Clarithromycin, metronidazole, amoxicillin, and omeprazole for 14 days

D. Repeat fecal antigen test in 4 weeks

E. Repeat upper endoscopy and biopsy

Question 7

- A 45-year-old man is evaluated after a positive result on fecal antigen testing for *Helicobacter pylori,* obtained 2 months after he completed eradication therapy for *H. pylori* gastritis, and duodenal ulcer documented by upper endoscopy. The patient was adherent to the initial eradication therapy, consisting of clarithromycin, amoxicillin, and omeprazole for 10 days. He is asymptomatic.
- Which of the following is the most appropriate next step in management?

A. Bismuth, tetracycline, metronidazole, and omeprazole for 14 days

B. Clarithromycin, amoxicillin, and omeprazole for 14 days

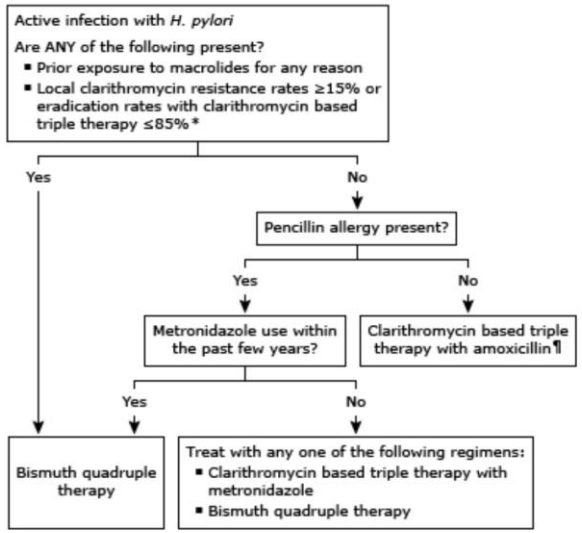
C. Clarithromycin, metronidazole, amoxicillin, and omeprazole for 14 days

D. Repeat fecal antigen test in 4 weeks

E. Repeat upper endoscopy and biopsy

Treat *Helicobacter pylori* infection persisting after initial therapy

Initial approach to antibiotic treatment for *Helicobacter pylori* infection



- Bismuth quadruple therapy consists of bismuth, metronidazole, tetracycline, and a PPI.
- Clarithromycin based triple therapy with amoxicillin consists of clarithromycin, amoxicillin, and a PPI.
- Clarithromycin based triple therapy with metronidazole consists of clarithromycin, metronidazole, and a PPI.

* In the United States, given the limited information on antimicrobial resistance rates, we generally assume clarithromycin resistance rates are ≥15% unless local data indicate otherwise.

- Confirm eradication 4 weeks after completion of antibiotics and PPI should be held 1-2 weeks before testing
- RFs for failure of initial regimen
  - Lack of adherence
  - Resistance


ACP Gastroenterology MONTHLY

ACP Gastroenterology Monthly | HIGHLIGHTS

MAY 27, 2022

U.S. antibiotic resistance rates for *H. pylori* appear high

A systematic review and meta-analysis of resistance patterns of *Helicobacter pylori* strains found that resistance to metronidazole, levofloxacin, and clarithromycin exceeds 30%.

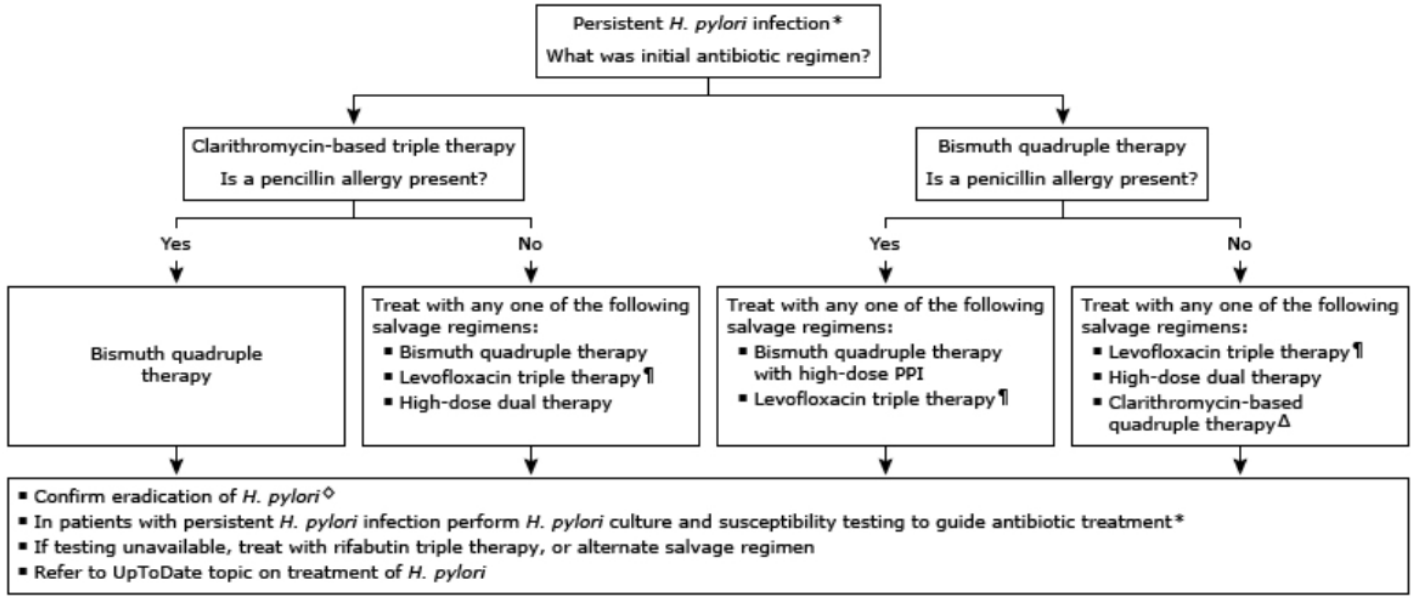
- Salvage therapy should not include antibiotics that have been previously taken
- 14-day course of therapy (rather than a 10-day course) should be used for persistent infection

Tests for eradication

- Urea breath testing
  - Based on the hydrolysis of urea by h. pylori to produce CO2 and ammonia
  - Takes 15-20 minutes
  - Sensitivity 88-95% and specificity 95-100%
- Stool antigen testing
  - Sens/spec comparable to UBT (94 and 97%, respectively)
- Do not use serology
  - Does not reliably distinguish between active and past infection

Salvage therapy

Approach to antibiotic treatment in patients with persistent *Helicobacter pylori* infection



- Clarithromycin-based triple therapy consists of clarithromycin, amoxicillin/metronidazole, and a PPI.
- Bismuth quadruple therapy consists of bismuth subsalicylate or bismuth subcitrate, metronidazole, tetracycline, and a PPI.
- Levofloxacin triple therapy consists of levofloxacin, amoxicillin/metronidazole, and a PPI.
- High-dose dual therapy consists of amoxicillin and a PPI.
- Rifabutin triple therapy consists of rifabutin, amoxicillin, and a PPI.
- Clarithromycin-based concomitant therapy consists of clarithromycin, amoxicillin, nitroimidazole (eg, metronidazole), and a PPI.

Question 8

- A 30-year-old woman is evaluated at a new-patient visit. She was born in Somalia and immigrated to the United States 2 years ago.
- On physical examination, vital signs and other findings are normal. Labs are below.

Alanine aminotransferase	24 U/L
Hepatitis B virus DNA	Undetected
Hepatitis B core antigen IgG antibody	Positive
Hepatitis B surface antibody	Negative
Hepatitis B surface antigen	Positive
Hepatitis B e antigen	Negative
Hepatitis B e IgG antibody	Positive

- Which of the following best describes this patient's phase of hepatitis B virus infection?

A. Immune active

B. Immune control

C. Immune tolerant

D. Reactivation

Question 8

- A 30-year-old woman is evaluated at a new-patient visit. She was born in Somalia and immigrated to the United States 2 years ago.
- On physical examination, vital signs and other findings are normal. Labs are below.

Alanine aminotransferase	24 U/L
Hepatitis B virus DNA	Undetected
Hepatitis B core antigen IgG antibody	Positive
Hepatitis B surface antibody	Negative
Hepatitis B surface antigen	Positive
Hepatitis B e antigen	Negative
Hepatitis B e IgG antibody	Positive

- Which of the following best describes this patient's phase of hepatitis B virus infection?

A. Immune active

B. Immune control

C. Immune tolerant

D. Reactivation

Categorize the phase of chronic hepatitis B virus infection

Interpretation of Hepatitis B Serology Test Results							
Interpretation	**HBsAg**	**Anti-HBs**	**Anti-HBc**	**HBeAg**	**Anti-HBe**	**HBV DNA (IU/mL)**	**ALT**
Immunized	-	+	-	-	-	-	Normal
Acute infection	+	-	+ (IgM)	+	-	+	Increased
Resolved infection	-	+	+ (IgG)	-	+/-	-	Normal
Chronic HBV infection							
Immune tolerant chronic HBV infection	+	-	+ (IgG)	+	-	>1 million	Normal or mildly elevated
Immune active chronic HBV infection	+	-	+ (IgG)	+	-	>2000 HBeAg negative; >20,000 HBeAg positive	Increased (intermittent or persistent)
Inactive chronic HBV infection/Immune control	+	-	+ (IgG)	-	+	<2000 (when measured every 3-4 months for 1 year)	Normal

Hepatitis B virus – who to treat

- Acute liver failure
- Immune-active phase
- Reactivation phase
- Cirrhosis
- Selected immunosuppressed patients

- Treatment goals:
  - Goal for patients in the HBeAg-positive immune-active phase are HBeAg loss with anti-HBe seroconversion and then 12 additional months of treatment
  - Goal for HBeAg-negative immune-active phase are HBV DNA suppression and ALT normalization; oral antiviral agents are generally continued indefinitely in this setting
  - HBsAg seroconversion rarely occurs with oral antiviral treatment and therefore is not a treatment goal
  - Patients with cirrhosis should continue oral antiviral medications indefinitely

Hepatitis B virus – who to screen

Screening Recommendations for Chronic Hepatitis B

The U.S. Preventive Services Task Force and CDC recommend screening in:

Household contacts or sex partners of persons with hepatitis B

Injection drug users

Men who have sex with men

Persons born in regions with ≥ 2% prevalence of chronic hepatitis B (e.g., Africa, Asia, Eastern Europe)

Persons born in the United States who were not vaccinated as infants and whose parents are from regions with ≥ 8% prevalence of chronic hepatitis B

Persons who are positive for HIV

Pregnant women

The CDC additionally recommends screening in:

Donors of blood, plasma, organs, tissue, or semen

Infants born to mothers positive for hepatitis B surface antigen

Persons on hemodialysis, cytotoxic therapy, or immunosuppressive therapy

Persons who are sources of blood or bodily fluids that may expose others, requiring postexposure prophylaxis

Persons with elevated alanine or aspartate transaminase levels of unknown etiology

AAFP, 2019

Question 9

- A 65-year-old woman is evaluated in the emergency department for a 2-day history of left-lower-quadrant abdominal pain and constipation. She reports having had nausea for 1 day but no vomiting. She has hypertension and type 2 diabetes mellitus and underwent renal transplantation 2 years ago. Current medications are prednisone, mycophenolate mofetil, enalapril, and insulin.
- On physical examination, temperature is 37.8 °C (100.1 °F); other vital signs are normal. Abdominal examination reveals left-lower-quadrant tenderness, with no guarding or mass.
- Labs: hgb 13 g/dL, leukocyte count 11,000/µL , BUN 22 mg/dL, Cr 1.2 mg/dL
- Contrast-enhanced CT scans of the abdomen and pelvis show diverticula in the sigmoid colon with bowel wall thickening and pericolonic mesenteric fat stranding. There is no abscess, obstruction, or fistula.
- Which of the following is the most appropriate management?

    A. Colonoscopy now

    B. Discharge to home with oral antibiotics

    C. Hospitalization for intravenous antibiotics

    D. Surgery

Question 9

- A 65-year-old woman is evaluated in the emergency department for a 2-day history of left-lower-quadrant abdominal pain and constipation. She reports having had nausea for 1 day but no vomiting. She has hypertension and type 2 diabetes mellitus and underwent renal transplantation 2 years ago. Current medications are prednisone, mycophenolate mofetil, enalapril, and insulin.
- On physical examination, temperature is 37.8 °C (100.1 °F); other vital signs are normal. Abdominal examination reveals left-lower-quadrant tenderness, with no guarding or mass.
- Labs: hgb 13 g/dL, leukocyte count 11,000/µL , BUN 22 mg/dL, Cr 1.2 mg/dL
- Contrast-enhanced CT scans of the abdomen and pelvis show diverticula in the sigmoid colon with bowel wall thickening and pericolonic mesenteric fat stranding. There is no abscess, obstruction, or fistula.
- Which of the following is the most appropriate management?

    A. Colonoscopy now

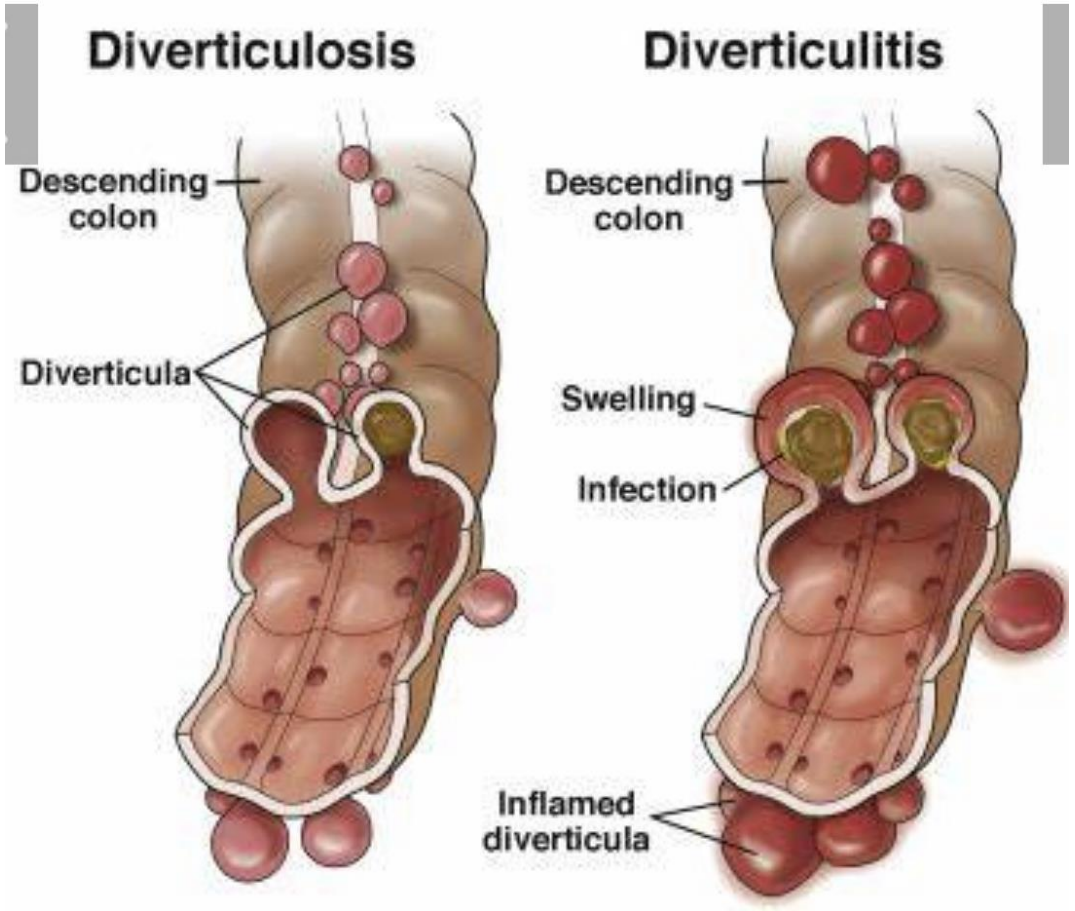
    B. Discharge to home with oral antibiotics

    C. Hospitalization for intravenous antibiotics

    D. Surgery

Treat acute diverticulitis with hospitalization and intravenous antibiotics

- Uncomplicated diverticulitis is treated with oral antibiotics and a liquid diet
  - More data on forgoing antibiotics in uncomplicated cases
- Hospitalization and IV antibiotics are required to treat acute diverticulitis in patients who cannot tolerate an oral diet; patients with severe comorbidities, advanced age, or immunosuppression; and those in whom oral antibiotics have been ineffective



Other answers

- A; Colonoscopy now is contraindicated in acute diverticulitis; guidelines recommend colonoscopy after the resolution of acute diverticulitis if a high-quality examination has not been performed recently
- B; Hospitalization and intravenous antibiotics are recommended for patients at higher risk for poor outcomes, such as patients with perforation, large abscesses, sepsis, or bowel obstruction or those who cannot tolerate liquid intake or have significant comorbid disease
- D; Surgery is indicated for patients presenting with, or who develop, peritonitis or persistent sepsis. Surgery is not necessary in this patient with uncomplicated diverticulitis

Question 10

- A 25-year-old woman is evaluated for frequent watery, nonbloody diarrhea that began 5 years ago. She has a 2-year history of arthralgia and headaches. Diarrhea, arthralgia, and headaches resolved after the patient started a gluten-free diet 1 year ago. Symptoms occasionally return if she accidentally consumes gluten.
- Vital signs and other physical examination findings are normal.
- Laboratory studies show a normal tissue transglutaminase IgA level. Results of testing for haplotypes *HLA-DQ2* and *HLA-DQ8*are positive for *HLA-DQ2*.
- Which of the following is the most appropriate diagnostic test to perform next?

  A. Clostridioides difficile testing

  B. Repeat HLA testing after resumption of a gluten-containing diet

  C. Repeat tissue transglutaminase IgA measurement after resumption of gluten-containing diet

  D. Upper endoscopy and biopsy

Question 10

- A 25-year-old woman is evaluated for frequent watery, nonbloody diarrhea that began 5 years ago. She has a 2-year history of arthralgia and headaches. Diarrhea, arthralgia, and headaches resolved after the patient started a gluten-free diet 1 year ago. Symptoms occasionally return if she accidentally consumes gluten.
- Vital signs and other physical examination findings are normal.
- Laboratory studies show a normal tissue transglutaminase IgA level. Results of testing for haplotypes *HLA-DQ2* and *HLA-DQ8*are positive for *HLA-DQ2*.
- Which of the following is the most appropriate diagnostic test to perform next?

  A. Clostridioides difficile testing

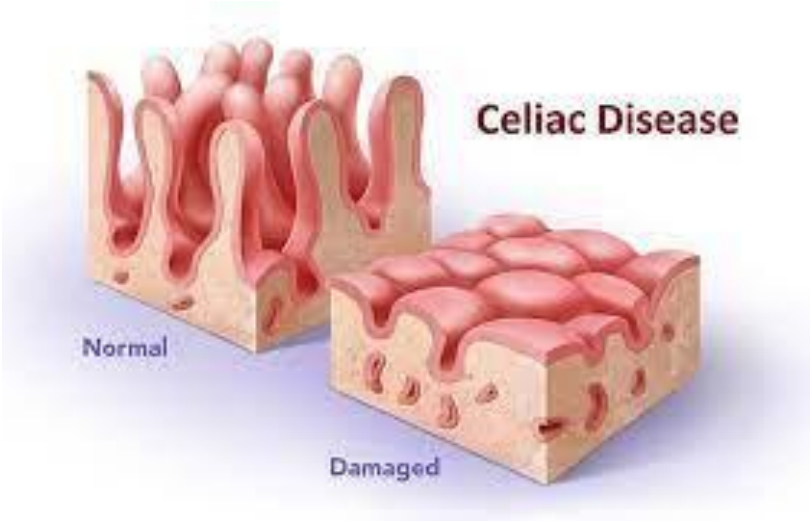
  B. Repeat HLA testing after resumption of a gluten-containing diet

  C. Repeat tissue transglutaminase IgA measurement after resumption of gluten-containing diet

  D. Upper endoscopy and biopsy

Evaluate for possible celiac disease

- Serologic testing for celiac disease must occur while the patient is on a gluten-containing diet
- Genetic testing for celiac disease with *HLA-DQ2* or *HLA-DQ8* can rule out celiac disease but not confirm it
- Celiac disease must first be excluded before nonceliac gluten sensitivity is diagnosed



- Other answers:
  - A, *Clostridioides difficile* colitis - response of the patient's symptoms to a gluten-free diet make this diagnosis less likely
  - B, most patients with celiac disease carry *HLA-DQ2* or *HLA-DQ8* genetic susceptibility; however, these genes can be found in up to 40% of the general population; can rule out disease but not confirm
  - D; a positive result on a serologic test for celiac disease requires upper endoscopy with biopsies from the duodenum to confirm the disease; findings on biopsy may be normal in a patient with celiac disease who has been on GFD

Diagnostic algorithm

- Step 1: IgA tTG with total IgA
  - If suggestive -> small bowel biopsy
  - If IgA deficiency -> IgG deamidated gliadin peptide or tTG and if suggestive -> small bowel biopsy
- If patient is already on a GFD, can get false negative test results

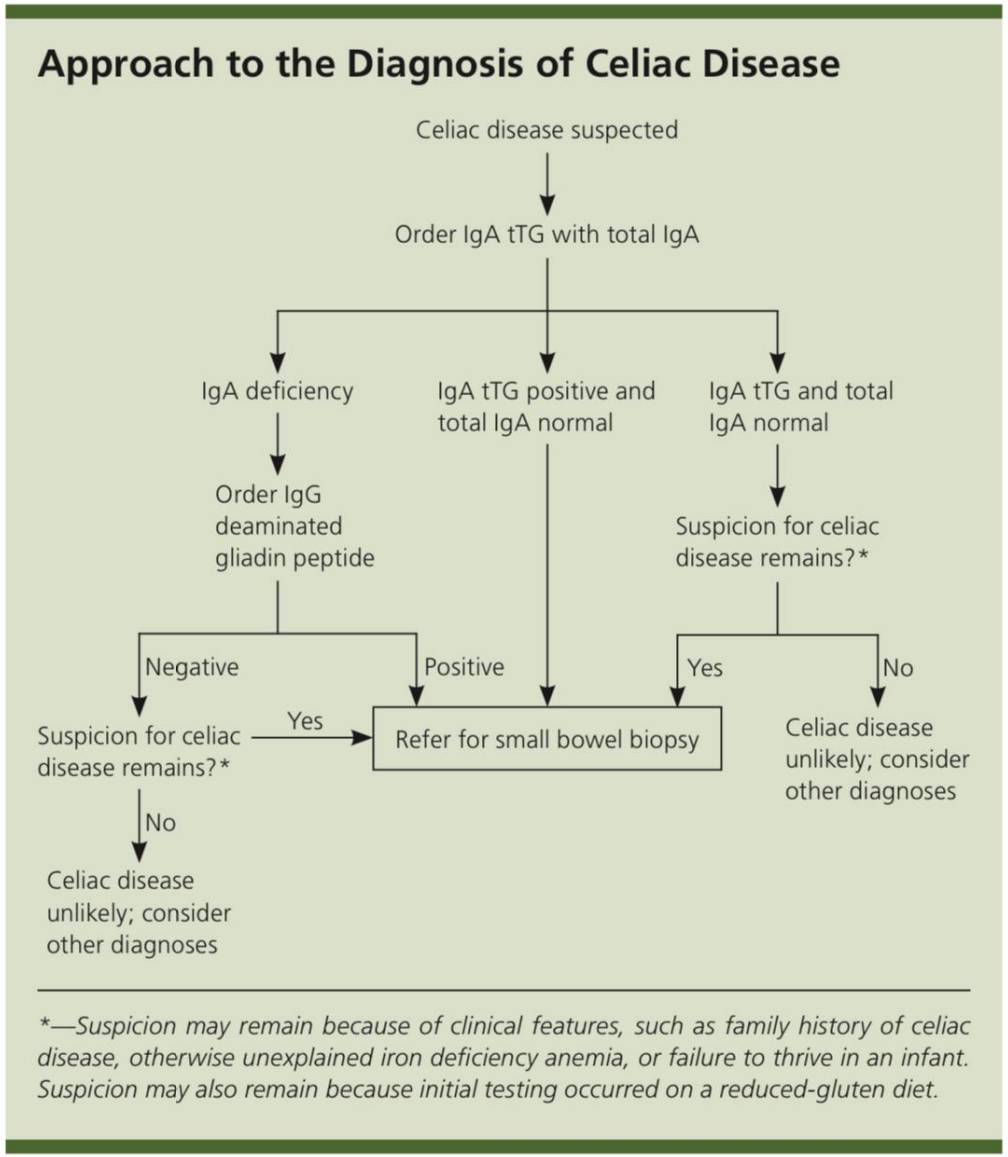


Figure 1. Algorithm for the diagnosis of celiac disease. (Ig = immunoglobulin; tTG = tissue transglutaminase.)

AAFP, 2014

Question 11

- A 55-year-old man is evaluated for gastroesophageal reflux disease (GERD). He has a 20-year history of GERD, which is well controlled with medication. He is an active cigarette smoker with a 30–pack-year history. He does not drink alcohol. A chest radiograph obtained 2 years ago for the evaluation of fever and cough revealed a hiatal hernia. His only medication is omeprazole.
- On physical examination, vital signs are normal. BMI is 37. Other than abdominal obesity, the physical examination is normal.
- Which of the following is the most appropriate initial management?

    A. Bariatric surgery

    B. Esophageal motility study

    C. Fundoplication

    D. Upper endoscopy

Question 11

- A 55-year-old man is evaluated for gastroesophageal reflux disease (GERD). He has a 20-year history of GERD, which is well controlled with medication. He is an active cigarette smoker with a 30–pack-year history. He does not drink alcohol. A chest radiograph obtained 2 years ago for the evaluation of fever and cough revealed a hiatal hernia. His only medication is omeprazole.
- On physical examination, vital signs are normal. BMI is 37. Other than abdominal obesity, the physical examination is normal.
- Which of the following is the most appropriate initial management?

A. Bariatric surgery

B. Esophageal motility study

C. Fundoplication

D. Upper endoscopy

Screen for Barrett esophagus

- Barrett esophagus is the replacement of the squamous epithelium with metaplastic columnar epithelium in the esophagus
- Precursor lesion for esophageal cancer
- Risk factors associated with Barrett esophagus include chronic GERD (for >5 years), age older than 50 years, male sex, tobacco use, and obesity
- Every 3-5 years if no dysplasia

- Annual cancer risks:
  - 0.2% to 0.5% per year for Barrett esophagus without dysplasia
  - 0.7% per year for Barrett esophagus with low-grade dysplasia
  - 7% per year for Barrett esophagus with high-grade dysplasia

Barrett esophagus

Table 1. Recommendations for Endoscopic Screening and Surveillance for Barrett Esophagus

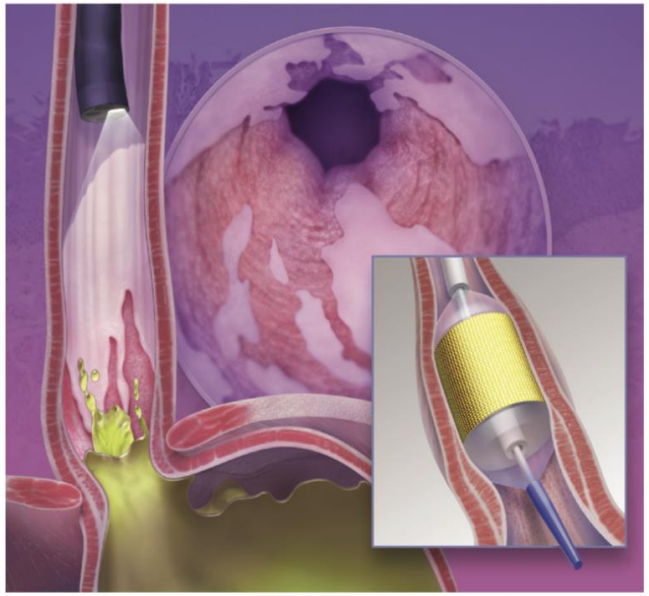
Indications	*American College of Gastroenterology*[18]	*American College of Physicians*[19]	*American Gastroenterological Association*[20]	*American Society for Gastrointestinal Endoscopy*[21]
GERD with alarm signs* or persistent symptoms despite proton pump inhibitor therapy	Endoscopy	Endoscopy	Endoscopy	Endoscopy
GERD with multiple risk factors	Use of endoscopy in high-risk patients should be individualized	Consider endoscopy	Screening endoscopy (weak recommendation, moderate-quality evidence)	Consider endoscopy
GERD without multiple risk factors	Endoscopy not recommended	Endoscopy not recommended	Endoscopy not recommended	Endoscopy not recommended
Dysplasia	None: twice in first year, then every three years Low-grade: six months, then annually until two consecutive negative tests High-grade (if not eradicated): every three months	None: no more than every three to five years Dysplasia: more frequently	None: three to five years Low-grade: every six to 12 months High-grade (if not eradicated): every three months	None: twice in first year, then every three years if no progression Low-grade: six and 12 months, then annually High-grade (if not eradicated): every three months

GERD = gastroesophageal reflux disease.

**—Alarm signs include weight loss, anemia, evidence of bleeding or obstruction, dysphagia, and symptoms that persist despite adequate proton pump inhibitor therapy.*

Information from references 18 through 21.

- Risk factors:
  - a . Chronic (>5 years) GERD symptoms
  - b . Advancing age (>50 years)
  - c . Male gender
  - d . Tobacco usage
  - e . Central obesity
  - f . Caucasian race



Question 12

- A 68-year-old woman is evaluated in the emergency department for sudden-onset, crampy, left-lower-quadrant abdominal pain followed several hours later by passage of bright red blood per rectum. She has hypertension and hyperlipidemia. Current medications are lisinopril and simvastatin.
- On physical examination, vital signs are normal. Abdomen is soft and nondistended, with left-lower-quadrant tenderness and no rebound or guarding. Anorectal examination shows scant bright red blood in the rectal vault.
- Laboratory testing shows a leukocyte count of 12,000/µL (12×10^9/L) and a blood urea nitrogen level of 24 mg/dL (8.5 mmol/L); other routine laboratory results are normal.
- Abdominal and pelvic CT scan shows only segmental thickening of the descending and sigmoid colon.
- Which of the following is the most likely diagnosis?

    A. Acute diverticulitis

    B. Clostridioides difficile infection

    C. Colonic ischemia

    D. Ulcerative colitis

Question 12

- A 68-year-old woman is evaluated in the emergency department for sudden-onset, crampy, left-lower-quadrant abdominal pain followed several hours later by passage of bright red blood per rectum. She has hypertension and hyperlipidemia. Current medications are lisinopril and simvastatin.
- On physical examination, vital signs are normal. Abdomen is soft and nondistended, with left-lower-quadrant tenderness and no rebound or guarding. Anorectal examination shows scant bright red blood in the rectal vault.
- Laboratory testing shows a leukocyte count of 12,000/µL (12×10^9/L) and a blood urea nitrogen level of 24 mg/dL (8.5 mmol/L); other routine laboratory results are normal.
- Abdominal and pelvic CT scan shows only segmental thickening of the descending and sigmoid colon.
- Which of the following is the most likely diagnosis?

    A. Acute diverticulitis

    B. Clostridioides difficile infection

    C. Colonic ischemia

    D. Ulcerative colitis

Diagnose colonic ischemia

- Most common form of ischemic bowel disease
- Nonocclusive low-flow state in microvessels
- RFs: age (>60 years), female sex, vasoconstrictive and antihypertension medications, constipation, and thrombophilia
- Abrupt onset of mild to moderate lower abdominal discomfort and cramping, followed within 24 hours by hematochezia
- Abdominal CT to assess the severity, phase, and distribution; nonspecific findings, including segmental bowel wall thickening and pericolonic fat stranding, often in the distribution of the “watershed” areas of the colon (splenic flexure and rectosigmoid junction)
- Colonoscopy is the primary method to diagnose colonic ischemia, usually after CT has shown a thickened segment of colon

Gastrointestinal Ischemic Syndromes

Problem	Cause	Symptoms	Diagnosis	Treatment
Acute mesenteric ischemia	Arterial embolus (most common)	Severe periumbilical pain; pain is out of proportion to exam	CT mesenteric angiography	Urgent laparotomy if peritoneal signs; embolectomy or thrombectomy
Chronic mesenteric ischemia	Mesenteric atherosclerosis	Postprandial pain, sitophobia, weight loss	CT or MR mesenteric angiography	Angioplasty with stenting or surgical bypass
Colonic ischemia	Low-flow states or drugs	Mild-to-moderate left-lower-quadrant pain and bloody diarrhea	Abdominal CT; colonoscopy with biopsy: segmental mucosal injury	Supportive care with intravenous fluids and bowel rest

Question 13

- A 42-year-old man is evaluated after screening laboratory tests obtained before initiation of statin therapy revealed isolated elevated aminotransferase levels. He is asymptomatic. His only active medical condition is type 2 diabetes mellitus. Medications are metformin and moderate-intensity atorvastatin.
- On physical examination, vital signs and other findings are normal. Waist circumference is normal. BMI is 23.

Laboratory studies:	
Hemoglobin	18 g/dL (180 g/L)
Alanine aminotransferase	43 U/L
Aspartate aminotransferase	56 U/L
Ferritin	1200 ng/mL (1200 µg/L)

- Which of the following is the most appropriate diagnostic test to perform next?

  A. α_1-Antitrypsin antibody measurement

  B. Liver biopsy

  C. Transferrin saturation measurement

  D. Urine porphyrin measurement

Question 13

- A 42-year-old man is evaluated after screening laboratory tests obtained before initiation of statin therapy revealed isolated elevated aminotransferase levels. He is asymptomatic. His only active medical condition is type 2 diabetes mellitus. Medications are metformin and moderate-intensity atorvastatin.
- On physical examination, vital signs and other findings are normal. Waist circumference is normal. BMI is 23.

Laboratory studies:	
Hemoglobin	18 g/dL (180 g/L)
Alanine aminotransferase	43 U/L
Aspartate aminotransferase	56 U/L
Ferritin	1200 ng/mL (1200 µg/L)

- Which of the following is the most appropriate diagnostic test to perform next?

  A. α_1-Antitrypsin antibody measurement

  B. Liver biopsy

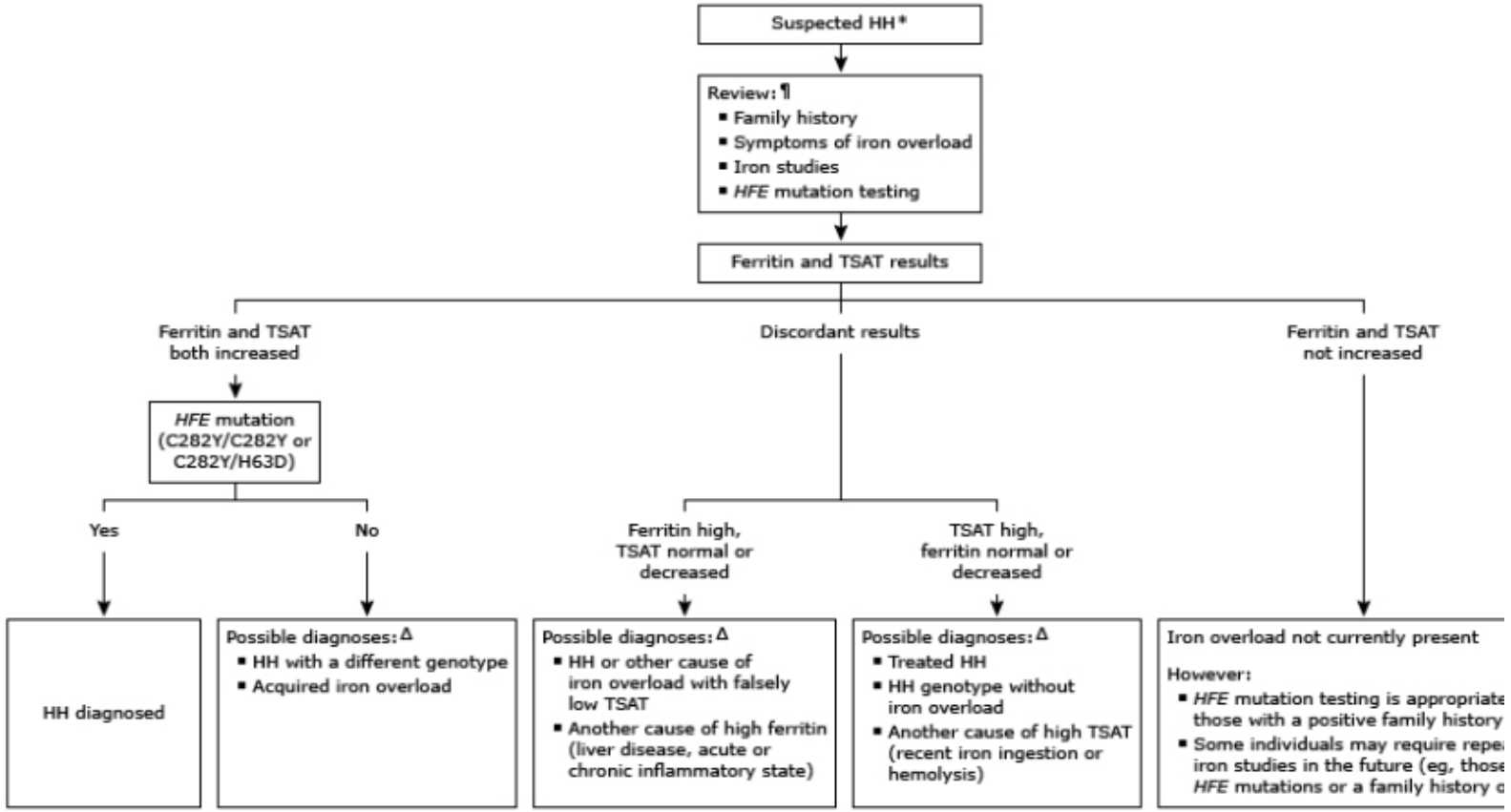
  C. Transferrin saturation measurement

  D. Urine porphyrin measurement

Diagnose hereditary hemochromatosis

Algorithm for diagnosing hereditary hemochromatosis (HH)

Iron studies and *HFE* genotype interpretation:
High ferritin:
▪ Women: >150 ng/mL (>337 pmol/L)
▪ Men: >200 ng/mL (>449 pmol/L)
High TSAT:
▪ >45%
HFE genotypes strongly associated with iron overload:
▪ C282Y/C282Y
▪ C282Y/H63D
Notes:
▪ Specific cutoff values used may vary by testing laboratories and professional societies.
▪ Ferritin is an acute phase reactant and may be elevated in inflammatory states, generally no more than 2 to 3 times increased over the upper limit of normal. Ferritin >1000 ng/mL (>2247 pmol/L) is associated with the greatest risk of organ damage, but some individuals with lower values (eg, 500 to 1000 ng/mL) may have organ damage.
▪ TSAT is a ratio of iron to transferrin and may be affected by recent iron ingestion or an episode of hemolysis.
▪ *HFE* genotypes other than those listed above (eg, heterozygous mutation, homozygous H63D/H63D, genotypes involving S65D) are less frequent in patients with HH and do not have as great a risk for iron overload (H63D/H63D, <10%; heterozygotes for any single mutation, similar to the general population). The interpretation of these other genotypes in individuals with significant iron overload is individualized.



Question 14

- A 33-year-old woman is evaluated during her annual follow-up visit. She is asymptomatic. She has a 2-year history of left-sided ulcerative colitis, now in remission. Current medications are an oral 5-aminosalicylate and azathioprine. All immunizations are up to date, and depression and anxiety screening results are negative. Skin cancer screening was performed 6 months ago. Her last cervical cancer screening was 1 year ago.
- Which of the following is the most appropriate health maintenance screening test to perform?

    A. Anal cancer screening

    B. Cervical cancer screening

    C. Colonoscopy

    D. Dual-energy x-ray absorptiometry

Question 14

- A 33-year-old woman is evaluated during her annual follow-up visit. She is asymptomatic. She has a 2-year history of left-sided ulcerative colitis, now in remission. Current medications are an oral 5-aminosalicylate and azathioprine. All immunizations are up to date, and depression and anxiety screening results are negative. Skin cancer screening was performed 6 months ago. Her last cervical cancer screening was 1 year ago.
- Which of the following is the most appropriate health maintenance screening test to perform?

A. Anal cancer screening

B. Cervical cancer screening

C. Colonoscopy

D. Dual-energy x-ray absorptiometry

Provide appropriate health care maintenance in a patient with inflammatory bowel disease

- Women with IBD receiving immunosuppressive therapy should undergo Pap testing annually
- Patients with IBD should undergo yearly melanoma screening, and those receiving immunomodulators should be screened for nonmelanoma squamous cell cancer while using these agents
- Surveillance colonoscopy should be done 8 years after diagnosis and then every 1 to 2 years thereafter. Because this patient has had IBD for only 2 years, surveillance colonoscopy is not yet necessary
  - Except if concomitant PSC, in which case colonoscopy should be done at the time of PSC diagnoses
  - Patients with IBD + PSC have a threefold increase in CRC compared with those with IBD alone

Question 15

- A 27-year-old man is evaluated in the emergency department for inability to eat, drink, or swallow his saliva for the past 2 hours. Symptoms began while he was eating chicken, when he felt that the bolus did not move all the way down his esophagus. During evaluation, he begins to sense that he can swallow again. He has had several previous but less severe episodes of dysphagia. His other medical conditions include asthma, seasonal allergies, and episodes of eczema. Current medications are budesonide-formoterol inhaler and loratadine as needed.
- On physical examination, vital signs and other findings are normal.
- Upper endoscopy is scheduled.
- Which of the following is the most likely diagnosis?

    A. Barrett esophagus

    B. Eosinophilic esophagitis

    C. Esophageal cancer

    D. Peptic stricture

    E. Systemic sclerosis

Question 15

- A 27-year-old man is evaluated in the emergency department for inability to eat, drink, or swallow his saliva for the past 2 hours. Symptoms began while he was eating chicken, when he felt that the bolus did not move all the way down his esophagus. During evaluation, he begins to sense that he can swallow again. He has had several previous but less severe episodes of dysphagia. His other medical conditions include asthma, seasonal allergies, and episodes of eczema. Current medications are budesonide-formoterol inhaler and loratadine as needed.
- On physical examination, vital signs and other findings are normal.
- Upper endoscopy is scheduled.
- Which of the following is the most likely diagnosis?

    A. Barrett esophagus

    B. Eosinophilic esophagitis

    C. Esophageal cancer

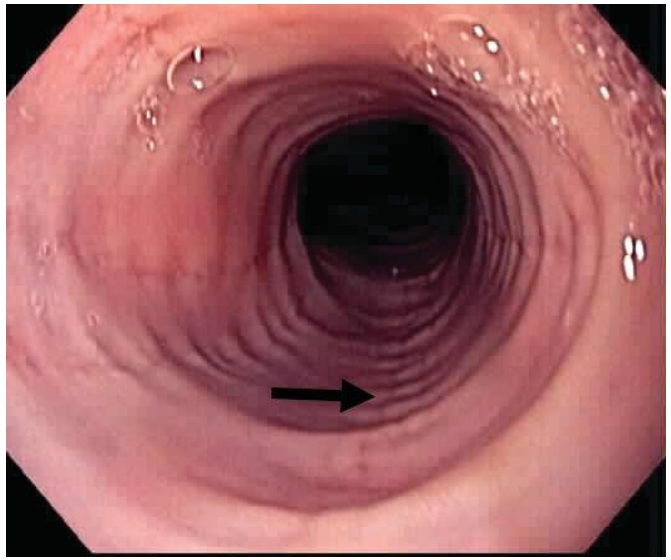
    D. Peptic stricture

    E. Systemic sclerosis

Diagnose eosinophilic esophagitis

- Eosinophilic esophagitis is a condition commonly associated with dysphagia and food bolus obstruction, usually found in younger men with atopic conditions
- Diagnostic criteria
  - Dysphagia
  - Esophageal biopsy specimens with eosinophil counts of at least 15/hpf
  - Exclusion of other causes of eosinophilia (GERD, hypereosinophilic syndrome, infections (fungal), AI and CTDs, Crohn, drug hypersensitivity reactions)

- Treatment options include a proton pump inhibitor, swallowed topical glucocorticoids (e.g., fluticasone, budesonide), and/or endoscopic dilation
- An empiric elimination diet may help treat and prevent flares in EoE



Question 16

- A 62-year-old man with compensated cirrhosis is evaluated at a follow-up visit. Six months ago, he was diagnosed with hepatitis C virus infection and treated with direct-acting antiviral agents. He experienced sustained viral response. Current liver ultrasound shows a small nodular liver compatible with cirrhosis and no masses.
- On physical examination, vital signs and other findings are normal.
- Which of the following is the most appropriate biannual surveillance modality?

A. Abdominal MRI

B. Contrast-enhanced CT

C. Ultrasonography of liver

D. No surveillance

Question 16

- A 62-year-old man with compensated cirrhosis is evaluated at a follow-up visit. Six months ago, he was diagnosed with hepatitis C virus infection and treated with direct-acting antiviral agents. He experienced sustained viral response. Current liver ultrasound shows a small nodular liver compatible with cirrhosis and no masses.
- On physical examination, vital signs and other findings are normal.
- Which of the following is the most appropriate biannual surveillance modality?

A. Abdominal MRI

B. Contrast-enhanced CT

C. Ultrasonography of liver

D. No surveillance

Screen for hepatocellular carcinoma in a patient with cirrhosis

- Patients with cirrhosis who have undergone virologic cure for hepatitis C virus infection should undergo surveillance for hepatocellular carcinoma every 6 months with US
- Plus or minus on the addition of AFP
- Alternative imaging modalities:
  - CT - involves contrast and cumulative radiation exposure; but more sensitive than US and used to determine the likelihood of HCC if nodule detected on US
  - MRI – can also be used to f/u on nodule detected on US with increased specificity

SURVEILLANCE TESTING

1A. The AASLD recommends surveillance of adults with cirrhosis because it improves overall survival (OS).

Quality/Certainty of Evidence: Moderate
Strength of Recommendation: Strong

1B. The AASLD recommends surveillance using US, with or without AFP, every 6 months.

Quality/Certainty of Evidence: Low
Strength of Recommendation: Conditional

1C. The AASLD recommends not performing surveillance of patients with cirrhosis with Child's class C unless they are on the transplant waiting list, given the low anticipated survival for patients with Child's C cirrhosis.

AASLD, 2018

Question 17

- A 55-year-old man is evaluated at follow-up for iron deficiency anemia and positive result on stool guaiac testing. Despite excellent preparation and visualization, upper endoscopy and colonoscopy performed last week did not find the source of bleeding. He has no melena, hematochezia, or localizing symptoms. He has no other medical conditions and takes no medications.
- Vital signs and other findings on physical examination are normal.
- Which of the following is the most appropriate diagnostic test to perform next?

    A. CT angiography

    B. Barium small-bowel follow-through

    C. Tagged red cell scintigraphy

    D. Video capsule endoscopy

Question 17

- A 55-year-old man is evaluated at follow-up for iron deficiency anemia and positive result on stool guaiac testing. Despite excellent preparation and visualization, upper endoscopy and colonoscopy performed last week did not find the source of bleeding. He has no melena, hematochezia, or localizing symptoms. He has no other medical conditions and takes no medications.
- Vital signs and other findings on physical examination are normal.
- Which of the following is the most appropriate diagnostic test to perform next?

A. CT angiography

B. Barium small-bowel follow-through

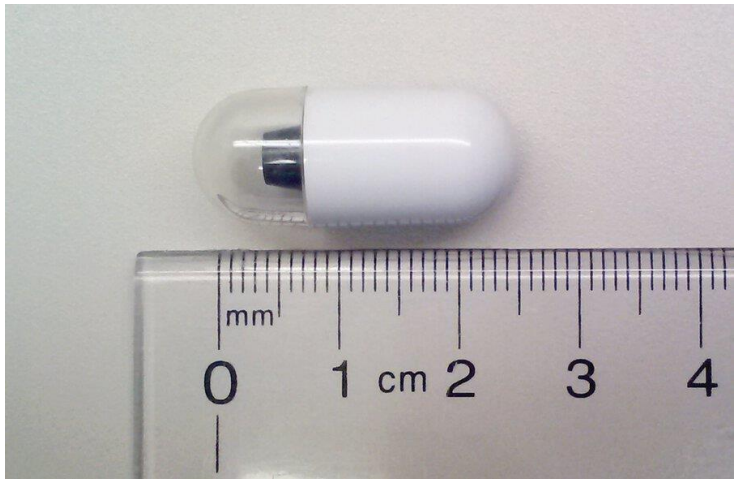
C. Tagged red cell scintigraphy

D. Video capsule endoscopy

Diagnose small-bowel bleeding

- Up to 10% of GI bleeding; between the ampulla of Vater and ileocecal valve
- Angiodysplasia is the #1 cause
- 1st step is to repeat upper endoscopy and/or colonoscopy if initial studies were of low quality
- Capsule endoscopy is the test of choice for stable patients
- CT angiography is the test of choice for hemodynamically unstable patients or for those with brisk small-bowel bleeding

- Therapy
  - For active bleeding on CT angiography or red blood cell scanning, angiography with embolization
  - When a bleeding source is identified on video capsule endoscopy or CT angiography, device-assisted enteroscopy (single-balloon system, double-balloon system, or spiral enteroscopy) or push enteroscopy should be performed



Question 18

- A 64-year-old man is evaluated in the hospital 2 hours after diagnosis of a bleeding gastric ulcer and treatment with endoscopic clips. He also has atrial fibrillation, hypertension, and hyperlipidemia. Outpatient medications are warfarin, rosuvastatin, losartan, and hydrochlorothiazide. On hospitalization, intravenous omeprazole was initiated and warfarin was withheld.
- On physical examination, vital signs are stable. Heart rhythm is irregularly irregular. The remainder of the examination is normal.
- Laboratory studies reveal a hemoglobin level of 8 g/dL (80 g/L) and an INR of 2.2.
- Which of the following is the most appropriate management?

    A. Begin intravenous heparin bridging therapy

    B. Discontinue warfarin permanently

    C. Reinitiate warfarin after 30 days

    D. Reinitiate warfarin within 7 days

Question 18

- A 64-year-old man is evaluated in the hospital 2 hours after diagnosis of a bleeding gastric ulcer and treatment with endoscopic clips. He also has atrial fibrillation, hypertension, and hyperlipidemia. Outpatient medications are warfarin, rosuvastatin, losartan, and hydrochlorothiazide. On hospitalization, intravenous omeprazole was initiated and warfarin was withheld.
- On physical examination, vital signs are stable. Heart rhythm is irregularly irregular. The remainder of the examination is normal.
- Laboratory studies reveal a hemoglobin level of 8 g/dL (80 g/L) and an INR of 2.2.
- Which of the following is the most appropriate management?

A. Begin intravenous heparin bridging therapy

B. Discontinue warfarin permanently

C. Reinitiate warfarin after 30 days

D. Reinitiate warfarin within 7 days

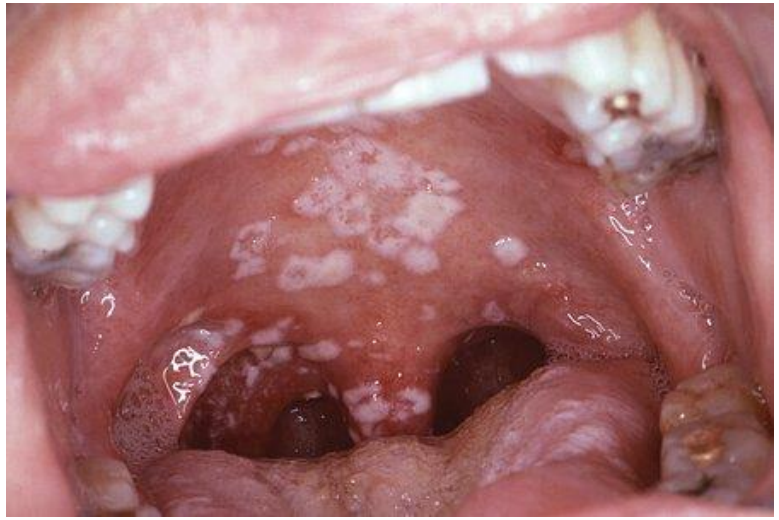
Manage upper gastrointestinal bleeding in a patient taking anticoagulant therapy for atrial fibrillation

- If hemostasis is achieved, anticoagulants should be restarted as soon as possible; the outcome of a thrombotic event is usually far worse than recurrent gastrointestinal bleeding
- Minimizes risk for 90-day thrombosis, without increasing risk for 90-day recurrent gastrointestinal bleeding

- Other answers:
  - A; bridging only indicated if patient is at high thrombotic risk – mechanical MV, very high CHA_2DS_2-VASc
  - B and C; anticoagulation indicated given CHA_2DS_2-VASc and delay of 30 days associated with increased risk for thrombosis and death without a significant increase in risk for recurrent gastrointestinal bleeding

Question 19

- A 43-year-old man is evaluated for difficulty with swallowing and painful swallowing. The pain began approximately 5 days ago and occurs with both solids and liquids. He has recently diagnosed HIV infection and is receiving antiretroviral therapy.
- On physical examination, vital signs are normal. Oropharynx findings are shown.
- The remainder of the examination is normal.
- Previous laboratory studies revealed a CD4 cell count of 128/µL.
- Which of the following is the most appropriate treatment?



A. Ganciclovir

B. Intravenous caspofungin

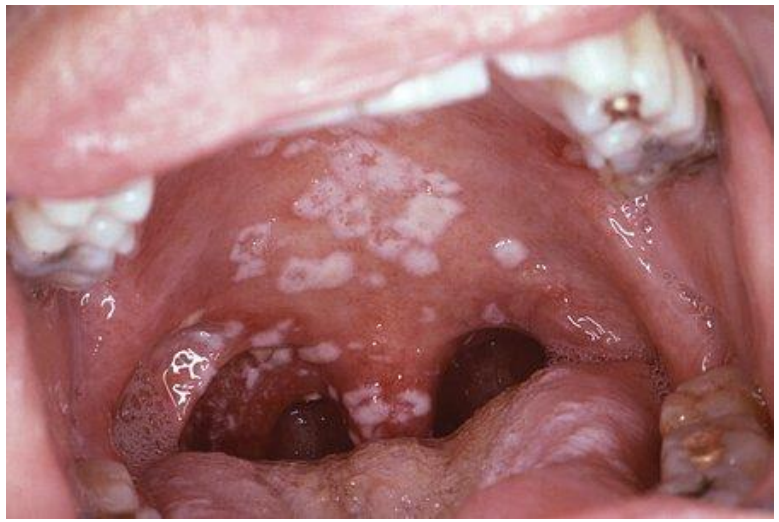
C. Oral fluconazole

D. Oral fluconazole and oral acyclovir

E. Upper endoscopy with biopsy and cytologic brushings

Question 19

- A 43-year-old man is evaluated for difficulty with swallowing and painful swallowing. The pain began approximately 5 days ago and occurs with both solids and liquids. He has recently diagnosed HIV infection and is receiving antiretroviral therapy.
- On physical examination, vital signs are normal. Oropharynx findings are shown.
- The remainder of the examination is normal.
- Previous laboratory studies revealed a CD4 cell count of 128/µL.
- Which of the following is the most appropriate treatment?



A. Ganciclovir

B. Intravenous caspofungin

C. Oral fluconazole

D. Oral fluconazole and oral acyclovir

E. Upper endoscopy with biopsy and cytologic brushings

Treat *Candida* esophagitis

- *Candida* esophagitis can be diagnosed clinically in patients with dysphagia and odynophagia, immunosuppression, and findings of oral thrush.
- *Candida* esophagitis can be treated with oral fluconazole

- Presence of oral candidiasis + painful swallowing suggests esophageal involvement
- Esophageal involvement requires systemic antifungal therapy
- Esophageal involvement warrants a prolonged course, 14-21 days of therapy, vs. 7-14 (for oropharyngeal candidiasis alone)
- Fluconazole 400 mg loading dose followed by 200 to 400 mg daily for 14-21 days
- Clinical response should be evident in a few days

Oropharyngeal candidiasis

- Oropharyngeal
  - HIV negative
    - Topical therapy
      - Clotrimazole troches, 5 times a day
      - Miconazole buccal tablets daily
      - Nystatin swish and swallow QID
    - Fluconazole 200 mg loading dose followed by 100 to 200 mg daily
  - HIV positive
    - Can trial topical for first episode of mild thrush
    - Systemic therapy for recurrent or moderate to severe

Question 20

- A 60-year-old woman is evaluated at follow-up for daily nausea, bloating and occasional vomiting after large meals, epigastric pain, and fullness. Upper endoscopy last week revealed some retained food in the stomach but no other significant findings, including *Helicobacter pylori* infection. She has a 10-year history of type 2 diabetes mellitus. Current medications are metformin and canagliflozin.
- The hemoglobin A_{1c} level is 9%.
- Which of the following is the most appropriate next step in management?

  A. Initiate erythromycin

  B. Initiate metoclopramide

  C. Obtain 4-hour gastric scintigraphy

  D. Obtain upper gastrointestinal barium series

  E. Repeat upper endoscopy once hemoglobin A_{1c} level is less than 7%

Question 20

- A 60-year-old woman is evaluated at follow-up for daily nausea, bloating and occasional vomiting after large meals, epigastric pain, and fullness. Upper endoscopy last week revealed some retained food in the stomach but no other significant findings, including *Helicobacter pylori* infection. She has a 10-year history of type 2 diabetes mellitus. Current medications are metformin and canagliflozin.
- The hemoglobin A_{1c} level is 9%.
- Which of the following is the most appropriate next step in management?

A. Initiate erythromycin

B. Initiate metoclopramide

C. Obtain 4-hour gastric scintigraphy

D. Obtain upper gastrointestinal barium series

E. Repeat upper endoscopy once hemoglobin A_{1c} level is less than 7%

Evaluate suspected gastroparesis

- Diagnosis of gastroparesis requires:
  - (1) the presence of compatible symptoms;
  - (2) the absence of mechanical outlet obstruction or ulceration; and
  - (3) objective evidence of delay in gastric emptying

- Commonly symptoms include early satiety, postprandial fullness, nausea, vomiting, upper abdominal pain, bloating and weight loss
- 3 tests can be used to objectively demonstrate delayed gastric emptying
  - 1. Gastric scintigraphy
  - 2. Wireless motility capsule
  - 3. Gastric emptying breath test

Testing modalities

Table 14. Diagnostic Tests Assessing Gastric Emptying			
Test Modality	**Advantages**	**Disadvantages**	**Clinical Pearls**
Gastric scintigraphy	Considered the gold standard	Radiation exposure (technetium radiolabeled meal) Requires specially trained personnel Cost	4-Hour study is most accurate Assesses solid emptying (liquid emptying is less accurate) Blood sugar should be less than 275 mg/dL (15.3 mmol/L)
Wireless motility capsule	Can also assess small bowel, colon, and whole gut transit No radiation Ambulatory study	Cost Can't be used with pacemaker or defibrillator Risk for capsule retention	Consider in a patient with suspected global motility problem Stop antisecretory agents as study relies on measurement of pH
Gastric emptying breath test	Low cost	Only recently commercially available Efficacy and accuracy limited to clinical trials	—

Other answers

- A and B; medical therapy should not be initiated until the diagnosis is confirmed
- D; UGI barium series can be used to exclude mechanical obstruction or other structural abnormalities, but this has already been done with upper endoscopy
- E; Better glycemic control will help, but no reason to repeat EGD after improvement in A_{1C}