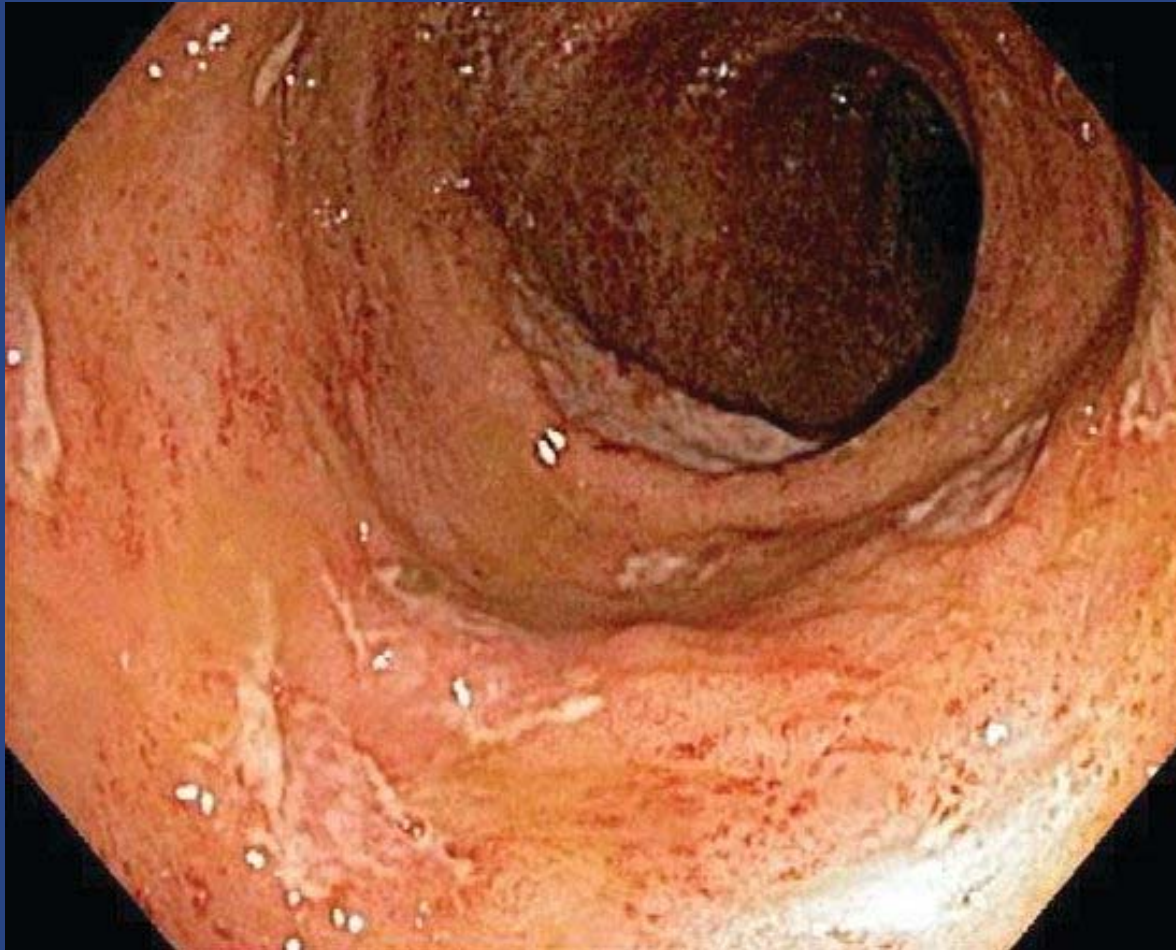


15.



# GI/Hepatology Test Review 2015

Brenda Shinar, MD

## Question 1.

- B; Empiric treatment with antibiotics

# Diagnose and treat small intestinal bacterial overgrowth (SIBO)

## Disorders associated with bacterial overgrowth

### Small intestinal stasis

#### Anatomic abnormalities

Small intestinal diverticulosis

Surgically created blind loops (end-to-side anastomosis)

Strictures (Crohn's disease, radiation, surgery)

#### Abnormal small intestinal motility

Diabetes mellitus

Scleroderma

Idiopathic intestinal pseudoobstruction

Radiation enteritis

Crohn's disease

## Symptoms of SIBO:

- Bloating, flatulence
- Abdominal pain
- Watery diarrhea
  - Dyspepsia
  - Weight loss
- Macrocytic anemia due to B12 malabsorption

## Diagnosis:

- Jejunal aspirate (gold standard)
- 14-C d-xylose breath test
- Hydrogen breath test

## Treatment 7-10 days:

Augmentin or Flagyl + Bactrim

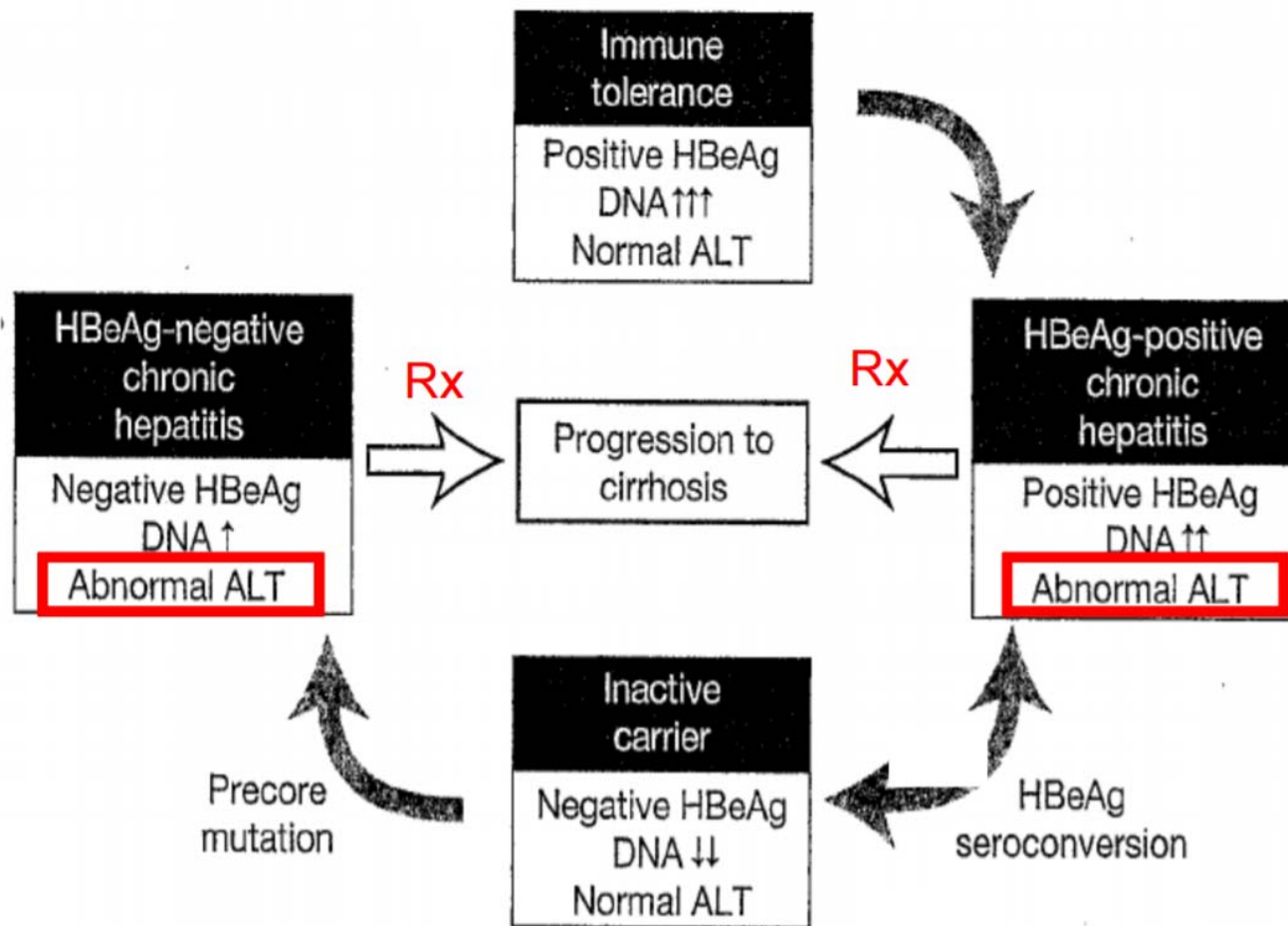
## Question 2.

- D. No treatment at this time

# Manage Hep B virus infection in a patient in the immune-tolerant phase

## Chronic Hepatitis B: The Four Phases

- For those who don't acquire sAb at 6 months or who obtain vertically...progression to chronicity
- Phase 1: Immune Tolerant
  - ▣ sAg: pos, eAg pos, HBV DNA High, LFTs normal
- Phase 2: "eAg positive" Chronic hepatitis B
  - ▣ sAg: pos, eAg pos, HBV DNA wherever, **LFTs abnormal**
- Phase 3: Chronic carrier
  - ▣ sAg: pos, eAg negative, eAb pos, HBV DNA Low, LFTs normal
- Phase 4: "eAg negative" Chronic hepatitis B
  - ▣ sAg: pos, eAg negative, eAb pos, HBV DNA wherever, **LFTs abnormal**



Hep B SAg	Anti HBs	IgM Anti-HBc	IgG Anti-HBc	HepB eAg	HepB Anti HBe	ALT	
+	-	+	-	+	-	HIGH	Acute HBV
+	-	-	+	+	-	HIGH	eAg pos CHB
+	-	-	+	-	+	LOW	Chronic Carrier
+	-	-	+	-	+	HIGH	eAg neg CHB
-	+	-	-	-	-	LOW	Immunized
-	+	-	+	-	+	LOW	Exposed



TABLE 5.

**Phases of Chronic HBV Infection**

<i>Phase</i>	<i>Tests</i>				<i>Histology</i>		
	<i>Alanine transaminase level</i>	<i>Hepatitis B e antigen</i>	<i>Hepatitis B e antibody</i>	<i>HBV DNA (IU per mL)</i>	<i>Inflammation</i>	<i>Fibrosis</i>	<i>Treatment</i>
Active	Elevated	+/-	+/-	> 20,000	Active	Variable	Indicated
Inactive	Normal	-	+	< 20,000	None	Minimal	Not indicated
Gray zone	Elevated or normal	+/-	+/-	Variable	Variable	Variable	May or may not be indicated
Immune tolerant	Normal	+	-	> 20,000	Minimal	Minimal	Not indicated

*HBV = hepatitis B virus; + = detectable; - = undetectable; +/- = may or may not be detectable.*

*Information from reference 22.*

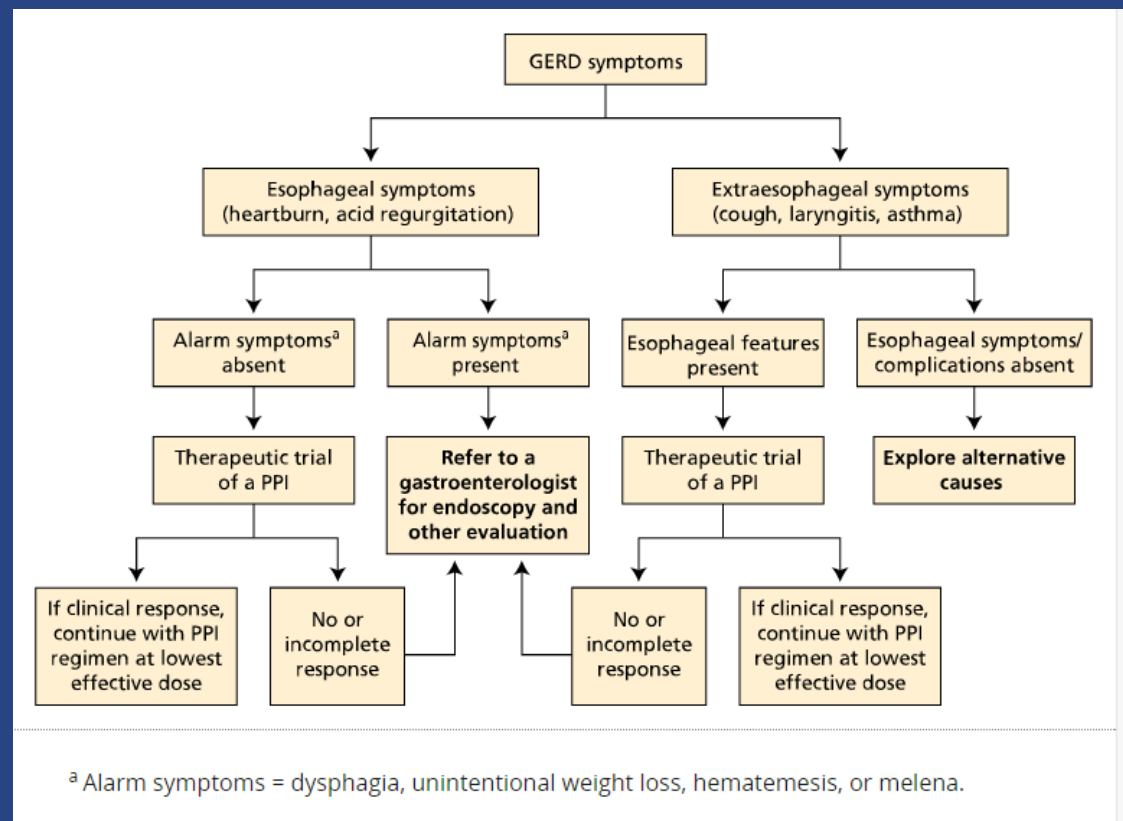
**IMMUNE TOLERANT PHASE**

During the immune tolerant phase of chronic HBV infection, HBeAg is positive, HBV DNA levels are high (greater than 20,000 IU per mL), and ALT levels are normal.<sup>18,22</sup> In this phase, there is minimal inflammation or fibrosis, and treatment is not indicated. Because there is a direct relationship between HBV DNA levels and the risk of hepatocellular carcinoma, patients in this phase should be monitored every six months with ultrasonography and serum  $\alpha$ -fetoprotein levels.<sup>2,23</sup> Patients should also be monitored every six to 12 months for reactivation.<sup>6</sup> Patients who convert to the active phase should be treated.

## Question 3.

- C; Trial of a proton pump inhibitor

# Manage gastroesophageal reflux disease with an empiric trial of a proton pump inhibitor

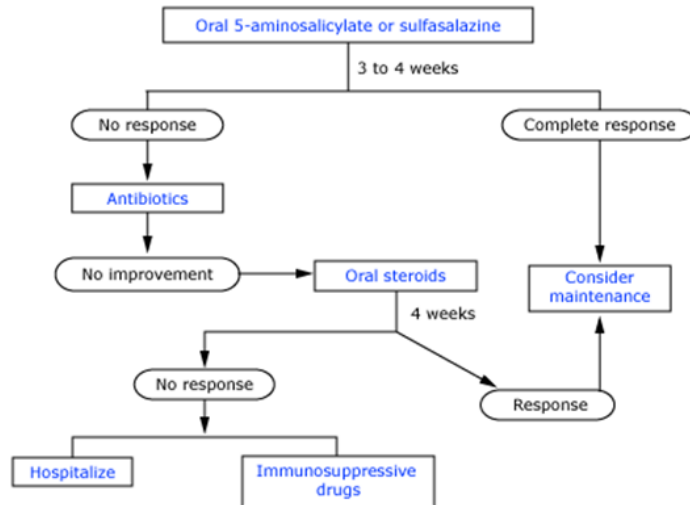


## Question 4.

- A; Certolizumab

# Treat Crohn disease in a pregnant patient

## Overview of the medical therapy of Crohn disease



Graphic 61081 Version 4.0

## SEVERITY SCORING FOR CROHN DISEASE:

- Crohn Disease Activity Index (CDAI)

**0-149 points:** Asymptomatic remission

**150-220 points:** Mildly to moderately active Crohn's disease

**221-450 points:** Moderately to severely active Crohn's disease

**451-1100 points:** Severely active to fulminant disease

## UNSAFE DRUGS FOR CROHN DISEASE IN PREGNANCY:

- Methotrexate
- Ciprofloxacin

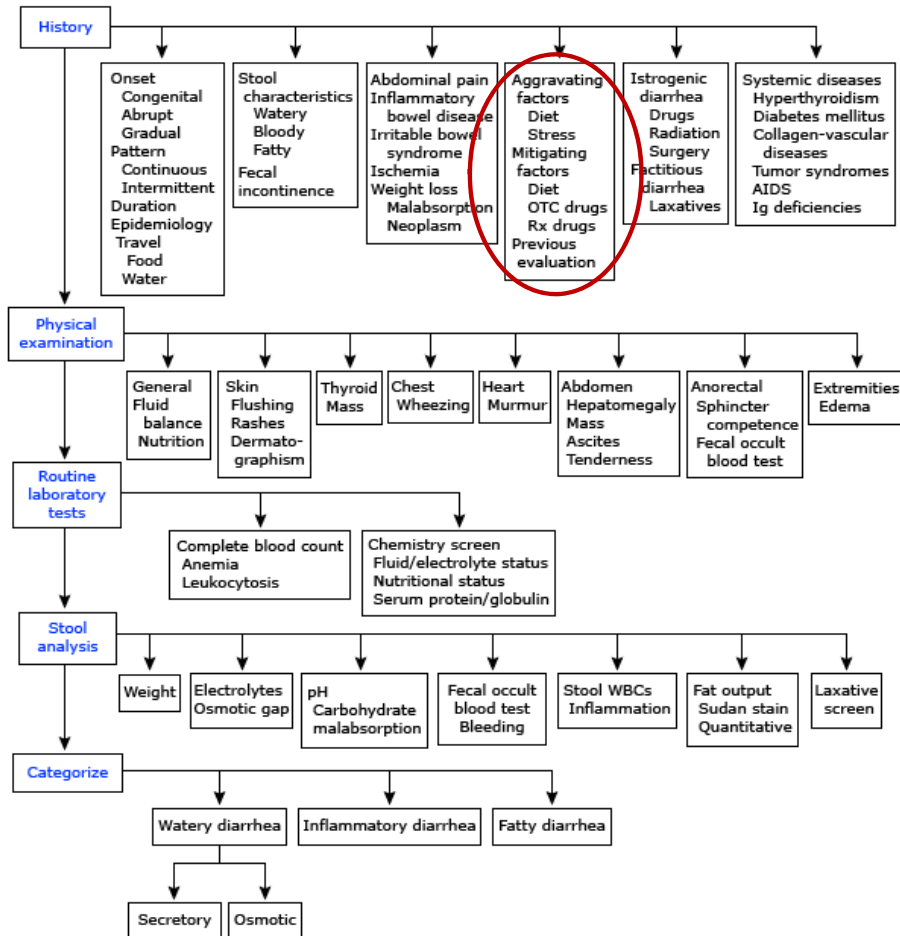
## SAFE DRUGS FOR CROHN DISEASE IN PREGNANCY:

- 5-amino salicylates
- Prednisone
- Biologic agents (certolizumab, infliximab)

## Question 5.

- C; Discontinue sugar-free sweeteners

## Diagnostic approach to chronic diarrhea - part I



### Sugar-free alcohols:

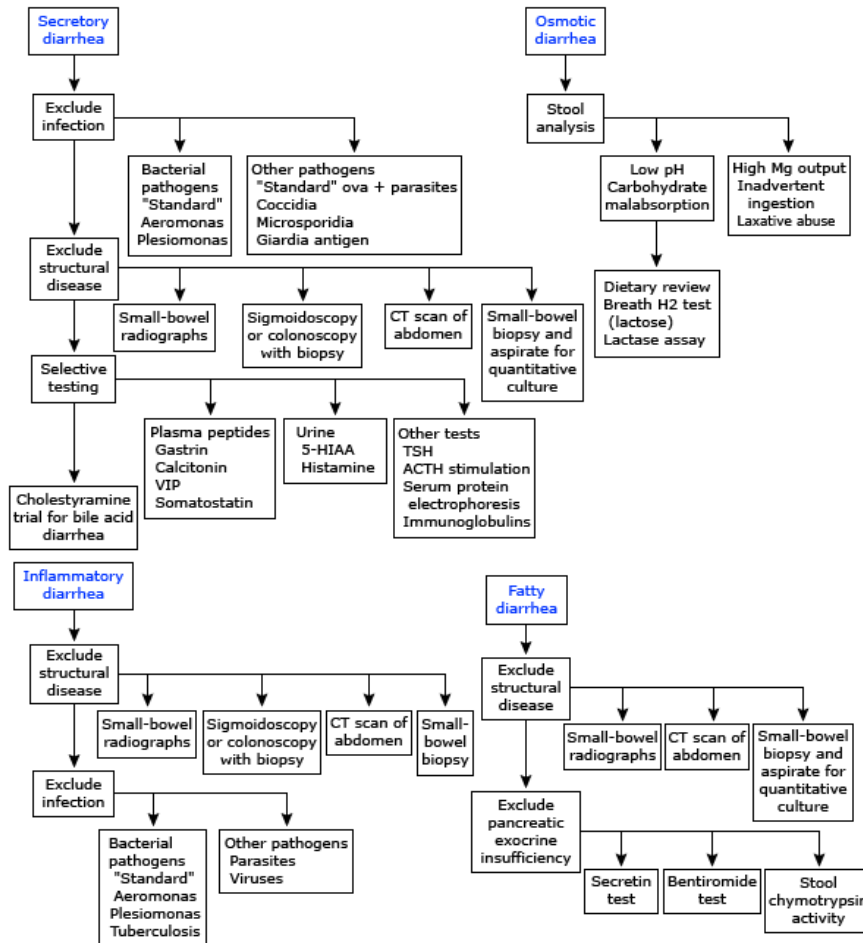
- sorbitol
- xylitol
- mannitol
- isomalt
- maltitol

### Side effects:

- gas, bloating
- cramping
- Diarrhea (osmotic)

Reprinted with permission from: Fine KD, Schiller LR. AGA technical review on the evaluation and management of chronic diarrhea. *Gastroenterology* 1999; 116:1464.

## Diagnostic approach to chronic diarrhea - part II



Adapted with permission from: Fine KD, Schiller LR. AGA technical review on the evaluation and management of chronic diarrhea. *Gastroenterology* 1999; 116:1464.

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### Osmotic: (watery)

- No diarrhea when fasting
- $290 - 2 (\text{stool Na} + \text{K}) = \text{gap}$
- Stool osm gap  $> 125 = \text{osmotic}$
- 

### Secretory: (watery)

- Large volume, persists when fasting
- $290 - 2 (\text{stool Na} + \text{K}) = \text{gap} < 50 = \text{secretory}$

### Inflammatory: (white cells, blood)

- Fecal calprotectin (93% sensitive, 96% specific in adults)
- Fecal WBC
- Sed rate/ CRP

### Fatty:

- Greasy, oily stool
- Quantitative fecal fat



## Question 6.

- B; 3 years

# Provide colonoscopy surveillance following a diagnosis of a serrated polyp

**United States Multi-Society Task Force on Colorectal Cancer recommendations for surveillance and screening intervals in individuals with baseline average risk**

Baseline colonoscopy: most advanced finding(s)	Recommended surveillance interval (years)	Quality of evidence supporting the recommendation	New evidence stronger than 2006
No polyps	10	Moderate	Yes
Small (<10 mm) hyperplastic polyps in rectum or sigmoid	10	Moderate	No
1 to 2 small (<10 mm) tubular adenomas	5 to 10	Moderate	Yes
3 to 10 tubular adenomas	3	Moderate	Yes
>10 adenomas	<3	Moderate	No
One or more tubular adenomas ≥10 mm	3	High	Yes
One or more villous adenomas	3	Moderate	Yes
Adenoma with HGD	3	Moderate	No
<b>Serrated lesions</b>			
Sessile serrated polyp(s) <10 mm with no dysplasia	5	Low	NA
Sessile serrated polyp(s) ≥10 mm	3	Low	NA
<b>OR</b> Sessile serrated polyp with dysplasia <b>OR</b> Traditional serrated adenoma			
Serrated polyposis syndrome*	1	Moderate	NA

The recommendations assume that the baseline colonoscopy was complete and adequate and that all visible polyps were completely removed.

HGD: high-grade dysplasia; NA: not applicable.

\* Based on the World Health Organization definition of serrated polyposis syndrome, with one of the following criteria: (1) at least five serrated polyps proximal to sigmoid, with two or more ≥10 mm; (2) any serrated polyps proximal to sigmoid with family history of serrated polyposis syndrome; and (3) >20 serrated polyps of any size throughout the colon.

Reproduced from: Lieberman DA, Rex DK, Winawer SJ, et al. Guidelines for colonoscopy surveillance after screening and polypectomy: A consensus update by the US Multi-Society Task Force on Colorectal Cancer. *Gastroenterology* 2012; 143:844. Table used with the permission of Elsevier Inc. All rights reserved.

## Question 7.

- B; Celecoxib and omeprazole

# Treat a patient at risk for NSAID-induced GI toxicity with a PPI and a COX-2 inhibitor

Patients at increased risk for NSAID gastrointestinal toxicity	
<b>High risk</b>	
1. History of a previously complicated ulcer, especially recent	
2. Multiple (>2) risk factors	
<b>Moderate risk (one to two risk factors)</b>	
1. Age >65 years	
2. High-dose NSAID therapy	
3. A previous history of uncomplicated ulcer	
4. Concurrent use of aspirin (including low-dose), glucocorticoids, or anticoagulants	
<b>Low risk</b>	
1. No risk factors	

COMBINED USE OF COX-2 INHIBITORS AND PPIs — In patients considered to be at exceptionally high risk for peptic ulcer disease, combining a selective COX-2 inhibitor with a proton pump inhibitor (PPI) may confer added protection against gastrointestinal (GI) toxicity. A randomized controlled trial of *Helicobacter pylori*-negative patients who had been hospitalized for upper GI bleeding associated with nonselective nonsteroidal anti-inflammatory drugs (NSAID) use found that after 13 months none of the patients on celecoxib in combination with a PPI had recurrent bleeding compared with 9 percent of patients on celecoxib and placebo [24].

Patients with ONE or MORE of the MODERATE risk factors should be given PPI therapy for PRIMARY prevention of gastrointestinal toxicity to NSAIDS!

## Question 8.

- D; Initiate omeprazole

# Manage short-bowel syndrome with acid suppression therapy

## Likelihood of resuming an oral diet

- Amount of bowel remaining
- Type of bowel remaining
- Presence of a colon and ileocecal valve
- Intestinal adaptation

## Citrulline concentration

- < 20 micromol/Liter predicts permanent intestinal failure
- 95% PPV, 86% NPV

## Treatment of short bowel syndrome

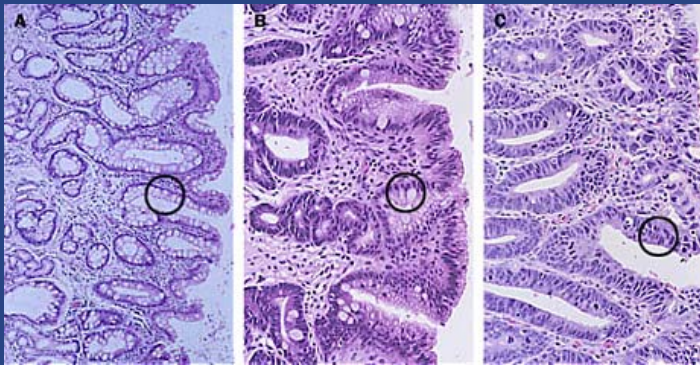
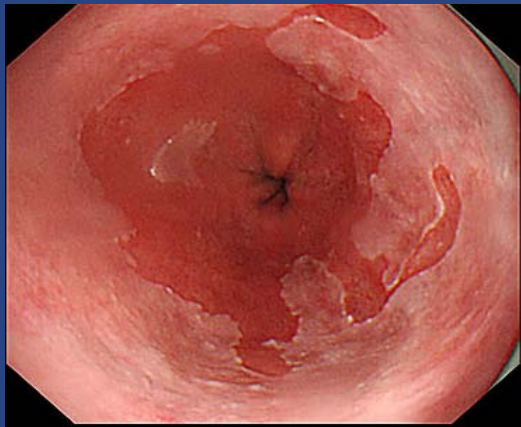
- PPI or H2 blocker for gastric acid suppression (oversecretors)
- Replacement of stomal/fecal fluid losses
- Electrolyte replacement
- Loperamide
- Thickeners



## Question 9.

- A; Endoscopic ablation

# Manage high-grade dysplasia in a patient with Barrett esophagus



American Gastrointestinal Association Guidelines 2011 for Management of High-Grade Barrett's dysplasia is to undergo Endoscopic Ablation:

- Radiofrequency ablation
  - Photodynamic Therapy
  - Endoscopic mucosal resection
- NOT**
- **Esophagectomy!**
- HIGH grade Barrett's without definitive treatment requires repeat surveillance in 3 months!



## Question 10.

- C; Endoscopic retrograde cholangiopancreatography (ERCP)

# Manage acute cholangitis

## Clinical Syndrome:

- Fever
- Abdominal Pain
- Jaundice
- Hypotension
- Altered mental status

## Diagnosis:

- Suspected: fever/rigors, labs consistent with inflammation, AND jaundice OR abnormal LFTs
- Definite: Suspected PLUS biliary dilation on imaging, or stone/stent/stricture

## Treatment:

- Obtain blood cultures
- Empiric antibiotics (E. coli, Klebsiella, Enterococcus, Anaerobes)
- ERCP within 24 hours
- MRCP if unsure or EUS if cannot perform MRCP

**TABLE 2. A proposed strategy to assign risk of choledocholithiasis in patients with symptomatic cholelithiasis based on clinical predictors**

Predictors of choledocholithiasis<sup>13,14,29,31,32</sup>

Very strong

- CBD stone on transabdominal US
- Clinical ascending cholangitis
- Bilirubin > 4 mg/dL

Strong

- Dilated CBD on US (> 6 mm with gallbladder in situ)
- Bilirubin level 1.8-4 mg/dL

Moderate

- Abnormal liver biochemical test other than bilirubin
- Age older than 55 y
- Clinical gallstone pancreatitis

Assigning a likelihood of choledocholithiasis based on clinical predictors<sup>12-14,28,29,31,32</sup>

Presence of any very strong predictor	High
Presence of both strong predictors	High
No predictors present	Low
All other patients	Intermediate

*CBD*, Common bile duct.

## Question 11.

- B; Infliximab

# Treat ulcerative colitis with the appropriate maintenance therapy

Calculator: Mayo score for assessing ulcerative colitis activity

**Stool pattern**

- Patient reports a normal number of daily stools (0 points)
- One to two more stools than normal (1 point)
- Three to four more stools than normal (2 points)
- Five or more stools than usual (3 points)

**Most severe rectal bleeding of the day**

- None (0 points)
- Blood streaks seen in the stool less than half the time (1 point)
- Blood in most stools (2 points)
- Pure blood passed (3 points)

**Endoscopic findings**

- Normal or inactive colitis seen (0 points)
- Mild colitis: mild friability, erythema, decrease in vascularity (1 point)
- Moderate colitis: friability, marked erythema, vascular pattern absent, erosions seen (2 points)
- Severe colitis: ulcerations and spontaneous bleeding (3 points)

**Global assessment by physician**

- Normal (0 points)
- Mild colitis (1 point)
- Moderate colitis (2 points)
- Severe colitis (3 points)

Total Criteria Point Count:

## Induce Remission (Mild to Moderate Dz):

- 5-ASA topical or systemic or both
- Topical steroids
- Prednisone for patients who fail the above therapies to induce remission;

## Steroid Dependent/ Steroid Refractory

- Prednisone 40-60 mg q day until improvement, then taper 5-10 mg q week until 20 mg q day
- 3x risk of infection on steroids, bone disease, cataracts, hyperglycemia, etc

## Maintain Remission:

- TPMT deficiency: CANNOT use azathioprine or 6-MP ; neutropenia

## Question 12.

- B; Liver transplant evaluation

# Manage hepatocellular carcinoma in a patient who meets the Milan criteria

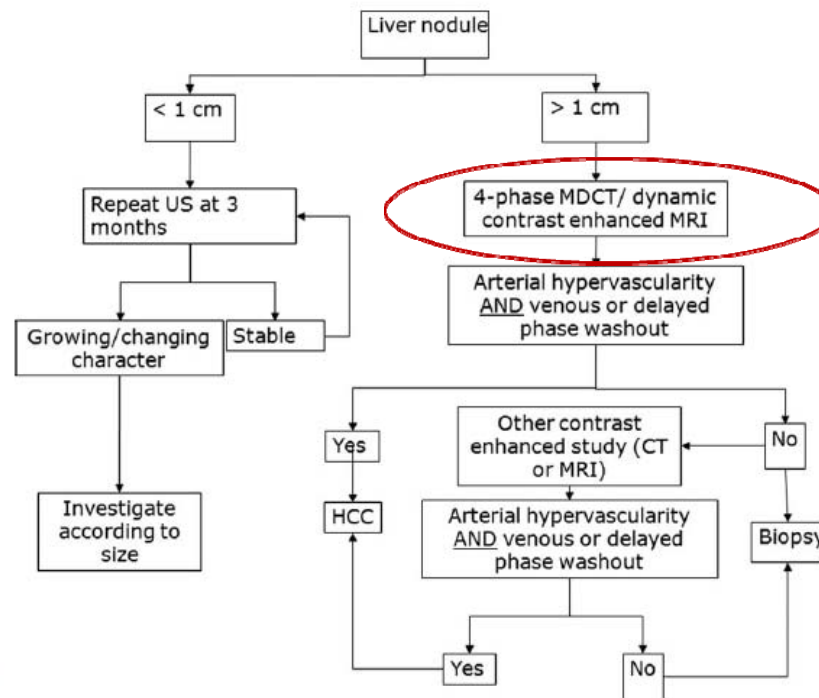


Fig. 1. Diagnostic algorithm for suspected HCC. CT, computed tomography; MDCT, multidetector CT; MRI, magnetic resonance imaging; US, ultrasound.

## Criteria For Liver Transplant for HCC

- Single Lesion  $\leq 5$  cm
- Up to 3 lesions, none larger than 3 cm
- No vascular invasion
- No regional node or extrahepatic distant metastases
- 5 year survival with transplant 75% or higher

## Question 13.

- E; Repeat upper endoscopy



# Diagnose the cause of obscure gastrointestinal bleeding with repeat upper endoscopy

## Causes of obscure GI blood loss:

Upper source 29-56%

Lower source 20-30%

Synchronous source 1-17%

No source found 29-52%

Age < 40

Small bowel tumors, celiac dz, Crohn

Age > 40

Vascular ectasia, NSAID induced, celiac

### Diagnosis of Iron Deficiency Anemia with or Without a Positive FOBT

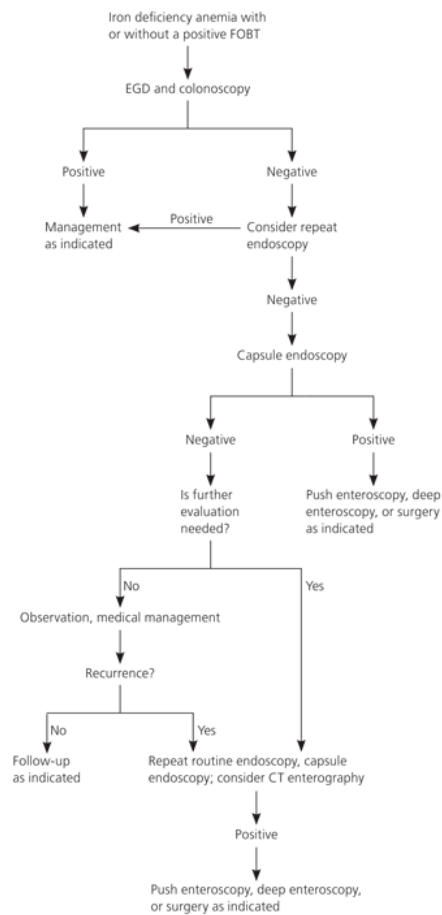


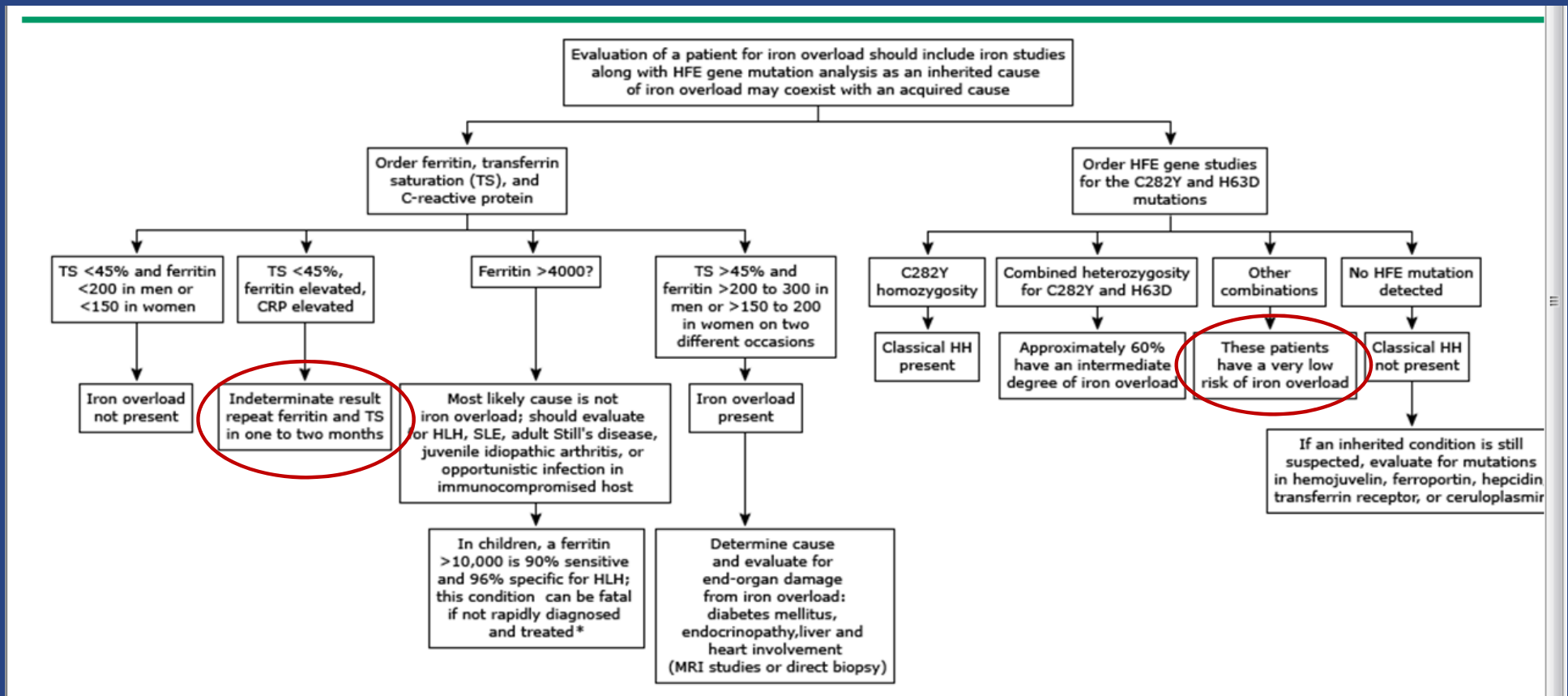
Figure 7.

Proposed algorithm for diagnosis of iron deficiency anemia with or without a positive FOBT. (CT = computed tomographic; EGD = esophagogastroduodenoscopy; FOBT = fecal occult blood test.)

## Question 14.

- D; Stop alcohol intake

# Evaluation of a patient for iron overload



# Primary and Secondary Causes of Iron Overload

<b>Hereditary hemochromatosis</b>
HH: HFE related
C282Y homozygosity
C282Y/H63D compound heterozygosity
Other mutations of HFE
HH: non-HFE related; other gene mutations
Juvenile hemochromatosis (mutations of hemojuvelin or hepcidin)
Ferroportin mutations
Transferrin receptor 2 mutation (rare)
<b>Secondary iron overload</b>
Iron-loading anemias with or without multiple transfusions
Thalassemia major and thalassemia intermedia
Sideroblastic anemia
Chronic hemolytic anemias (eg, sickle cell disease)
Aplastic anemia
Myelodysplastic syndromes
Dietary iron overload
Chronic liver diseases
Hepatitis C and B
Alcohol-induced liver disease
Porphyria cutanea tarda
Fatty liver disease
<b>Miscellaneous causes of iron overload</b>
African iron overload
Neonatal iron overload
Aceruloplasminemia

HH: hereditary hemochromatosis.

## Question 15.

- B; Crohn colitis

# Diagnose Crohn Colitis

- Diagnosis of Crohn disease
  - 80% involve small bowel
  - Transmural inflammation
    - 5-ASA tx ineffective
  - Skip lesions, rectal sparing
  - Mouth to anus
- Assess severity clinically and endoscopically
  - Crohn Disease Activity Index (CDAI)
- Initiate treatment
  - Step up vs. Top down

1. General well-being (0 = very well, 1 = slightly below average, 2 = poor, 3 = very poor, 4 = terrible)  
2. Abdominal pain (0 = none, 1 = mild, 2 = moderate, 3 = severe)  
3. Number of liquid stools per day  
4. Abdominal mass (0 = none, 1 = dubious, 2 = definite, 3 = tender)  
5. Complications (1 point for each)  
- Arthralgia  
- Uveitis  
- Erythema Nodosum  
- Aphthous Ulcers  
- Pyoderma Gangrenosum  
- Anal Fissure  
- New Fistula  
- Abscess

**Scoring**  
<5 Remission  
5-7 Mild Disease  
8-16 Moderate Disease  
>16 Severe Disease

- ANTI-TNF THERAPY WITH OR WITHOUT 6-MP OR AZATHIOPRINE RESULTED IN HIGHEST REMISSION RATES (SONIC trial; NEJM September,2010)

## Question 16.

- C; Primary biliary cirrhosis





## Question 17.

- A; Discharge home with close follow up

# Manage acute diverticulitis

- Diverticulosis:
  - Intrinsic weakness where vessel penetrates the colon wall
  - Simultaneous or excessive haustral contractions
  - Inadequate dietary fiber
  - COMMON in Western populations
  - 40% by age 60 and 60% by age 80
- Diverticulitis:  
(fever, LLQ pain, WBC)  
(1 in 5 with diverticulosis):
  - Uncomplicated
  - Recurrent uncomplicated
  - Complicated
  - Smoldering
- CT is diagnostic test of choice
- Management decisions:
  - Outpatient or inpatient
  - Antibiotics (gm neg and anaerobes)
  - Bowel rest
- \*Following resolution (2-6 weeks later) the entire colon needs endoscopic evaluation to look for mimickers, ie. cancer/polyps
- Preventing future episodes:
  - Surgical resection of diseased segment
  - High fiber diet
  - No association between seeds, nuts, or popcorn consumption

## Question 18.

- A; Acute mesenteric ischemia

# Diagnose acute mesenteric ischemia

## 1) Acute arterial mesenteric ischemia

- Pain out of proportion
- Afib, unanticoagulated
- Thromboembolus to SMA
- Known vasculopath
- High mortality: dead bowel

## 2) Chronic arterial mesenteric ischemia

- Hungry
- Afraid to eat due to pain
- Weight loss
- Known vasculopath

## 3) Subacute venous-hypertension related mesenteric ischemia

- Unusual hypercoagulable state
- Polycythemia Vera, Paroxysmal Nocturnal Hemoglobinuria (PNH)
- Occlusive portal vein clot propagates to SMV

## 4) Colonic ischemia

- Elderly
- Hypotension /Dehydration event
- Mucosal ischemia especially watershed areas (splenic flexure and sigmoid)
- Increase perfusion pressure to treat; avoid hypotension
- No need for angiogram

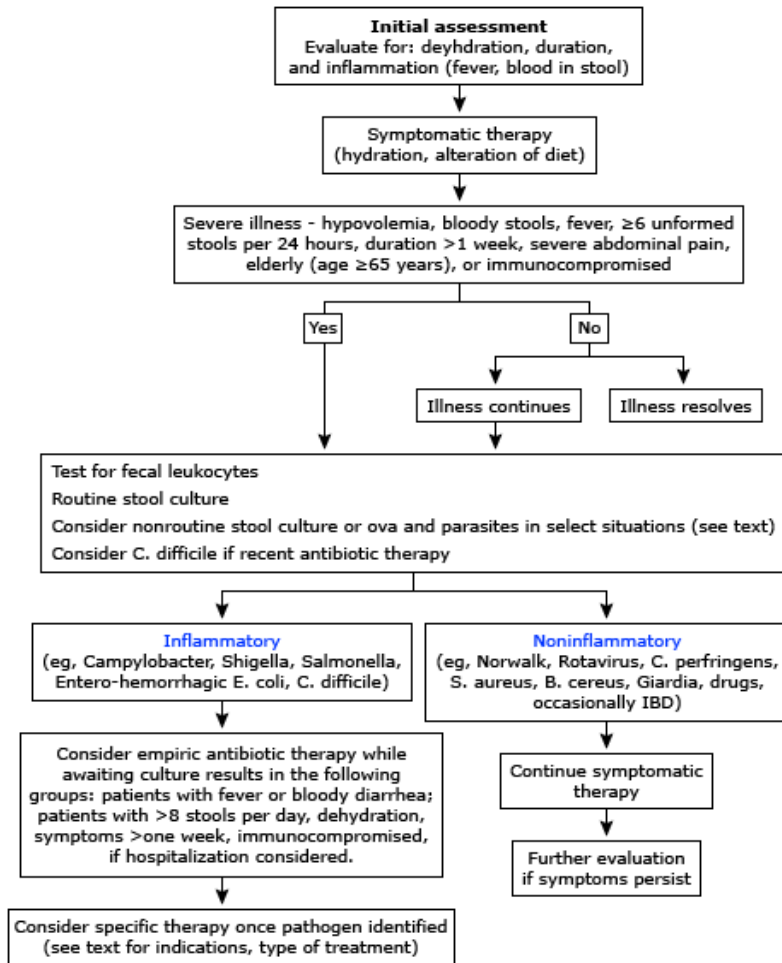
## Question 19.

- D; Supportive care

# Manage acute diarrhea

- Definition:
  - Acute < 14 days
  - Chronic > 4 weeks
- Osmotic, secretory, inflammatory or malabsorptive
- Most acute cases of diarrhea are self-limited and require no further evaluation
- FEATURES that require additional evaluation:
  - Fever > 38.5 C (101.3 F)
  - Bloody stool
  - Pregnancy
  - Elderly or immunocompromised
  - Hospitalized
  - Food handler
  - Recent antibiotics
  - Volume depleted
  - Severe abdominal pain

## Evaluation of acute diarrhea



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## Manage acute diarrhea

### Stool cultures:

- Immunocompromised, including HIV
- Bloody diarrhea
- Underlying IBD
- Food-handlers

### Pregnant patients:

- *Listeria* is not found in stool cultures; only blood cultures!

## Question 20.

- D; Ultrasound of liver and spleen



# Manage nonalcoholic steatohepatitis

- 30% of adults in US have NAFLD
- 20% of patients with NAFLD have NASH
- Risk factors for progression to cirrhosis:
  - Age > 50 years
  - BMI > 28
  - Serum triglycerides >150
  - ALT > 2x ULN
- Platelets are predictive of progression to cirrhosis
  - <150,000/uL, confirm with ultrasound
- Treatment for all:
  - Weight loss
  - Monitor AST/ALT q 3-6 months
  - Statins are okay
- AASLD Guidelines For *Biopsy Proven* NASH:
  - Diabetics: Pioglitazone 45 mg/day (1B)
  - Non-diabetics: Vitamin E 800 U/ day (1B)