Top GI Complaints

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A 57-year-old woman has elevated liver enzymes noted on laboratory testing done for a pre-employment physical. Past medical history is negative. She takes no medications or dietary supplements. The physical examination is normal; body mass index is 24 kg/m². Laboratory testing shows AST 437 mg/dl and ALT 613 mg/dl. Alkaline phosphatase, bilirubin, albumin, and prothrombin time results are normal. The most likely cause of her laboratory abnormalities is:

A. Alcoholic hepatitis
B. Autoimmune hepatitis
C. Hepatitis A
D. Hepatitis B
E. Hepatitis C
F. Non-alcoholic steatohepatitis
Initial evaluation

A. Alcoholic hepatitis
B. Autoimmune hepatitis
C. Hepatitis A
D. Hepatitis B
E. Hepatitis C
F. Non-alcoholic steatohepatitis

• History: alcohol use, previous medications
• PE: hepatomegaly, splenomegaly, spider angiomata
• Labs:
  – Hepatitis A ab
  – HbsAg, HbsAb, HbcAb
  – HCV ab
  – ANA, ASMA, SPEP, immunogloblins, LKM-1 ab
• Liver imaging
Most likely diagnosis?

A. Alcoholic hepatitis
B. Autoimmune hepatitis
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F. Non-alcoholic steatohepatitis
Most likely diagnosis?

A. Alcoholic hepatitis
B. Autoimmune hepatitis
C. Hepatitis A
D. Hepatitis B
E. Hepatitis C
F. Non-alcoholic steatohepatitis
What do we do next?

• Diagnosis - assessment of fibrosis
  – Clinical decision aids
  – Imaging: Fibroscan, elastography
  – Liver biopsy
    • Advanced fibrosis suspected
    • Can not exclude other chronic liver disease (autoimmune, hemochromatosis)
Treatment

• Many patients have metabolic syndrome. Treat this aggressively
  – Diabetes mellitus
  – Hyperlipidemia
  – Hypertension
  – Obesity (diet, exercise)
    • Goal: 10% weight loss over 12 months

• Vitamin E
  – In non-diabetics
  – 800 IU/day for 6-12 months, stop if no improvement in LFTs
Hey Doc, when do I need my next colonoscopy?

A. 3 - 6 months
B. 1 year
C. 3 years
D. 5 years
E. 5 - 10 years
F. 10 years
Hey, Doc, when do I need my next colonoscopy?

A. 3 - 6 months
B. 1 year
C. 3 years
D. 5 years
E. 5 - 10 years
F. 10 years

A 50 year old undergoes colonoscopy with prep adequate to identify polyps 6 mm in size or larger. Exam is normal to the cecum. There is with no family history of colon cancer or polyps.
Hey, Doc, when do I need my next colonoscopy?

A. 3 - 6 months  
B. 1 year  
C. 3 years  
D. 5 years  
E. 5 - 10 years  
F. 10 years

A 50 year old undergoes colonoscopy with prep adequate to identify polyps 6 mm in size or larger. Exam is normal to the cecum. There is with no family history of colon cancer or polyps.

Average risk individual with normal colonoscopy – repeat in 10 years.
Hey, Doc, when do I need my next colonoscopy?

A. 3 - 6 months
B. 1 year
C. 3 years
D. 5 years
E. 5 - 10 years
F. 10 years

A 50 year old undergoes colonoscopy, which is normal to the cecum, however formed stool is present in the ascending colon preventing adequate visualization. There is no family history of colon cancer or polyps.
Hey, Doc, when do I need my next colonoscopy?

A. 3 - 6 months
B. 1 year
C. 3 years
D. 5 years
E. 5 - 10 years
F. 10 years

A 50 year old undergoes colonoscopy, which is normal to the cecum, however formed stool is present in the ascending colon preventing adequate visualization. There is no family history of colon cancer or polyps.

Inadequate colonoscopy – repeat soon.
Hey, Doc, when do I need my next colonoscopy?

A. 3 - 6 months
B. 1 year
C. 3 years
D. 5 years
E. 5 - 10 years
F. 10 years

A 50 year old undergoes colonoscopy with prep adequate to identify polyps 6 mm in size or larger. The exam is normal. Her mother was diagnosed with colon cancer at age 58.
Hey, Doc, when do I need my next colonoscopy?

A. 3 - 6 months
B. 1 year
C. 3 years
D. 5 years
E. 5 - 10 years
F. 10 years

A 50 year old undergoes colonoscopy with prep adequate to identify polyps 6 mm in size or larger. The exam is normal. Her mother was diagnosed with colon cancer at age 58.

High risk individual – 1\textsuperscript{st} degree relative with colon cancer < 60 years old – repeat in 5 years.
Hey, Doc, when do I need my next colonoscopy?

A. 3 - 6 months
B. 1 year
C. 3 years
D. 5 years
E. 5 - 10 years
F. 10 years

A 50 year old undergoes colonoscopy with prep adequate to identify polyps 6 mm in size or larger. Exam shows a 5 mm polyp in the sigmoid colon, removed by cold snare polypectomy. Pathology shows tubular adenoma. There is no family history of colon cancer or polyps.
Hey, Doc, when do I need my next colonoscopy?

A. 3 - 6 months
B. 1 year
C. 3 years
D. 5 years
E. 5 - 10 years
F. 10 years

A 50 year old undergoes colonoscopy with prep adequate to identify polyps 6 mm in size or larger. Exam shows a 5 mm polyp in the sigmoid colon, removed by cold snare polypectomy. Pathology shows tubular adenoma. There is no family history of colon cancer or polyps.

Low risk adenoma (< 3, < 1 cm, not villous histology) – repeat in 5-10 years.
Hey, Doc, when do I need my next colonoscopy?

A. 3 - 6 months  
B. 1 year  
C. 3 years  
D. 5 years  
E. 5 - 10 years  
F. 10 years

A 50 year old undergoes colonoscopy with prep adequate to identify polyps 6 mm or larger. A 15 mm polyp is completely removed from the ascending colon. Pathology shows tubular adenoma.
Hey, Doc, when do I need my next colonoscopy?

A. 3 - 6 months
B. 1 year
C. 3 years
D. 5 years
E. 5 - 10 years
F. 10 years

A 50 year old undergoes colonoscopy with prep adequate to identify polyps 6 mm or larger. A 15 mm polyp is completely removed from the ascending colon. Pathology shows tubular adenoma. High risk adenoma (3 or more, ≥ 1 cm, villous histology) – repeat in 3 years.
Hey, Doc, when do I need my next colonoscopy?

A. 3 - 6 months
B. 1 year
C. 3 years
D. 5 years
E. 5 - 10 years
F. 10 years

A 50 year old undergoes colonoscopy with prep adequate to identify polyps 6 mm or larger. A flat 15 mm polyp is found in the ascending colon and removed by piecemeal resection. Pathology shows tubular adenoma.
Hey, Doc, when do I need my next colonoscopy?

A. 3 - 6 months
B. 1 year
C. 3 years
D. 5 years
E. 5 - 10 years
F. 10 years

A 50 year old undergoes colonoscopy with prep adequate to identify polyps 6 mm or larger. A flat 15 mm polyp is found in the ascending colon and removed by piecemeal resection. Pathology shows tubular adenoma.

Piecemeal polypectomy – risk of incomplete removal – repeat in 3 – 6 months.
Hey, Doc, when do I need my next colonoscopy?

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B. 1 year
C. 3 years
D. 5 years
E. 5 - 10 years
F. 10 years

A 50 year old undergoes colonoscopy with prep adequate to identify polyps 6 mm or larger. A 5 mm polyp is found in the sigmoid colon, removed by cold snare polypectomy. Pathology shows tubular adenoma. Repeat colonoscopy is performed 5 years later and is completely normal.
Hey, Doc, when do I need my next colonoscopy?

A. 3 - 6 months
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A 50 year old undergoes colonoscopy with prep adequate to identify polyps 6 mm or larger. A 5 mm polyp is found in the sigmoid colon, removed by cold snare polypectomy. Pathology shows tubular adenoma. Repeat colonoscopy is performed 5 years later and is completely normal.

<table>
<thead>
<tr>
<th>Baseline colonoscopy</th>
<th>First surveillance</th>
<th>Second surveillance</th>
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<tbody>
<tr>
<td>LRA</td>
<td>HRA</td>
<td>3 years</td>
</tr>
<tr>
<td></td>
<td>LRA</td>
<td>5 years</td>
</tr>
<tr>
<td></td>
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<td>No adenoma</td>
<td>5 years</td>
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Refractory GERD

A 52-year-old man comes to your office for follow-up of heartburn. His heartburn is present after meals, especially after dinner, as well as when he lays down at night to sleep. He also complains of intermittent nocturnal regurgitation awakening him from sleep with cough and throat burning. He was seen by you 2 months ago with similar complaints, and omeprazole 40 mg once daily was prescribed. Symptoms are not improved.

What do you do next?
Persistent GERD on PPI
What do you do next?

- Obtain more history
- Increase PPI to BID
- Change to another PPI
- Add bedtime H2-blocker
- Request upper endoscopy
- Request barium esophagram
- Request ambulatory esophageal pH monitoring
Persistent GERD on PPI
What do you do next?

• Obtain more history
• Increase PPI to BID
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Persistent GERD on PPI
More history

- Diet is high in fat, low in fresh fruits, vegetables
- Drinks coffee 8 cups/day. Has 2-3 cans/beer every night
- Works late, eats dinner around 8 pm, falls asleep by 10 pm
- Frequently snacks on ice cream or cookies before bed
- Takes PPI at bedtime when he remembers to take it
- BMI is 34 kg/m2
Pathophysiology of GERD

Mechanical factors

- Normal antireflux barrier
  - Crura of the diaphragm
  - Lower esophageal sphincter (LES)

- Defective antireflux barrier
  - Lower esophageal sphincter
    - Inappropriate Transient Lower Esophageal Sphincter Relaxation (TLESRs)
    - Hypotensive LES
  - Hiatal hernia
Pathophysiology of GERD

- **Gastric factors**
  - Acid
  - Gastric distention
  - Gastric emptying

- **External factors**
  - Diet
  - Obesity
  - Tobacco/alcohol use
  - Medications

- **Diminished esophageal clearance**
  - Peristalsis
  - Body position
  - Saliva

- **Impaired mucosal resistance**
Lifestyle modifications are cornerstone of GERD therapy

- Elevate head of bed while sleeping
- No food 3 hours before bedtime
- Stop smoking
- Modify diet
  - Decrease fat and volume
  - Avoid peppermint, chocolate, alcohol, coffee
- Weight loss
- Avoid potentially harmful medications
- Antacids prn
<table>
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<tr>
<th>Treatment</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lifestyle modifications/antacids</td>
<td>20 %</td>
</tr>
<tr>
<td>$H_2$-receptor antagonists</td>
<td>50 %</td>
</tr>
<tr>
<td>Single-dose PPI</td>
<td>80 %</td>
</tr>
<tr>
<td>Increased-dose PPI</td>
<td>&gt; 80 %</td>
</tr>
</tbody>
</table>
Follow-up

He takes your advice to heart. He is now eating a heart healthy diet, has decreased alcohol and caffeine intake, is avoiding food within 3 hours of bedtime, has elevated the head of his bed 6 inches, and takes his PPI 30 minutes before breakfast every day.

But his heartburn symptoms persist!

What do you do next?
Persistent GERD on PPI
What do you do next?

• Obtain more history
• Increase PPI to BID
• Change to another PPI
• Add bedtime H2-blocker
• Request upper endoscopy
• Request barium esophagram
• Request ambulatory esophageal pH monitoring
PPI once vs twice daily

• Rationale: once daily dosing does not heal more severe esophagitis. BID dosing is more effective.

• Some studies show improved outcomes with BID therapy. But recent meta-analysis suggest PPI BID is not associated with improved heartburn relief.

(Gastroenterol Res Pract 2017 PMC5585660)

Am J Gastroenterol 2002; 97:575
Nocturnal Acid Breakthrough

Nocturnal acid breakthrough between 21:00-22:00
Nocturnal Acid Breakthrough improved with H2RA

Gastroenterology 1998; 115:1335
Role of EGD: identify other causes of symptoms

- Eosinophilic esophagitis
- Pill esophagitis
- Zollinger Ellison syndrome
- Lichen planus with esophageal involvement
Functional testing for GERD

- Ambulatory 24 hour pH monitoring
  - Quantifies acid reflux in esophagus and correlates with symptoms
  - Most useful for atypical symptoms: is this really GERD?

- Multichannel intraluminal impedance (MII) – pH study
  - Quantifies acid and non-acid reflux and correlates with symptoms
  - Most useful when symptoms persist on twice daily PPI therapy
Wireless ambulatory esophageal pH monitoring


BRAVO pH probe attached to esophageal wall
Reported adverse events associated with PPI use

• No causal associations determined
• Studies are retrospective
• Confounding contributes to conclusions
• Effect size of many of these events is minimal

→ Use PPIs when appropriate
   Assess if still needed over time

Vaezi et al. Gastroenterology 2017; 153:35
Anti-reflux surgery – Nissen fundoplication

A. Fundus wrapped around back side of esophagus
B. Wrap secured with sutures to anchor lower esophagus below diaphragm
Persistent GERD on PPI
What would I do?

• Increase PPI to BID
• Add bedtime H2-blocker
• Change to another PPI
• Perform upper endoscopy
• If still with bothersome symptoms, perform ambulatory esophageal pH/multichannel intraluminal impedance monitoring
A 33-year-old woman complains of frequent bloating. This is present most days and is worse in the late afternoon, with distension. Bowel movements are irregular, with several days of constipation (no stool or small hard formed stool with straining) followed by several days of loose frequent stools. She has lower quadrant cramping pain sometimes relieved with bowel movements, worse when constipated. For the past 6 months she has been on a gluten free diet without improvement. She requests testing for celiac disease. She denies weight loss, skin rash, fever/chills, blood in the stool.

Her past medical/surgical history/family history is negative.
Evaluation

• Physical exam is normal except for mild LLQ tenderness.
• Lab studies are obtained:
  – CBC, thyroid studies normal
  – Sed rate, CRP normal
  – IgA TTG negative

• What would you do next?
Bloat/distension

• Symptoms may be due to combination of:
  – Increased intestinal gas
  – Gut hyperalgesia
  – Impaired transit of gas

• Treatment
  – Diet modification: low-FODMAP diet
  – Assess for small intestinal bacterial overgrowth (SIBO)
  – Alter gut microbiome
From Chey, W. DDW 2017
What are FODMAPs?

- Fermentable oligo-, di-, monosaccharides and polyols
- Fruits with fructose exceeding glucose
  - Apples, pears, watermelon
- Fructan containing vegetables
  - Onions, leeks, asparagus, artichokes
- Wheat based products
  - Bread, pasta, cereal, cake, biscuits
- Sorbitol and lactose containing foods
- Raffinose containing foods
  - Legumes, lentils, cabbage, brussels sprouts

From Chey, W. DDW 2017
How do FODMAPs affect gut function?

From Chey, W. DDW 2017
Low-FODMAP diet reduces IBS symptoms

30 IBS patients and 8 HVs: 1 week baseline followed by 21 days of low-FODMAP diet or typical Australian diet before crossing over to other diet. Significant benefits for overall IBS symptoms, bloating, pain, and wind (p<0.001). Benefits for King’s Stool Chart only for IBS-D (p<0.04)

From Chey, W. DDW 2017
3 phases of low-FODMAP diet

Elimination is the Beginning NOT the End!!

1. **Elimination**
   - Diagnose FODMAP sensitivity

2. **Reintroduction**
   - Diversify the diet to improve adherence and reduce effects on the MB

3. **Maintenance**
   - Find each patient’s low FODMAP diet

Prospective follow-up study from the UK demonstrates LFD reduces global symptoms and lower severity and incidence of symptoms at **12 months**. Abdominal pain, borborygmi, and bloating are symptoms that appear to especially benefit (Lomer et al. DDW 2017, abs Tu1616)

From Chey, W. DDW 2017
Breath testing for SIBO/carbohydrate intolerance

• Glucose/lactulose  Small intestinal bacterial overgrowth
• Lactose  Lactose intolerance
• Fructose  Fructose intolerance
Treatment of SIBO

- Rifaximin 550 mg TID for excess hydrogen production
- Rifaximin plus neomycin for excess methane production
- Stop PPI?
- Avoid drugs that slow gut motility
Probiotics in IBS

179 adults randomized to *Saccharomyces cerevisiae* 500 mg/d vs placebo for 8 weeks. Treated group had significantly more improvement in abdominal pain/discomfort (p=0.04). Dig Liv Dis 2015; 27:119.
Bloated/distended/IBS
What do I do?

- Education about cause of symptoms
- Try probiotic
- Discuss low-FODMAP diet
  - Ideally done with assistance of trained dietician
  - Stepwise reintroduction of foods after initial response
  - [http://myginutrition.com](http://myginutrition.com)
- Consider breath testing for SIBO