



# Abdominal pain include IBS IBS

## ● Objectives:

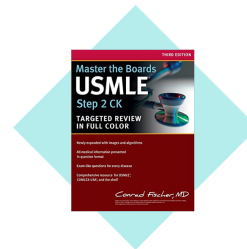
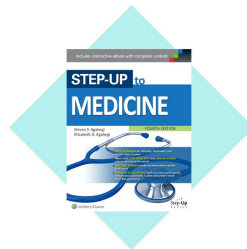
- Should know the different types of abd pain
- Is acute or chronic?
- Hx taking skills with knowing the key questions
- Important abdominal pain signs.
- A good differential diagnosis of each abdominal area.
- Labs interpretation.
- To know the most common cause of chronic abdominal pain and how to handle it.

[ Color index : **Important** | **Notes** | Extra ]

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## ● Resources:

- 435 slides



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"Medicine is an art, nobody can deny it."

## Objective 1: Should know the different types of abdominal pain!

-Abdominal pain can be a challenging complaint for both primary care and specialist physicians because it is frequently a benign complaint, but it can also herald serious acute pathology.

-Abdominal pain is present on questioning of 75% of otherwise healthy adolescent students and in about half of all adults.

- **Classification:**

<b>Based on duration:</b> When? For how long?	
Acute abdominal pain	Chronic abdominal pain
<ul style="list-style-type: none"> <li>● Less than 12 weeks.</li> <li>● The pain worsened progressively.</li> <li>● Pain in a sick or unstable patient should be managed as acute. <b>Irrespective of the duration</b></li> </ul>	<ul style="list-style-type: none"> <li>● More than 12 weeks.</li> <li>● The pain remained unchanged for months.</li> </ul>
<b>Acute abdominal pain ( Surgical abdomen )</b>	
<ul style="list-style-type: none"> <li>● Defined as a condition with a rapidly worsening prognosis in the absence of surgical intervention.</li> <li>● Two syndromes that constitute urgent surgical referrals are <b>obstruction</b> and <b>peritonitis (perforation)</b></li> <li>● Pain is typically severe in these conditions, and can be associated with unstable vital signs, fever, and dehydration.</li> </ul>	
<b>Based on the origin:</b> -What kind of pain?	
Visceral pain	Parietal
Gut organs are insensitive to stimuli such as burning and cutting but are sensitive to distension, contraction, twisting and stretching. Pain from unpaired structures is usually but not always felt in the midline.	The parietal peritoneum is innervated by somatic nerves, and its involvement by inflammation, infection or neoplasia causes sharp, well-localized and lateralized pain.
<ul style="list-style-type: none"> <li>● Involves hollow or solid organs; midline pain due to bilateral innervation.</li> </ul>	<ul style="list-style-type: none"> <li>● Involves parietal peritoneum.</li> </ul>
<ul style="list-style-type: none"> <li>● Causes vague discomfort to excruciating pain.</li> </ul>	<ul style="list-style-type: none"> <li>● Causes tenderness and guarding which progress to rigidity and rebound as peritonitis develops.</li> </ul>
<b>Poorly localized</b>	<b>Localized pain</b>
<u>Course:</u> Non specific.	<u>Course:</u> Localised tenderness > Guarding > Rigidity > Rebound.
<ul style="list-style-type: none"> <li>● <b>Epigastric region:</b> stomach, duodenum, biliary tract</li> <li>● <b>Periumbilical:</b> small bowel, appendix, cecum</li> <li>● <b>Suprapubic:</b> colon, sigmoid, GU tract</li> </ul>	<ul style="list-style-type: none"> <li>- <b>Course: starts as visceral pain and then parietal (localized) pain</b></li> <li>- <b>As localized peritonitis ( inflammation of the peritoneum) tenderness, guarding and rebound tenderness</b></li> </ul>

## Referred pain

### Produces symptoms (not signs) Based on developmental embryology such as:

- **Ureteral obstruction** → Testicular pain.
- **Subdiaphragmatic irritation** → Ipsilateral shoulder pain.
- **Gynecologic pathology** → Back or proximal lower extremity.
- **Biliary disease** → Right infrascapular pain.
- **MI** → Epigastric, neck, jaw.

## Psychogenic pain

Cultural, emotional and psychosocial factors influence everyone's experience of pain. In some patients, no organic cause can be found despite investigation, and psychogenic causes (depression or somatization disorder) may be responsible.

## Based on the location:

-Where exactly? Huge DDX

## Epigastric pain

- Myocardial infarction
- Peptic ulcer.
- Acute cholecystitis.
- Perforated esophagus

### Right upper quadrant

- Acute cholecystitis.
- Duodenal ulcer.
- Hepatitis.
- Congestive hepatomegaly.
- Pyelonephritis.
- Appendicitis.
- Pneumonia (right).

### Left upper quadrant

- Ruptured spleen.
- Gastric ulcer.
- Aortic aneurysm.
- Perforated colon.
- Pyelonephritis.
- Pneumonia (left).

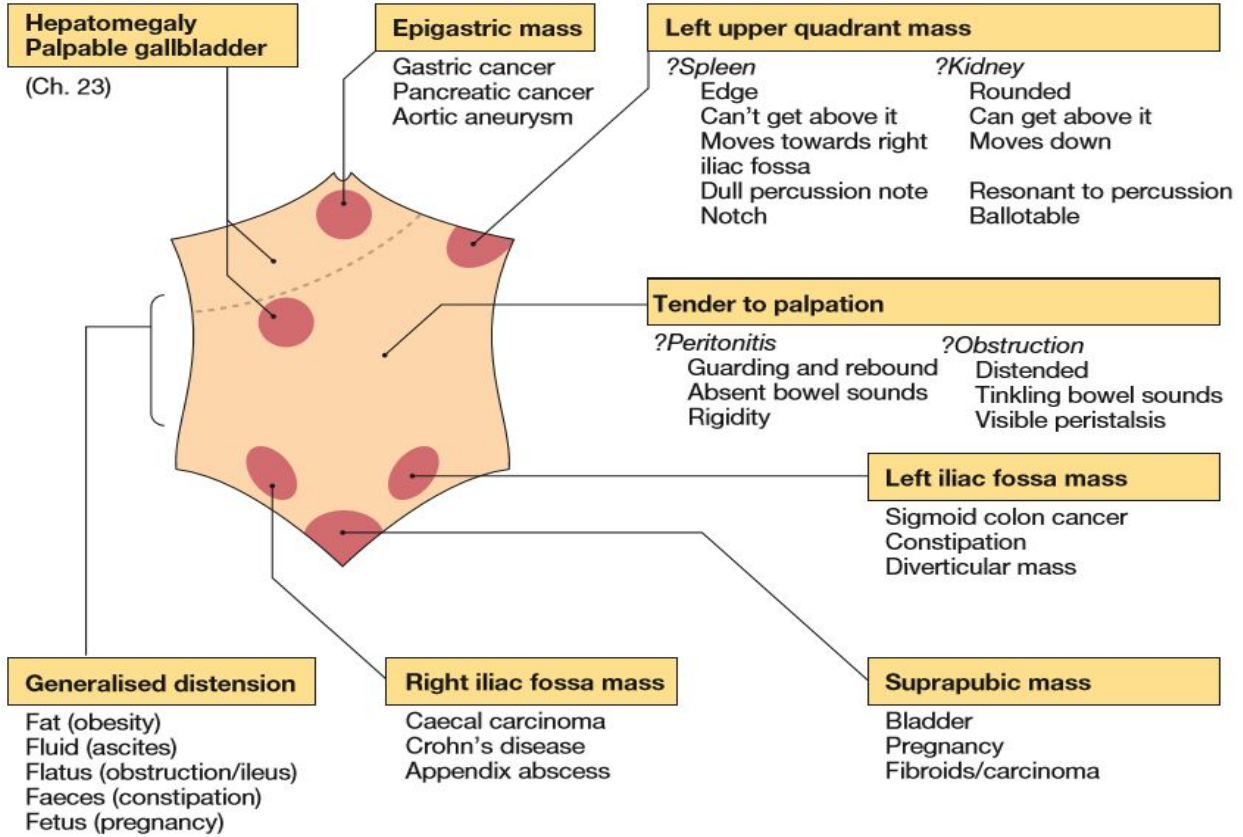
### Right lower quadrant

- Appendicitis.
- Salpingitis.
- Tubo-ovarian abscess.
- Ruptured ectopic pregnancy.
- Renal/ureteric stone.
- Irreducible hernia.
- Mesenteric adenitis.
- Meckel's diverticulitis.
- Crohn's disease.
- Perforated cecum.
- Psoas abscess

### Left lower quadrant

- Sigmoid diverticulitis.
- Salpingitis.
- Tubo-ovarian abscess.
- Ruptured ectopic pregnancy.
- Irreducible hernia.
- Perforated colon.
- Crohn's disease.
- Ulcerative colitis.
- Renal / ureteral stone.

#### 4 Abdominal examination: possible findings



#### • The acute abdomen:

This accounts for approximately 50% of all urgent admissions to general surgical units. The acute abdomen is a consequence of one or more pathological processes:

Inflammation	Perforation	Obstruction
Pain develops gradually, usually over several hours. It is initially rather diffuse until the parietal peritoneum is involved, when it becomes localised. <b>Movement exacerbates the pain;</b> abdominal rigidity and guarding occur.	When a viscus perforates, pain starts <b>abruptly</b> ; it is severe and leads to generalised peritonitis.	Pain is colicky, with spasms which causes the patient to writhe around and double up. Colicky pain which does not disappear between spasms suggests complicating inflammation.

22.25 Causes of acute abdominal pain	
<b>Inflammation</b>	
<ul style="list-style-type: none"> <li>• Appendicitis</li> <li>• Diverticulitis</li> <li>• Cholecystitis</li> <li>• Pelvic inflammatory disease</li> </ul>	<ul style="list-style-type: none"> <li>• Pancreatitis</li> <li>• Pyelonephritis</li> <li>• Intra-abdominal abscess</li> </ul>
<b>Perforation/rupture</b>	
<ul style="list-style-type: none"> <li>• Peptic ulcer</li> <li>• Diverticular disease</li> </ul>	<ul style="list-style-type: none"> <li>• Ovarian cyst</li> <li>• Aortic aneurysm</li> </ul>
<b>Obstruction</b>	
<ul style="list-style-type: none"> <li>• Intestinal obstruction</li> <li>• Biliary colic</li> </ul>	<ul style="list-style-type: none"> <li>• Ureteric colic</li> </ul>

22.26 Acute abdominal pain in old age	
<ul style="list-style-type: none"> <li>• <b>Presentation:</b> severity and localisation may blunt with age. Presentation may be atypical, even with perforation of a viscus.</li> <li>• <b>Cancer:</b> a more common cause of acute pain in those over 70 yrs than in those under 50 yrs. Older people with vague abdominal symptoms should therefore be carefully assessed.</li> <li>• <b>Non-specific symptoms:</b> intra-abdominal inflammatory conditions, such as diverticulitis, may present with non-specific symptoms, such as acute confusion or anorexia and relatively little abdominal tenderness. The reasons for this are not clear but may result from altered sensory perception.</li> <li>• <b>Outcome of abdominal surgery:</b> determined by the degree of comorbid disease and whether surgery is elective or emergency, rather than by chronological age.</li> </ul>	

● **Chronic or recurrent abdominal pain:**

- Chronic abdominal pain is a common complaint, and the vast majority of patients will have a functional disorder, most commonly the irritable bowel syndrome.
- Initial workup is therefore focused on differentiating benign functional illness from organic pathology.
- **The first thing when you have a patient with Chronic pain like for 6 months or 1 year is to ask yourself. Is it functional or organic problem?**
- **Functional** > *No anatomical problems, labs are normal, imaging are normal. Only function abnormalities. Like IBS.*
- **Organic** > *There're anatomical problems. Like pancreatic mass.*
- **So, how to differentiate between them?** By asking about the alarm symptoms and features.
- **Features that suggest organic illness include: IMPORTANT!**
  - unstable vital signs
  - weight loss
  - fever
  - dehydration
  - electrolyte abnormalities
  - symptoms or signs of gastrointestinal bleed
  - anemia
  - signs of malnutrition.

● **Chronic pain DDX:**

- **IBS “The most common cause”**
- IBD
- PUD “can present Acute with severe pain or chronic”
- Gastric, small bowel, or large bowel cancer
- Pancreatic cancer
- Celiac disease
- Reflux disease
- Functional dyspepsia

**Investigations will depend to a large extent on the clinical features elicited during the history and examination:**

<p><input type="checkbox"/> <b>Endoscopy and ultrasound</b> are indicated for epigastric pain, and for dyspepsia and symptoms suggestive of gallbladder disease.</p>	<p><input type="checkbox"/> <b>Colonoscopy</b> is indicated for patients with altered bowel habit, rectal bleeding or features of obstruction suggesting colonic disease.</p>	<p><input type="checkbox"/> <b>Angiography</b> should be considered when pain is provoked by food in a patient with widespread atherosclerosis since this may indicate mesenteric ischaemia.</p>
<p><input type="checkbox"/> <b>Simple investigations (blood tests, faecal calprotectin and sigmoidoscopy)</b> are sufficient in the absence of rectal bleeding, weight loss and abnormal physical findings.</p>	<p><input type="checkbox"/> <b>Ultrasound, CT and faecal elastase</b> are required for patients with upper abdominal pain radiating to the back. Eg. Pancreatitis</p>	<p><input type="checkbox"/> A <b>history</b> of alcohol misuse, weight loss and diarrhoea suggest chronic pancreatitis or pancreatic cancer.</p>
<p><input type="checkbox"/> Recurrent attacks of pain in the loins radiating to the flanks with urinary symptoms should prompt investigation for renal or ureteric stones by abdominal X-ray, ultrasound and intravenous urography.</p>	<p><input type="checkbox"/> A <b>past history</b> of psychiatric disturbance, repeated negative investigations or vague symptoms which do not fit any particular disease or organ pattern suggest a psychological origin for the patient’s pain.</p>	

22.27 Extra-intestinal causes of chronic or recurrent abdominal pain	
<b>Retroperitoneal</b>	
• Aortic aneurysm	• Lymphadenopathy
• Malignancy	• Abscess
<b>Psychogenic</b>	
• Depression	• Hypochondriasis
• Anxiety	• Somatisation
<b>Locomotor</b>	
• Vertebral compression/fracture	• Abdominal muscle strain
<b>Metabolic/endocrine</b>	
• Diabetes mellitus	• Acute intermittent porphyria
• Addison’s disease	• Hypercalcaemia
<b>Drugs/toxins</b>	
• Corticosteroids	• Lead
• Azathioprine	• Alcohol
<b>Haematological</b>	
• Sickle-cell disease	• Haemolytic disorders
<b>Neurological</b>	
• Spinal cord lesions	• Radiculopathy
• Tabes dorsalis	

- **Initial clinical assessment:**

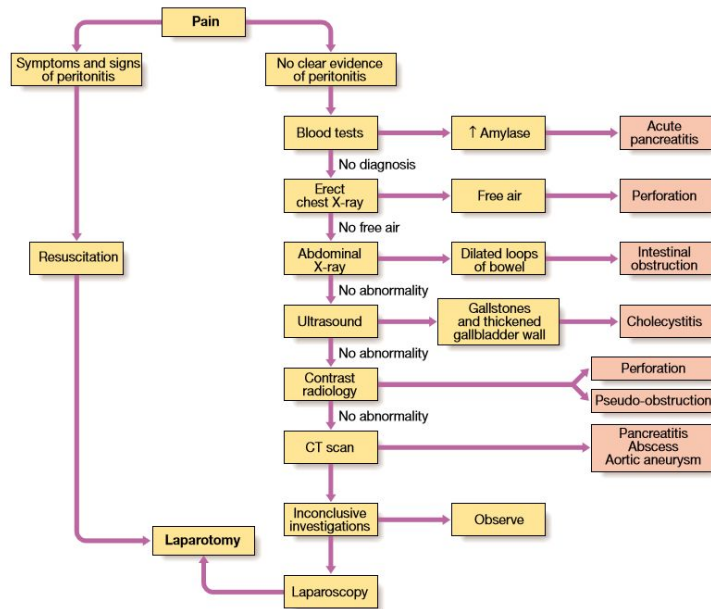


Fig. 22.25 Management of abdominal pain: an algorithm.

- **Management:**

In general, and depending on the organ affected, perforations are closed, inflammatory conditions are treated with antibiotics or resection, and obstructions are relieved. The speed of intervention and the necessity for surgery depend on a number of factors, of which the presence or absence of peritonitis is the most important.

**A treatment summary of some of the more common surgical conditions follows: EXTRA**

- ❑ **Acute appendicitis:** Although nonoperative treatment can be successful in some patients, the risk of perforation and subsequent recurrent attacks dictates that early surgery is undertaken. The appendix can be removed through a conventional right iliac fossa skin crease incision or by laparoscopic techniques.
- ❑ **Acute cholecystitis:** This can be successfully treated non-operatively but the high risk of recurrent attacks and the low morbidity of surgery have made early laparoscopic cholecystectomy the treatment of choice.
- ❑ **Acute diverticulitis:** Conservative therapy is usually recommended, but if perforation has occurred, resection is advisable. Depending on peritoneal contamination and the state of the patient, primary anastomosis is preferable to a Hartmann's procedure (oversew of rectal stump and end colostomy).
- ❑ **Small bowel obstruction:** If the cause is obvious and surgery inevitable (e.g. for an external hernia) an early operation is appropriate. If the suspected cause is adhesions from previous surgery, only those patients who do not resolve within the first 48 hours or who develop signs of strangulation (colicky pain becomes constant, peritonitis, tachycardia, fever, leukocytosis) will require surgery.
- ❑ **Large bowel obstruction:** Pseudo-obstruction is treated non-operatively. Some patients benefit from colonoscopic decompression, but mechanical obstruction merits surgical resection, usually with primary anastomosis. Differentiation between the two is made by a water-soluble contrast enema.
- ❑ **Perforated peptic ulcer:** Although surgical closure of the perforation is standard practice, some patients without generalised peritonitis in whom a water-soluble contrast meal has confirmed spontaneous sealing of the perforation can be treated non-operatively. Adequate and aggressive resuscitation is mandatory before surgery.

## Objective 2: History taking skills with knowing the key questions

### ➤ History:

- Type of pain?
- Location and radiation.
- Character and Severity.
- Onset (sudden...) and duration.
- Exacerbating or relieving factor.
- Associated symptoms (fever, vomiting).
- **Medications (aspirin or NSAIDs)**

### ➤ Physical examination:

#### ★ General and Vital Signs (Abnormality of vital signs suggest acute abdomen)

- Orthostatic vital signs are less reliable in the diabetic, elderly, those on beta-blocker.
- Pulse increase of 30 or pre syncope on standing are highly sensitive for loss of 1 L of blood or 3L of fluid. BP changes are less reliable.
- Patient must be standing at least one minute before measurements are taken.

#### ★ Guarding:

- Voluntary: Diminished by having patient flex their knees
- Involuntary: Reflex spasm of abdominal muscles

#### ★ Rigidity. (Board like)

#### ★ Rebound (can be normal in 25%): Suggests peritoneal irritation



#### 22.28 How to assess abdominal pain

- Duration
- Site and radiation
- Severity
- Precipitating and relieving factors (food, drugs, alcohol, posture, movement, defecation)
- Nature (colicky, constant, sharp or dull, wakes patient at night)
- Pattern (intermittent or continuous)
- Associated features (vomiting, dyspepsia, altered bowel habit)

## ★ High Yield Questions !

**These Qs will help you to know whether the pain requires surgical or medical management?**

- **Most surgical causes of pain cause pain before vomiting > SBO<sup>1</sup>.**
- **If vomiting presents first, then pain starts with fever > Gastroenteritis.**

#### 1- What does come first pain or vomiting?

Pain first is worst - most likely to be caused by **surgical diseases**.

#### 2- How long have you had the pain ?

Pain for less than 48h is more likely to be due to surgical cause .

#### 3- Constant or intermittent ?

Constant pain more likely to be serious than intermittent.

#### 4- History of cancer , diverticulosis , gallbladder , inflammatory bowel disease ?

First episode more likely to be something bad.

#### 5- Vascular history , HTN , heart disease or A-fib?

If present , consider mesenteric ischemia or AAA.

**\*Advanced age = Increase the risk of Nasty.**

<sup>1</sup> Small bowel obstruction

## Objective 3: A good differential diagnosis of each abdominal area

### Differential Diagnosis:

- **It's Huge!**
- Use history and physical exam to narrow it down
- **Rule out life-threatening pathology.**
- Half the time you will send the patient home with a diagnosis of nonspecific abdominal pain. – 90% will be better or asymptomatic at 2-3 weeks.

### Case 1:

**24 yo healthy male with one day hx of abdominal pain; Pain was generalized at first and now is worse in right lower abd & radiates to his right groin. He has vomited twice today. Denies any diarrhea, fever, dysuria or other complaints.**

- What else do you want to know? **We would like to examine the patient.**
- Acute vs chronic? **1day hX, so it's Acute.**
- Visceral or parietal? **It was generalized (Visceral) and then worse in RLQ (Localized = parietal)**
- Important signs? **He Denies any diarrhea, fever, dysuria. So, it's not UTI or gastroenteritis.**
- **No previous hx of similar attack.**

### Examination:

- T: 37.8 **"Mild low grade fever"** HR: 95, BP 118/76,
- Uncomfortable appearing, slightly pale
- Abdomen: soft, non-distended, tender to palpation in RLQ with mild guarding; hypoactive bowel sounds.
- **What is your differential diagnosis and what do you do next? Most likely (Appendicitis)**
- **Send the patient to surgery. And the surgeons will ask for CT abdomen.**



### Labs:

- CBC? **High WBC count suggests Infections.(leukocytosis).**
- LFT? **High bilirubin suggests cholecystitis.**
- Renal function? **To rule out UTI & renal causes.**
- Urinalysis?
- X-ray? **"Any patient presents to you with abdominal pain YOU HAVE TO DO X-RAY" Why? To rule out Small bowel obstruction and perforation. So, How to rule out SBO and perforation based on X-ray? The most Important 2 signs:**
  - **Air under diaphragm > Perforated viscus.**
  - **Air-Fluid level > SBO.**
- Abdominal US? **Depends on the abdominal quadrants.**
  - **How to detect Cholecystitis? On US > Thick gallbladder wall & stones.**
  - **What's the best modality to detect Gallbladder stones? US.**
- CT scan? **Depends on presentation of the patient by HX & EXAM.. Do we have to do CT scan for every Abdominal pain patient? NO. If we think of mass, renal stone or abscess we do CT scan**
- **2nd most important thing to do in female is to do (Beta-HCG) > Just to make sure that she's not pregnant or to exclude ectopic pregnancy.**
- Any abdominal pain initially starts with **plain abdominal X-ray** "Erect & supine" to rule out obstruction or perforations. Then do **CT scan** to confirm the diagnosis (like appendicitis).
- If the patient unstable (**Resuscitate** the pain first) then do plain X-ray.



## Case 2:

72 yo male with hx of CAD on aspirin and Plavix with several days of dull upper abdominal pain; the pain is worsening today and “in entire abdomen”. Used to be relieved by food until today; now it worsens after eating lunch.

- T: 38.9 “High”, HR: 70, BP: 90/45 “Low”, R: 22
- Abdomen: mildly distended and diffusely tender to palpation + rebound and guarding
- **What is your differential diagnosis & what next?** Very suggestive “Perforated duodenal”. Why we said ulcer? Because it's relieved by food and he's on aspirin, these are risk factors for ulcers.
- On X-ray there's an **air under the diaphragm** which is a sign for perforation.



## Peptic Ulcer (Extra)

Peptic ulcer disease is a term applied for both duodenal ulcer and gastric ulcer.

### Causes:

#### 1. **Most common causes:**

- **Helicobacter pylori infection.**
- **NSAIDs (2nd most common)**—inhibit prostaglandin production which is the major stimulant for mucus production that form the protective barrier, leads to impaired mucosal defenses.
- Acid hypersecretory states, such as “**Zollinger–Ellison syndrome**” (3rd most common)

#### 2. **Other causes:**

- Smoking—ulcers twice as likely in cigarette smokers as in nonsmokers.
- Alcohol and coffee—may exacerbate symptoms, but causal relationship as yet unproven.
- Other potential but unproven causes include emotional stress, personality type (“type A”), and dietary factors

*Other causes:* They don't cause the ulcer disease but they delay the healing and are associated with the development of gastritis. *Stress ulcer* which are caused by burns, head injury, its mechanism is that there is an intense vasoconstriction of the vasculature that supplies the gastric mucosa. Leading to sloughing of these cells and ulceration.

### Clinical Features:

#### 1. **Epigastric pain:**

- Sharp, dull, Aching in nature.
- Gnawing Burning epigastric pain or “hungry” feeling.
- Nocturnal symptoms and the effect of food on symptoms are variable.
- Relieved by milk, food, or antacids.
- Epigastric tenderness
- **Duodenal ulcer**: the pain relieved by food + weight gain.
- **Gastric ulcer**: the pain exacerbated by food + weight loss.

#### 2. **May be complicated by upper GI bleeding.**

#### 3. **Other symptoms: nausea/vomiting, early satiety, and weight loss.**

	<b>Duodenal Ulcers</b>	<b>Gastric Ulcers</b>
<b>Pathogenesis</b>	Caused by an increase in offensive factors (higher rates of basal and stimulated gastric acid secretion)	Caused by a decrease in defensive factors (gastric acid level is normal/ low unless ulcer is pyloric or prepyloric)
<b><i>Helicobacter pylori</i> infection</b>	70% to 90% of patients	60% to 70% of patients
<b>Malignant potential</b>	Low (malignancy is very rare) should undergo biopsy to rule out	High (5% to 10% are malignant)—malignancy
<b>Location</b>	Majority are 1–2 cm distal to pylorus (usually on posterior wall)	Type I (most common, 70%): on lesser curvature Type II: gastric and duodenal ulcer Type III: prepyloric (within 2 cm of pylorus) Type IV: near esophagogastric junction
<b>Age distribution</b>	Occurs in younger patients (<40)	Occurs in older patients (>40)
<b>Associated blood type</b>	Type O	Type A
<b>Risk factors</b>	NSAIDs	Smoking
<b>Other</b>	Eating usually relieves pain Nocturnal pain is more common than in gastric ulcers	Eating does not usually relieve pain Complication rates are higher than those of duodenal ulcers. There is a higher recurrence rate with medical therapy alone

**Complications:**

**Symptoms that suggest complications related to a peptic ulcer include:**

- The sudden development of severe, diffuse abdominal pain may indicate perforation.
- Vomiting is the cardinal feature present in most cases of pyloric outlet obstruction.
- Hemorrhage may be heralded by nausea, hematemesis, melena, or dizziness.

	<b>Clinical Findings</b>	<b>Diagnostic Studies</b>	<b>Management</b>	<b>Other</b>
<b>Perforation</b>	Acute, severe abdominal pain, signs of peritonitis, hemodynamic instability	Upright CXR ( <b>free air under diaphragm</b> ), CT scan is the most sensitive test for perforation (detects free abdominal air)	Emergency surgery to close perforation and perform definitive ulcer operation (such as highly selective vagotomy or truncal vagotomy/pyloroplasty)	<b>Can progress to sepsis and death if untreated</b>
<b>Gastric outlet obstruction</b>	Nausea/vomiting (poorly digested food), epigastric fullness/early satiety, weight loss	Barium swallow and upper endoscopy; saline load test (empty stomach with a nasogastric tube, add 750 mL saline, aspirate after 30 min—test is positive if aspirate >400 mL)	Initially, nasogastric suction; replace electrolyte/volume deficits; supplement nutrition if obstruction is longstanding Surgery is eventually necessary in 75% of patients	Most common with duodenal ulcers and type III gastric ulcers
<b>GI bleeding</b>	Bleeding may be slow (leading to anemic symptoms) or can be rapid and severe (leading to shock)	Stool guaiac, upper GI endoscopy (diagnostic and therapeutic)	Resuscitation; diagnose site of bleed via endoscopy and treat; perform surgery for acute bleeds that require transfusion of ≥6 units of blood	<b>Peptic ulcer disease is the most common cause of upper GI bleeding</b>

**Warning sign of peptic ulcers → Complication:**

- Sudden and severe, diffuse abdominal pain → **perforation**.
- Vomiting “Is the cardinal feature in” → **pyloric outlet obstruction**.
- Nausea, hematemesis, melena, or dizziness. → **Hemorrhage**.

**Diagnosis:**

**Endoscopy (most accurate test)**

- Essential in diagnosis of gastric ulcers because biopsy is necessary to rule out malignancy—duodenal ulcers do not require biopsy.

**Barium swallow:**

- Sometimes used initially but is less reliable than endoscopy.
- Double-contrast techniques preferred due to improved accuracy.

**Laboratory test:**

- for diagnosis of H. pylori infection.
- Biopsy: (gold standard).
- Urease detection via urea breath test is (The most convenient test) (sensitivity and specificity >95%).
- Serology (lower specificity).

**Serum gastrin measurement**—if considering Zollinger–Ellison syndrome as a diagnosis.

**Treatment:**

**Medical:**

- **Supportive (patient directives):**
  - Discontinue aspirin/NSAIDs.
  - Restrict alcohol, Stop smoking, decrease emotional stress.
  - Avoid eating before bedtime and decrease coffee intake.
- **Acid suppression:**
  - H2 blockers “accelerate healing of ulcer”
  - PPIs. (most effective)
  - Antacids. “Symptomatic relief”
- **Eradicate H. pylori:**
  - With triple or quadruple therapy (PPI, bismuth and 2 antibiotics).
- **Cytoprotection:**
  - Sucralfate. “facilitates ulcer healing.”
  - Misoprostol. “Can cause GI upset (common side effect)”
- **Treatment regimens:**
  - If H. pylori test is positive, begin eradication therapy.
  - Also begin acid-suppression with antacids, an H2 blocker, or a PPI.
  - If the patient has an active NSAID-induced ulcer, stop NSAID use .

**Surgical:**

- Rarely needed and required for the complications of PUD (bleeding, perforation, gastric outlet obstruction)

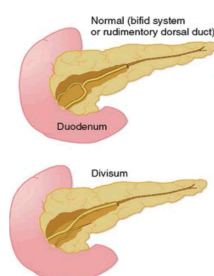

	<b>Regimen</b>	<b>Advantage</b>	<b>Disadvantage</b>
<b>Triple therapy</b>	PPI plus two antibiotics	Twice daily dosing	More expensive than bismuth-based triple therapy
<b>Quadruple therapy</b>	PPI, bismuth subsalicylate, and two antibiotics	Half the time as triple therapy (a 1-week program as opposed to 2 weeks for triple therapy), yet reaps similar eradication results	Expense of PPI

**Case 3:**

46 yo male, with a hx of alcohol abuse, presents with 3 days “Acute” of severe upper abdominal pain, vomiting, subjective fevers.”He said that he has fever but on examination it's normal”

- **Vital signs:** T: 37.4, HR: 115”Tachycardic”, BP: 98/65 “Low”
- **Abdomen:** mildly distended, moderately epigastric tenderness +voluntary guarding.
- **What is your differential diagnosis & what next?**
- Ask more questions about the pain.
- Perforation> but there's no signs of perforation like rebound tenderness, fever, involuntary guarding.
- Most likely “Acute pancreatitis” > “Hx of alcohol”.

## Acute pancreatitis (Extra)

<b>General characteristics:</b>	<ul style="list-style-type: none"> <li>● There is inflammation of the pancreas resulting from prematurely activated pancreatic digestive enzymes that invoke pancreatic tissue autodigestion.</li> <li>● Most patients with acute pancreatitis have mild to moderate disease but up to 25% have severe disease.</li> <li>● There are two forms of acute pancreatitis, mild and severe:             <ol style="list-style-type: none"> <li>1. <b>Mild acute pancreatitis</b> is most common and responds well to supportive treatment.</li> <li>2. <b>Severe acute pancreatitis (necrotizing pancreatitis)</b> has significant morbidity and mortality.</li> </ol> </li> </ul>
<b>Causes:</b>	<ol style="list-style-type: none"> <li>1. <b>Gallstones (40%)</b>—The gallstone passes into the bile duct and blocks the ampulla of Vater. “ALWAYS consider gallstone pancreatitis and rule it out even in pt with hx of alcohol use”</li> <li>2. <b>Alcohol abuse (40%)</b></li> <li>3. Post-ERCP<sup>2</sup>—Pancreatitis occurs in up to 10% of patients undergoing ERCP<sup>3</sup>.</li> <li>4. Viral infections (e.g., mumps, Coxsackievirus B)</li> <li>5. Drugs: Sulfonamides, thiazide <b>diuretics</b>, <b>NSAIDs</b>, furosemide, estrogens, HIV medications.</li> <li>6. Postoperative complications. (high mortality rate)</li> <li>7. Scorpion bites.</li> <li>8. Pancreas divisum<sup>4</sup>. “Pic”</li> <li>9. Pancreatic cancer.</li> <li>10. Hypertriglyceridemia, hypercalcemia.</li> <li>11. Uremia.</li> <li>12. Blunt abdominal trauma (<b>most common cause of pancreatitis in children</b>)</li> </ol> <div style="text-align: right; margin-top: 10px;">  </div>
<b>Clinical Feature:</b>	<p><b>Symptoms:</b></p> <ol style="list-style-type: none"> <li>1. Abdominal pain, usually in the epigastric region.             <ul style="list-style-type: none"> <li>● May radiate to back (50% of patients).</li> <li>● Often steady, dull, tenderness and severe; worse when supine and after meals</li> </ul> </li> <li>2. Nausea and vomiting, anorexia</li> </ol> <p><b>Signs:</b></p> <ol style="list-style-type: none"> <li>1. Low-grade fever, tachycardia, hypotension, leukocytosis.</li> <li>2. Epigastric tenderness, abdominal distention.</li> <li>3. Decreased or absent bowel sounds indicate partial ileus.</li> <li>4. The following signs are seen with hemorrhagic pancreatitis as blood tracks along fascial planes:             <ul style="list-style-type: none"> <li>➤ <i>Grey Turner's sign (flank ecchymoses)</i></li> <li>➤ <i>Cullen's sign (periumbilical ecchymoses)</i></li> <li>➤ <i>Fox's sign (ecchymosis of inguinal ligament)</i></li> </ul> </li> </ol> <p><b>Signs of severe Necrotizing Pancreatitis:</b></p> <ul style="list-style-type: none"> <li>- <i>Cullen sign:</i> Blue discoloration around the umbilicus -&gt; due to hemoperitoneum.</li> <li>- <i>Turner's sign:</i> Bluish purple discoloration of flanks -&gt; tissue catabolism of Hb.</li> </ul> <div style="text-align: right; margin-top: 10px;">  </div>

<sup>2</sup> “Endoscopic retrograde cholangiopancreatography” Read

<sup>3</sup> Presumably because of back pressure from injection of contrast material into the ductal system. Most people have asymptomatic increase in amylase, only 2-8% of pt will actually develop symptomatic pancreatitis.

<sup>4</sup> Is a congenital anomaly in the anatomy of the ducts of the pancreas in which a single pancreatic duct is not formed, but rather remains as two distinct dorsal and ventral ducts.

## Diagnosis:

### Laboratory studies:

- **Serum amylase** is the most common test (**Best initial test**), but many conditions cause hyperamylasemia (*nonspecific*) and its absence does not rule out acute pancreatitis (*nonsensitive*). However, if levels are more than five times the upper limit of normal, there is a high specificity for acute pancreatitis.
- **Serum lipase**—(**more specific for pancreatitis than amylase**).
- LFTs. “To identify cause (gallstone pancreatitis).”
- Hyperglycemia, hypoxemia, and leukocytosis may also be present.
- Order the following for assessment of prognosis (**Ranson’s criteria**): glucose, calcium, hematocrit, BUN, arterial blood gas (PaO<sub>2</sub>, base deficit), LDH, AST, WBC count.

TABLE 3-3 Ranson’s Criteria

Admission Criteria (GA LAW)	Initial 48 Hours Criteria (C HOBBS)	Mortality
Glucose >200 mg/dL	Calcium <8 mg/dL Decrease in Hematocrit >10%	<3 criteria—1%
Age >55 years	PaO <sub>2</sub> <60 mm Hg	3–4 criteria—15%
LDH >350	BUN increase >8 mg/dL	5–6 criteria—40%
AST >250	Base deficit >4 mg/dL	>7 criteria—100%
WBC >16,000	Fluid sequestration >6 L	

### Abdominal radiograph:

- Has a limited role in the diagnosis of acute pancreatitis.
- More helpful in ruling out other diagnoses, such as intestinal perforation (free air).
- The presence of calcifications can suggest chronic pancreatitis. “Pic”



### Abdominal ultrasound:

- Can help in identifying cause of pancreatitis (e.g., gallstones).
- Useful for following up pseudocysts or abscesses.

### CT scan of the abdomen:

- **(Most accurate test)** “for diagnosis of acute pancreatitis and for identifying complications of the disease.”
- Indicated in patients with severe acute pancreatitis.

### ERCP (indications):

- Severe gallstone pancreatitis with biliary obstruction.
- To identify uncommon causes of acute pancreatitis if disease is recurrent.

## Complications:

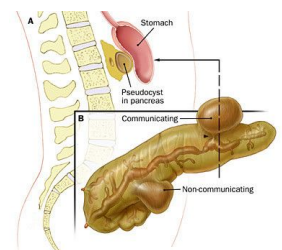
### 1. Pancreatic necrosis (may be sterile or infected):

- **Sterile pancreatic necrosis**—Half of all cases resolve spontaneously. Should be monitored closely in an ICU.
- **Infected pancreatic necrosis**—has high mortality rate (results in multiple organ failure in 50% of cases); surgical débridement and antibiotics indicated.

The only way to distinguish sterile from infected necrosis is via *CT-guided percutaneous aspiration* with Gram stain/culture of the aspirate.

### 2. Pancreatic pseudocyst:

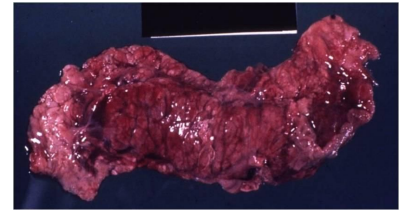
- Encapsulated fluid collection that appears 2 to 3 weeks after an acute attack—unlike a true cyst, it lacks an epithelial lining.
- **Complications** of untreated pseudocysts include rupture, infection, gastric outlet obstruction, fistula, hemorrhage into cyst, and pancreatic ascites.
- **Diagnosis:** CT scan is the study of choice.
- **Treatment:**
  - Cysts <5 cm: observation.



➤ Cysts >5 cm: drain either percutaneously or surgically.

**3. Hemorrhagic pancreatitis:**

- Characterized by Cullen’s sign, Grey Turner’s sign, and Fox’s sign.
- CT scan with IV contrast is the study of choice.



**4. Adult respiratory distress syndrome**—a life-threatening complication with high mortality rate.

**5. Pancreatic ascites/pleural effusion.** “The most common cause is inflammation of peritoneal surfaces.”

**6. Ascending cholangitis.** “Due to gallstone in ampulla of Vater, leading to infection of biliary tract”

**7. Pancreatic abscess (rare).** “Develops over 4 to 6 weeks and is less life threatening than infected pancreatic necrosis.”

**Treatment:**

**1. Patients with mild acute pancreatitis:**

- Bowel rest (NPO).
- IV fluids. “Correct electrolyte abnormalities.”
- Pain control.
- Nasogastric tube. “If severe nausea/vomiting or ileus present.”

**2. Patients with severe pancreatitis:**

- Should be admitted to the ICU.
- Early enteral nutrition in the first 72 hours is recommended through a nasojejunal tube.
- If the severe acute pancreatitis has not resolved in a few days, supplemental parenteral nutrition should be started.
- If more than 30% of the pancreas is necrosed, prophylactic antibiotics (imipenem) should be considered to prevent infection. “Which has high morbidity and mortality”

**Case 4:**

**23 year old female medical students, Presented with 2 years h/o intermittent left lower quadrant abdominal pain which is usually relieved by defecation and associated with constipation and abdominal bloating.**

- What else you need?
- Acute vs chronic?
- Visceral vs parietal?
- Physical exam?
- DDX?

You're supposed to know how to answer these questions now ;)

**Irritable bowel syndrome**

- IBS refers to an idiopathic disorder associated with an intrinsic bowel motility dysfunction (abnormal resting activity of GI tract) that affects 10% to 15% of all adults.
- Is predominantly a pain syndrome of unknown etiology that is often relieved by bowel movement.

**General characteristics**

- **IBS is a chronic continuous or remittent functional GI illness.**
- **It has no recognized organic disease and has no specific cause.**
- **50% of referrals to gastroenterologist.**
- Common associated findings include depression, anxiety, and somatization. Psychiatric symptoms often precede bowel symptoms. Symptoms are exacerbated by stress and irritants in the intestinal lumen.
- All laboratory test results are **normal**, and no mucosal lesions are found on sigmoidoscopy. “IBS is a benign condition and has a favorable long-term prognosis.”
- Symptoms should be present for at least 3 months to diagnose IBS.

<p><b>Causes</b></p>	<ul style="list-style-type: none"> <li>The cause of IBS is incompletely understood but biopsychosocial factors are thought to play an important role, along with luminal factors, such as diet and the gut microbiota.</li> </ul>										
<p><b>Clinical Feature</b></p>	<ul style="list-style-type: none"> <li><b>Recurrent Cramping abdominal pain characterized by:</b> “Location varies widely, but <b>sigmoid colon</b> is the common location of pain” <ul style="list-style-type: none"> <li>☐ Relieved by defecation</li> <li>☐ Less at night.</li> </ul> </li> <li>Change frequency and consistency of stool Such as diarrhea , constipation or alternating diarrhea ,and constipation. “20% of IBS have constipation only. The majority are diarrhea or alternating.”</li> <li>Abnormal stool passage (straining, urgency or feeling of incomplete evacuation).</li> <li>Bloating or feeling of Abdominal distention.</li> </ul>										
<p><b>Clinical features supporting IBS Dx</b></p>	<ul style="list-style-type: none"> <li>Long history with <b>exacerbation triggered by life events</b> (stress).</li> <li>Association with symptoms in other organ systems. <b>Fatigue, headache, SOB, dizziness</b></li> <li>Coexistence of <b>anxiety and depression</b>.</li> <li>Symptoms that are <b>exacerbated by eating</b>.</li> <li>Conviction of the patient that the disease is caused by “popular” concerns (e.g. allergy, H Pylori)</li> </ul>										
<p><b>Symptoms that cumulatively support the IBS Dx:</b></p>	<ul style="list-style-type: none"> <li>Abnormal stool frequency (&gt;3 BM/day or &lt;3 BM/week.)</li> <li>Abnormal stool form (lumpy/hard or loose/watery)</li> <li>Abnormal stool passage (straining, urgency or feeling of incomplete evacuation).</li> <li>Passage of mucus.</li> <li>Bloating or feeling of abd distension.</li> </ul> <table border="1" data-bbox="971 793 1572 1096"> <thead> <tr> <th>Type</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>IBS with constipation (IBS-C)</td> <td>Hard lumpy stools &gt;25% and loose (mushy) or watery stools &lt;25% of bowel movements</td> </tr> <tr> <td>IBS with diarrhoea (IBS-D)</td> <td>Loose (mushy) or watery stools &gt;25% and hard or lumpy stools &lt;25% of bowel movements</td> </tr> <tr> <td>Mixed IBS (IBS-M)</td> <td>Hard or lumpy stools &gt;25% and loose (mushy) or watery stools &gt;25% of bowel movements</td> </tr> <tr> <td>Unsubtyped IBS</td> <td>Insufficient abnormality of stool consistency to meet criteria for IBS-C, D or M</td> </tr> </tbody> </table>	Type	Description	IBS with constipation (IBS-C)	Hard lumpy stools >25% and loose (mushy) or watery stools <25% of bowel movements	IBS with diarrhoea (IBS-D)	Loose (mushy) or watery stools >25% and hard or lumpy stools <25% of bowel movements	Mixed IBS (IBS-M)	Hard or lumpy stools >25% and loose (mushy) or watery stools >25% of bowel movements	Unsubtyped IBS	Insufficient abnormality of stool consistency to meet criteria for IBS-C, D or M
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<p><b>Epidemiology</b></p>	<p>Gender differences:</p> <ul style="list-style-type: none"> <li>Affects up to 20% of adults (70% of them are <b>women</b>).</li> </ul> <p>Age:</p> <ul style="list-style-type: none"> <li><b>Young.</b></li> <li>High prevalence of psychiatric disorders (anxiety and depression were the most common).</li> </ul> <p>Only 25% of people with this condition seek medical care.</p>										
<p><b>Pathophysiology</b></p>	<pre> graph TD     PSF[Psychosocial Factors 60% psychiatric history Physical or Sexual abuse]     AM[Altered Motility Distention Spasm Stress (physical or psychological) Food (high fat meal)]     NH[Neurotransmitter imbalance? Infection and inflammation?]     VHS[Visceral Hypersensitivity Pain Bloating Urge to defecate]     HSL[High serotonin levels]     BDS[Balloon distension studies Pain during transit of food or gas]      PSF --&gt; NH     AM --&gt; NH     NH --&gt; VHS     HSL --&gt; PSF     HSL --&gt; AM     BDS --&gt; VHS   </pre>										

## Diagnosis

- This is a clinical diagnosis, and a **diagnosis of exclusion**.
- Initial tests that may help exclude other causes include CBC, renal panel, fecal occult blood test, stool examination for ova and parasites, ESR and possibly a flexible sigmoidoscopy.
- You must first exclude lactose intolerance , IBD , celiac disease , carcinoid, Giardia infection and anatomic defects of bowel as the cause.

**By Rome III criteria : Recurrent abdominal pain or discomfort > or = 3 days per month in last 3 months:**

1. Pain or discomfort **improve with defecation**.
2. Symptoms onset is associated with change in **frequency of stool**.
3. Symptoms onset is associated with change in **form (appearance) of stool**.

**Ask about Alarm symptoms that suggest other serious diseases. (to exclude them):**

- PR bleeding , Weight loss.
- Family history of cancer , Onset >45 years of age.
- Fever , Anemia.
- Progressive deterioration, Steatorrhea and dehydration.
  - A firm diagnosis of IBS based on validated HX, and a normal physical examination, coupled with limited relevant diagnostic testing is reassuring to patients.
  - Endoscopy?. **Only if you want to roll out other diseases**

**22.83 Rome III criteria for diagnosis of irritable bowel syndrome**

Recurrent abdominal pain or discomfort at least 3 days/mth in the last 3 months, associated with *two or more* of the following:

- Improvement with defecation
- Onset associated with a change in frequency of stool
- Onset associated with a change in form (appearance) of stool

**22.84 Supporting diagnostic features and alarm features in IBS**

**Features supporting a diagnosis of IBS**

- Symptoms > 6 mths
- Frequent consultations for non-gastrointestinal problems
- Previous medically unexplained symptoms
- Stress worsens symptoms

**Alarm features**

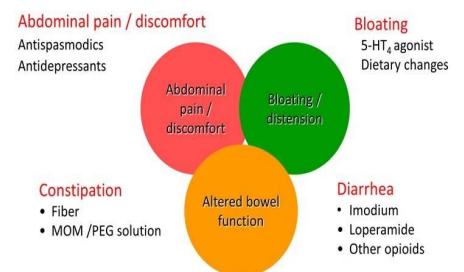
- Age > 50 yrs; male gender
- Weight loss
- Nocturnal symptoms
- Family history of colon cancer
- Anaemia
- Rectal bleeding

## Management and treatment:

- Usually, no specific treatment is necessary. Manage the symptoms below as indicated: **“Anti Motility”**
- **Diarrhea**—diphenoxylate, *loperamide*.
- **Constipation**—Colace, psyllium, *cisapride*.
- Avoid dairy products, avoid excessive caffeine.
- Tegaserod maleate (Zelnorm) is a serotonin agonist recently introduced for the treatment of IBS. “In a short-term study, it improved abdominal pain, bloating, and constipation in women.”
- Fiber and diet.
- Antispasmodic agent (hyoscyamine or dicyclomine).
- Tricyclic and antidepressant (Resistant cases)

**(Note :There is no cure, but effective management may lessen the symptoms).**

### Treatment of IBS (Then)



## Physician attitude

- The therapeutic attitude of the physician during the first interview is of paramount importance. تذكر دائماً إن المريض هنا يعاني، وظهور النتائج سليمة تماماً مع وجود الأعراض يقلقه أكثر.
- He should acknowledge the distress caused by the illness.
- Build an atmosphere of confidence and trust.
- Allow sufficient time.
- Explain to patient that he does not have a serious disease, however he has a chronic illness characterized by “sensitive gut” which can reacts excessively to food and mood.



### **Abdominal Pain Clinical Pearls:**

- Pain awakening the patient from sleep should always be considered significant.
- Pain almost always precedes vomiting in surgical causes; converse is true for most gastroenteritis and NSAP (non-specific abdominal pain).
- Exclude life threatening pathology.
- BHCG (Beta Human chorionic gonadotropin) in female of childbearing age.
- Initial workup of chronic abdominal pain should be focused on differentiating benign functional illness from organic pathology.
- Features that suggest organic illness include unstable vital signs, weight loss, fever, dehydration, electrolyte abnormalities, symptoms or signs of gastrointestinal blood loss, anemia, or signs of malnutrition.

## **Cases**

**1. You see a 47-year-old man in clinic with a three-month history of epigastric dull abdominal pain. He states that the pain is worse in the mornings and is relieved after meals. On direct questioning, there is no history of weight loss and the patient's bowel habits are normal. On examination, his abdomen is soft and experiences moderate discomfort on palpation of the epigastric region. The most likely diagnosis is:**

- A. Gastric ulcer
- B. Gastro-oesophageal reflux disease (GORD)
- C. Duodenal ulcer
- D. Gastric carcinoma
- E. Gastritis

**2. You see an 80-year-old man who presents to accident and emergency with epigastric pain. The pain started 3 days ago and today he noticed that the colour of his stools has changed to a 'tarry-black' colour. Associated symptoms include nausea and lethargy. The patient is a smoker of 20 cigarettes a day and has recently finished eradication treatment for a duodenal ulcer. The patient is alert and orientated with a pulse rate of 99 and blood pressure of 98/69, respiratory rate of 18, oxygen saturations of 98 per cent on room air and temperature of 37.2°C. On examination, the abdomen is soft with marked tenderness in the epigastric region and bowel sounds are present. The rectum is empty, on PR examination, with some traces of malaena. The patient has been started on high flow oxygen and has been given some oral analgesia. The most appropriate next step in managing this patient is:**

- A. Keep nil by mouth and arrange endoscopy
- B. Request an erect chest x-ray
- C. Intravenous pantoprazole
- D. ECG
- E. Intravenous cannulation and fluids

**3. A 32-year-old white woman complains of abdominal pain off and on since the age of 17. She notices abdominal bloating relieved by defecation as well as alternating diarrhea and constipation. She has no weight loss, GI bleeding, or nocturnal diarrhea. On examination, she has slight LLQ tenderness and gaseous abdominal distension. Laboratory studies, including CBC, are normal. Which of the following is the most appropriate initial approach?**

1. Recommend increased dietary fiber, antispasmodics as needed, and follow-up examination in 2 months.
2. Refer to gastroenterologist for colonoscopy.
3. Obtain antiendomysial antibodies.
4. Order UGI series with small bowel follow-through.
5. Order small bowel biopsy.

## Answers

- C.** Although all of the answers may present with abdominal pain, the key to the answer is in the history. Duodenal ulcers (C), which are four times more common than gastric ulcers, classically present with abdominal pain which is usually relieved after meals or drinking milk. Gastric ulcers (A) on the other hand present with abdominal pain which tends to worsen after meals. In either duodenal/gastric ulcers, weight loss may be an associated symptom, but this is usually more common in gastric ulcers. Patients who suffer from GORD (B) usually experience retrosternal discomfort ('heartburn') after meals and on lying flat. In addition, abdominal discomfort and pain in patients with gastritis (E) usually occurs after meals. Gastric carcinomas (D) tend to present with abdominal pain and drastic weight loss (e.g. 2–3 stone weight loss in the space of three months).
- E.** The patient's symptoms of epigastric pain and malaena point to a diagnosis of an upper GI bleed which can also present with haematemesis. The cause could possibly be due to a (recurrent) bleeding duodenal ulcer. The initial assessment/management of any acute medical condition should follow the 'ABC' (airway, breathing and circulation) route. Answers A–E are all steps in managing an upper GI bleed but, in this question, the most appropriate next step in management would be to insert two large bore cannulae and commence IV fluids (E). In addition, although not mentioned in the answer, taking blood for investigations (e.g. FBC, U&Es, coagulation screen, group and save, amylase and liver function tests) would also be performed when the cannulae are inserted. Once the patient has been stabilized haemodynamically (with IV fluids or blood if required in cases of severe anaemia), he/she is usually placed nil by mouth and an upper GI endoscopy is arranged to identify, and treat, any sites of bleeding. The Rockall score can be used to assess: (1) Risk of rebleeding/mortality pre-endoscopy; and (2) Risk of rebleeding/mortality post-endoscopy.
- A.** This patient meets the Rome II criteria for irritable bowel syndrome. The major criterion is abdominal pain relieved with defecation and associated with change in stool frequency or consistency. In addition, these patients often complain of difficult stool passage, a feeling of incomplete evacuation, and mucus in the stool. In this young patient with long-standing symptoms and no evidence of organic disease on physical and laboratory studies, further evaluation (ie, colonoscopy or small bowel studies for sprue) is unnecessary. Irritable bowel syndrome is a motility disorder associated with altered sensitivity to abdominal pain and distension. It is the commonest cause of chronic GI symptoms and is three times more common in women than in men. Associated lactose intolerance may cause similar symptoms and should be considered in all cases. Patients older than 40 years with new symptoms, weight loss, or positive family history of colon cancer should have further workup, usually with colonoscopy.