Advanced Assessment in Clinical Practice:
Abdominal Disorders

I. Common abdominal conditions

A. Bowel obstruction: Disruption in normal bowel function due to some type of cause. Peristalsis increases above the area of obstruction which leads to increased secretions, edema and increased capillary permeability. This results in fluid and electrolyte imbalances and hypovolemia.

Mechanical bowel obstruction	Caused by some type of factor involving the abdomen or the bowel such as hernia, adhesions, tumors, diverticulitis, intussusception, or gallstones.
Non-mechanical bowel obstruction	Inability of the bowel to function in the absence of a mechanical blockage. Paralytic ileus. Occurs in comatose and post-op patients.

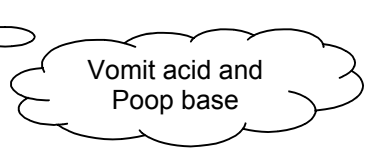
1. Assessment

<u>Small bowel obstruction</u>
- Vomiting common and may have a fecal odor
- Metabolic alkalosis
- Hypoactive to absent bowel sounds

<u>Large bowel obstruction</u>
- Vomiting a late sign
- Pronounced abdominal distention
- Hypoactive to absent bowel sounds
- Diarrhea may be present leading to metabolic acidosis

<u>Early obstruction</u>
- High pitched bowel sounds
- Vital signs normal

<u>Late obstruction</u>
- Absent or hypoactive bowel sounds
- Signs of shock



Lab effects: Bowel obstruction with prolonged vomiting
↑ amylase and lipase and ↓ Na+, Cl^-, K^+
↑ venous CO_2 initially due to loss of acid
↓ venous CO_2 as HCO_3^- lost from the duodenum due to vomiting

B. Appendicitis

1. Pain characteristics: Gradual onset of pain because it is due to an infection. May be periumbilical initially and then localize to the right lower quadrant. Rebound tenderness and localization to the right lower quadrant.

Lab effects: Appendicitis
↑ WBC, ↑ Neutrophils,
↓ Lymphocytes

2. Associated findings: Often associated with anorexia, nausea or vomiting, and low grade fever.

C. Hepatitis: inflammation of the liver caused by several different viruses. B, C, and D can cause chronic hepatitis

1. Symptoms: Jaundice, fatigue, abdominal pain especially in the right upper quadrant, loss of appetite, nausea, vomiting, diarrhea, low grade fever, and headache.

Lab effects: Hepatitis
Some ↑ ALP, AST, and LDH.
Marked ↑ of ALT
↑ Total and indirect bilirubin
↑ Direct bilirubin due to swelling
+ ANA, ↑ PT, and ↑ ammonia

Types of Viral Hepatitis					
	Hepatitis A	Hepatitis B	Hepatitis D	Hepatitis C	Hepatitis E
Incubation period	30 days	60-180 days	30-180 days	35-60 days	15-60 days
Route of transmission	Fecal-oral, parenteral, sexual	Parenteral, sexual	Parenteral, possible fecal-oral, sexual	Parenteral	Fecal-oral, sexual
Onset	Acute with fever	Insidious	Insidious	Insidious	Acute
Carrier state	Negative	Positive	Positive	Positive	Negative
Severity	Mild	Severe and may be prolonged or chronic	Severe	Severe	Severe in pregnant women
Chronic hepatitis	No	Yes	Yes	Yes	No
Age-group infected	Children and young adults	Any	Any	Any	Children and young adults
Prophylaxis	Hygiene, immune serum globulin	Hygiene, HBV vaccine	Hygiene, HBV vaccine	Hygiene, screening blood, interferon-alpha	Hygiene, safe water

D. Cirrhosis: Irreversible destruction of the liver parenchyma with replacement of hepatic cells with fibrous tissue as a result of the chronic disease. Ultimately will progress to hepatic failure.

Lab effects: Cirrhosis
Moderate ↑ AST and ALT. AST>ALT
(If AST more than 2x, think alcoholic cirrhosis)
↑↑ ALP, ↑ total and indirect bilirubin, ↑ ammonia
↑ PT, PTT, INR and ↓ platelets
↓ Albumin and total protein and ↑ globulin

1. Liver palpation.
2. Esophageal varices.
3. Ascites as the enlarged liver places pressure on the portal system causing increased hydrostatic pressure.
4. Fatigue and muscle wasting.
5. Fetor hepaticus: Breath odor of chronic liver disease caused by the liver's inability to detoxify mercaptan from the breakdown of protein.
6. Gynecomastia and impotence in men.
7. Amenorrhea in women.
8. Pruritis common with high risk for skin breakdown.
9. Vascular lesions
   - Spider angiomas
   - Telangiectasias on the face and hands
10. Hepatic encephalopathy resulting in impaired cognition and confusion, decreased LOC and coma due to cerebral edema and neuromuscular disturbances such as asterixis "Liver flap".
11. Evidence of portal hypertension.

E. Severity of liver dysfunction

Parameter	Least Severe	Moderate Severity	Most Severe
Serum bilirubin (.1-1.0)	Below 2.0	2.0-3.0	Over 3.0
Serum albumin (3.5-5.0)	Over 3.5	3.0-3.5	Under 3.0
Ascites	None	Easily controlled	Poorly controlled
Degree of encephalopathy	None	Minimal	Advanced coma
Nutrition	Good	Fair	Poor with muscle wasting

F. Liver cancer: Invasion of the liver by malignant cells producing liver enlargement and a hard, irregular border on palpation. See upper abdominal enlargement.

1. Nodules may be present and palpated.

2. Assessment
   - Liver may be tender or non-tender.
   - Ascites and jaundice.
   - Anorexia and fatigue.
   - Dark urine and light colored stools.

G. Gallbladder disease

Cholelithiasis	Stone formation in the gallbladder. May also be present in the biliary tract.
Cholecystitis	Acute cholecystitis is associated with stone formation in 90% of all cases, causing obstruction and inflammation. Chronic cholecystitis is repeated attacks resulting in a gallbladder that is scarred and contracted. These patients have fat intolerance, flatulence, nausea, anorexia, and nonspecific abdominal pain and tenderness of the right hypochondriac region.

1. Pain characteristics
   - Intermittent severe RUQ or epigastric pain lasting minutes to hours.
   - May be subscapular, especially on the right.
   - May radiate around the mid torso to the right scapula.
   - Pain is abrupt and severe with cholelithiasis lasting 2-4 hours.
   - Positive Murphy's sign.

2. Associated findings
   - RUQ tender.
   - Nausea and vomiting.
   - Temperature may be low with cholelithiasis.
   - Fever with cholecystitis.
   - Jaundice if obstruction of the common bile duct.

Lab effects: Obstructive biliary tract
↑ ↑ ↑ ALP, ↑ ALT, ↑ PT
↑ direct bilirubin, ↓ urobilinogen
↑ amylase, lipase, WBC

H. Pancreatitis: Inflammation and autodigestion of the pancreas

Lab effects:
↑ amylase 4x normal
↑ lipase. Late to rise and fall
↑ triglyceride probable alcohol use
↑ WBC, ↑ PT, ↑ Hct, ↓ K+, ↓ Ca++
↑ BS, ↓ protein and albumin
Protein, casts and glucose in urine

1. Pain characteristics
   - Sudden, severe pain in the left upper quadrant, epigastric or umbilical areas.
   - May be referred to the left shoulder.

2. Associated findings
   - Often associated with nausea and vomiting.
   - May be associated with alcohol intake.
   - Abdominal distention.
   - Bowel sounds may be absent or diminished if an ileus.
   - Fever of 101-102º. Sweating, weakness.
   - Mild jaundice may be present.

   <u>Other potential findings</u>
   - Basilar consolidation of the lung with left pleural effusion
   - Signs of hypocalcemia such as muscle twitching, seizure activity, laryngospasm, Chvostek's and Trousseau's sign.
   - Cullen's and/or Grey-Turner's sign in hemorrhagic pancreatitis.

3. Ranson's criteria: Assessment of acute pancreatitis

   Age over 55 years
   WBC > 16,000
   Blood glucose > 200 mg/dL
   Base deficit > 4 mEq/L
   Serum LDH > 350 IU/L
   AST > 250 IU/L

   Development of the following findings in the first 48 hours indicates worsening prognosis:

   Hct decreased by > 10%
   BUN increased by 5 mg/dL
   PaO2 < 60 mm Hg
   Serum calcium < 8 mg/L
   Estimated fluid sequestration > 6 L

4. Mortality rates based on Ranson's criteria

   3-4 signs=15% mortality
   5-6 signs=40% mortality
   >6 signs=100% mortality

5. Chronic pancreatitis may develop
   - Steatorrhea occurs when 90% of the pancreas is destroyed.
   - Diabetes mellitus can develop if endocrine function fails.

I. Peritonitis: Inflammation of the peritoneum.

1. Pain characteristics
   - Onset may be sudden or gradual.
   - Pain may be localized or generalized, dull or severe.
   - Often have guarding and pain on deep inspiration.
   - If a perforated gastric or duodenal ulcer may see abrupt right upper quadrant pain which may be referred to the shoulders.

2. Associated findings
   - Reduced or absent bowel sounds.
   - Nausea, vomiting, and fever.
   - If a perforated gastric or duodenal ulcer may see abdominal distention, rigid abdomen and rebound tenderness.

J. Mesenteric thrombosis: Blood clot in the major vessels supplying or draining blood from the intestines. Pain will usually be periumbilical, severe, and unrelieved by narcotics. Prognosis depends on prompt diagnosis and the underlying cause.

1. Venous thrombosis - 32% mortality

2. Arterial embolism - 54% mortality

3. Arterial thrombosis - 77% mortality

4. Non-occlusive ischemia - 73% mortality

II. Common urinary tract disorders

Lab effects: UTI
Urine cloudy, WBC and casts, RBCs, ↑ pH
+ nitrate need for a culture
+ leukocyte esterase=UTI
↑ WBC, ↑ Neutrophils, ↓ Lymphocytes

A. Pyelonephritis: Infection of the kidney and renal pelvis.

1. Assessment
   - Chills and fever.
   - Flank pain, bacteriuria, pyuria, dysuria, nocturia, and frequency.
   - Costovertebral angle tenderness may be evident.

2. Abscesses may form. If prolonged, kidneys will atrophy and the tubules and glomerulus is destroyed.

B. Cystitis: Inflammation of the bladder

1. Assessment
   - Urinary incontinence and hematuria.
   - Low back or suprapubic pain.
   - Burning on urination, fever, nausea and vomiting.

2. Chronic cystitis may develop

C. Renal calculi: The presence of stones in the renal pelvis, ureters, or bladder

1. Assessment
   - Colic pain in the lower quadrants of the abdomen or the flank. May extend to the groin or genitals. May be intermittent.
   - Hematuria present. Often will have a fever.
   - Kehr's sign with radiation of the pain to the left shoulder may be seen.

2. Nephrostomy tube may be needed if unable to pass the stone.