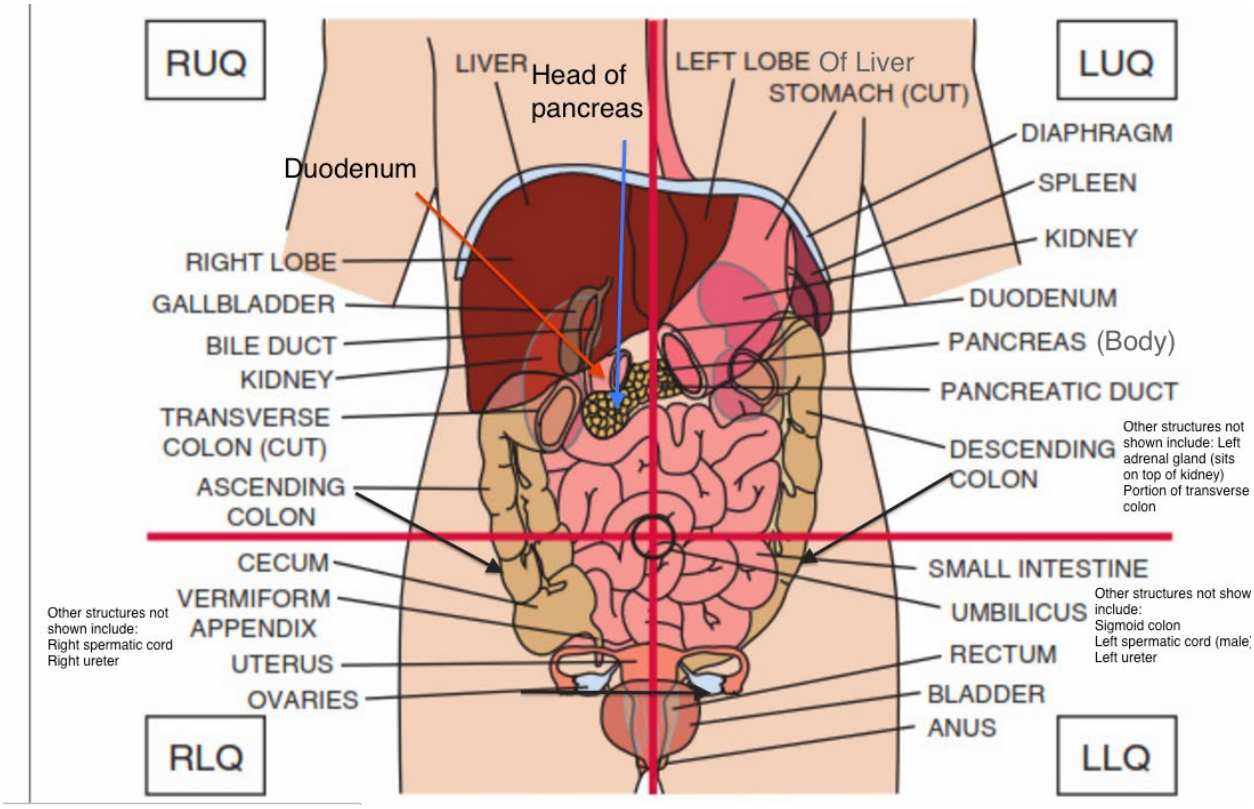
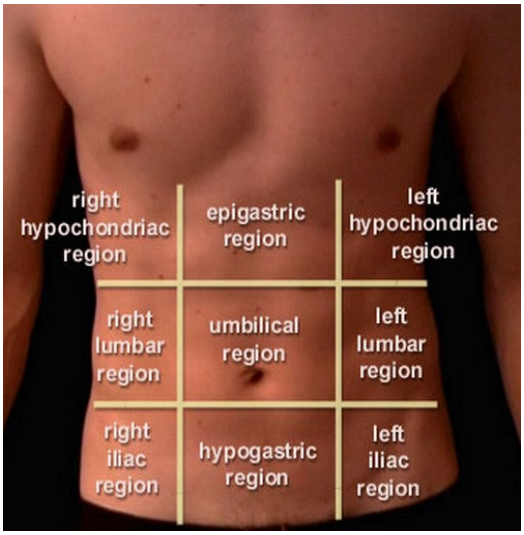
Condensed Chapter Material
Chapter 17: Abdomen

Identify the organs present in each quadrant of the abdomen (Siedel's, Figures 17-1 and 17-3 and Box 17-1)

When approaching the abdominal examination, mentally break the abdomen into four quadrants (right upper, left upper, right lower, left lower) by making an imaginary line vertically and horizontally through the umbilicus and think about what organs would be located in each quadrant. The diagram below highlights the organs located in each quadrant.



You can also break the abdomen into 9 quadrants:



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Describe the key aspects of the history and be able to generate pertinent questions regarding abdominal and GI complaints (Siedel's, 375-277)

Complaint/Symptom	Pertinent Specific Information to Obtain
Abdominal Pain	● Onset/Duration: Did symptoms begin gradually or suddenly? Is the pain persistent, recurrent or intermittent? ● Character: Have patient describe the pain (e.g. dull, sharp, burning, gnawing, stabbing, cramping, aching, colicky) ● Location: Have patient point to the pain; Has the pain changed in location? Does the pain radiate or is it localized? Is the pain superficial or deep? ● Associated symptoms: Have you noticed any other symptoms? (e.g. vomiting, diarrhea, constipation, weight loss/gain) ● Alleviating/Aggravating factors: Ask about the relationship of pain with the patient's menstrual cycle, intercourse, urination, defecation, inspiration, change in body position, food/alcohol intake, stress, time of day, trauma, etc. ● Stool characteristic: Have you noticed any recent changes in your stool? (e.g. color, consistency, odor, frequency) ● Urinary characteristics: Have you noticed any changes in your urination? (e.g. frequency, color, volume congruent with fluid intake, force of stream, hesitancy, difficulty emptying) ● Medication: Are you taking any medication? (e.g. high dose aspirin, steroids, nonsteroidal anti-inflammatory drugs)
Additional Abdomen-Specific History Questions	● Early satiety? ● Decreased appetite? ● Vomiting? Any blood in vomit? Appearance of coffee grounds? ● Bowel movements: # per day, color, consistency, caliber, blood or mucous? ● Pain with defecation? ● Pain relieved with defecation? ● Weight loss? ● Yellowing of skin or eyes? ● Use of acetaminophen? How much and how often? ● Urinary symptoms (dysuria, increased frequency, hematuria?)

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List the basic elements of the abdominal physical exam and the order in which to perform them (Physical Exam Checklist; Siedel's, 377-383):

Abdominal Examination: Approach patient from the right and place the patient in a supine position with arms at sides and have the patient relax his/her abdominal musculature. Make sure to keep patient covered with a drape or gown in areas which are not being examined. Have patient identify the area which is causing discomfort, and examine that area last.

Inspection:

1) Observe skin color and surface characteristics
    a) Skin may be slightly paler than rest of body given the amount of sun exposure
    b) Venous network is often visible
    c) Look for unexpected findings such as jaundice (yellowing) and cyanosis (bluish discoloration), inflammation (redness), bluish periumbilical discoloration (Cullen sign-indicative of intra-abdominal bleeding), striae ("stretch marks", which are caused by tumors, ascites, Cushing disease and increased weight), or any lesions
2) Inspect for contour, symmetry and surface motion.
    a) Contour: abdominal profile from rib margin to pubis
        i) Flat contour: well-muscled, athletic
        ii) Rounded/convex: young children; adults with poor muscle tone and increased fat
        iii) Scaphoid or concave: Thin adults
        iv) Abdomen should be symmetric with max convexity at umbilicus
    b) Umbilicus:
        i) May be inverted or protrude slightly
        ii) Should not have inflammation, swelling or bulging (hernia)
    c) Hernias: defect of abdominal wall allowing protrusion of internal organs into defect. Most are reducible (contents can be pushed back into place) but nonreducible hernias can allow for incarceration and subsequent obstruction of blood flow to specific organ requiring immediate medical attention. Can have patient raise head or legs to increase abdominal pressure->protrusion of hernia for easier visualization
    d) Movement:
        i) Should have smooth even movement with respiration

Auscultation: Always perform before percussion and palpation because those maneuvers may alter frequency/intensity of bowel sounds

1) Place warm diaphragm of stethoscope lightly on abdomen
2) Listen for bowel sounds in all four quadrants until sound is identified and note frequency and character
    a) Normal: clicks and gurgles occurring irregularly between 5-35 times per minute
    b) Loud prolonged gurgles (stomach growling)=borborygmi

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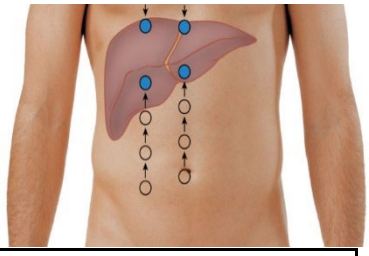
c) Loud sounds may be due to gastroenteritis ("stomach flu"), intestinal obstruction or hunger
d) High-pitched tinkling can be caused by intestinal fluid and air under pressure (early obstruction)
e) Absent bowel sounds: inability to hear any bowel sounds after five minutes of continuous listening (usually associated pain and is a surgical emergency)

Percussion:

1) Indirect percussion used to assess size and density of organs and to detect presence of fluid, air or masses.

2) Assessing Liver span:
   a) Begin at the right midclavicular line over an area of tympany and proceed to an area of dullness
   b) Percuss upward along midclavicular line to identify lower border of liver (dullness)
      i) Usually heard at or slightly below the costal margin
      ii) Lower liver border greater than 2-3 cm below costal margin indicates organ enlargement or downward displacement of diaphragm (due to pulmonary diseases)



Review of Percussion Sounds:

Note	Description	Location
Tympany	Musical note of higher pitch than resonance, drum-like sound	Over air-filled viscera (ex. stomach)
Hyperresonance	Pitch lies between tympany and resonance, booming sound	Base of left lung
Resonance	Sustained note of moderate pitch, hollow sound	Over lung tissue and sometimes over abdomen
Dullness	Short, high-pitched note with little resonance; thud sound	Over dense, solid organs adjacent to air-filled structures (liver, spleen etc)

Palpation: Palpate to assess organs of abdominal cavity, muscle spasm, masses, fluid and areas of tenderness.

1) Light Palpation: used to identify muscular resistance, tenderness and large masses
   a) Begin with light, systematic palpation of all four quadrants. Address the area of concern last.
   b) Lay palm of hand lightly on abdomen, with fingers extended and held together.

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c) Depress abdominal wall with palmar surface of fingers in a light, circular motion.
d) Guarding (tensing of abdomen to protect inflamed viscera) should be noted

2) Moderate Palpation
    a) Continue palpation with same hand position, gradually increasing force until deep palpation is obtained
    b) Palpate during the entire respiratory cycle (inspiration causes downward displacement of organs)
    c)
3) Deep Palpation: used to delineate abdominal organs and identify less obvious masses
    a) Continue same technique, pressing deeply
    b) Palpate all four quadrants, moving fingers back and forth over abdominal contents
    c) May feel borders of rectus abdominis muscles, aorta, and colon.
    d) Tenderness may become evident
    e) If deep palpation is difficult due to obesity or muscular resistance, you can utilize the bimanual technique
        i) Place one hand atop the other
        ii) Exert pressure with the top hand while concentrating on sensation with other hand
        iii) Bimanual technique can be used on all patients.

Identify masses and note location, size, shape, consistency, tenderness, pulsation, mobility and movement with respiration. To delineate superficial, mass located in abdominal wall, from intraabdominal mass, have patient lift head which causes contraction of abdominal muscles. Superficial masses will still be palpated while intraabdominal masses will be obscured by musculature.

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Recognize common causes of abdominal pain (Siedel's, Tables 17-2, and 17-3)

***Acute* Causes of Abdominal Pain**		
Location	Condition	Characteristic
RUQ	Cholecystitis (inflammation of gallbladder)	Severe pain; RUQ rigidity and tenderness, vomiting, fever,
	Perforated Gastric/Duodenal Ulcer	Abrupt pain, distention of abdomen due to free air ->increased resonance; pain may refer to shoulders
	Biliary stones	Episodic, severe pain, vomiting, jaundice
RLQ	Appendicitis	Initially periumbilical, colicky pain then goes to the RLQ. Guarding, tenderness, nausea and vomiting
LUQ	Splenic rupture	Pain: Intense, LUQ, radiating to left shoulder, may worsen with foot of bed elevated. Possible associated shock, pallor, lowered temperature
Lower Quadrants	Pelvic Inflammatory Disease	Pain increases with activity; tender cervix, cervical discharge, dyspareunia (pain with intercourse)
	Ectopic Pregnancy	Pain: Lower quadrant and may refer to shoulder; agonizing pain. May have symptoms of spotting, irregular menses, symptoms of pregnancy, mass on pelvic exam
	Diverticulitis (inflammation of pouches in large bowel)	Pain radiates to left side, especially after eating; Associated flatulence, borborgymi, diarrhea, tenderness on palpation
Epigastric	Pancreatitis	Dramatic and sudden, refers to back; associated vomiting and fever
Generalized	Peritonitis	Sudden or gradual onset; dull or severe; guarding; pain on deep inspiration, therefore patient's take shallow respirations;
	Intestinal Obstruction	Abrupt, severe, colicky, spasmodic, refereed to epigastrium and umbilicus; distention of abdomen, can have visible peristalsis
	Volvulus (obstruction due to twisting or knotting of the gastrointestinal tract)	Pain referred to hypogastrium and umbilicus; Associated distension of abdomen, nausea, vomiting, guarding, and volvulus may be palpable
	Renal Calculi	Pain: Intense, flank, extending to groin and genitals, may be episodic; Possible associated fever and hematuria (blood in urine)

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Chronic **Conditions Causing Abdominal Pain**	
Condition	**Characteristics**
Irritable Bowel Syndrome	Pain: Hypogastric, crampy, associated with bowel function. Unremarkable physical examination. Pain associated with gas, and bloating. Relief with passage of flatus and feces.
Lactose Intolerance	Pain: Crampy after drinking milk or eating milk products. Associated diarrhea and unremarkable physical exam
Constipation	Pain: Colicky/dull and steady pain that does not progress/worsen. May have associated palpable fecal mass and stool in rectum
Gastroesophageal reflux disease	Pain: Burning or gnawing in midepigastrium that worsens when laying down or eating certain foods. Unremarkable physical examination
Peptic Ulcer	Pain: Burning/gnawing pain. May have epigastric tenderness on palpation

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