Abdominal Assessment

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Order of Exam is Critical!

1. Inspection
2. Auscultation
3. Percussion
4. Palpation

Inspection

1. Skin Characteristics and Color
   - Note any jaundice, redness or cyanosis
   - Note any bruising, scars, striae, rashes or lesions
2. Symmetry
   - Should be evenly rounded
   - Umbilicus should be centrally located
   - Note any distention or bulges
3. Inspect Abdominal Muscles as patient raises their head:
   - Masses
   - Hernia
   - Separation of Muscles
Auscultation

- Diaphragm of stethoscope to listen for:
  - Bowel Sounds
- Bell the stethoscope to listen for:
  - Bruits

Auscultation

- Auscultate before palpation and percussion
- Listen for bowel sounds:
  - Normal is usually 5-35/minute
  - Hypoactive less than 3-5/minute
  - Hyperactive greater than 34 per minute
  - No bowel sounds-after 2-5 minutes in all 4 quadrants
- Listen for bruits (use bell side of stethoscope)

Percussion

Assess for tympany and dullness

Assess organ size-liver

Assess for ascites
**Percussion**

<table>
<thead>
<tr>
<th align="left">Solid Objects: Dull Sound</th>
</tr>
</thead>
<tbody>
<tr>
<td align="left">Air-filled: Tympanic</td>
</tr>
<tr>
<td align="left">Hollow: Resonant</td>
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</tbody>
</table>

**Palpation**

| Palpating for masses, organ size, tenderness |
| Rebound Tenderness: occurs when peritoneum becomes inflamed |
| Press area far away from the tender area and release suddenly. Pain will occur in the area of the disease. |

**Palpation**

**DO NOT PALPATE A PULSATING MIDLINE ABDOMINAL AREA!**

Also be cautious with a distended spleen in the LUQ
Peritoneum
Visceral
Parietal
Retroperitoneal
Abdominal aorta
Kidneys
Ureters
Pancreas
Abdominal Pain History (PQRSTAAA)

- **P**: Place/Location
- **Q**: Quality
- **R**: Radiates
- **S**: Severity
- **T**: Timing
- **A**: Alleviating Factors
- **A**: Aggravating Factors
- **A**: Associated Symptoms

Additional GI History

1. Bowel Movements - pattern, size, hard, soft
2. Ingestion of toxins/foreign objects (magnets)
3. Trauma
4. Dietary History
5. PMH
6. Sexual History
7. Family History
8. Travel History
9. Social/Psychiatric History - potential stressors
10. Contact History

Types of Abdominal Pain

1. Visceral
2. Somatic
3. Referred Pain
### Visceral Pain
- Intermittent, cramp-like pain
- Caused by edema or obstruction
- Difficult to localize
- Usually accompanied by diaphoresis, nausea and vomiting
- Examples: early appy, pancreatitis, chole, bowel obstruction or kidney stone

### Somatic Pain
- Sharp, severe and constant
- It’s starts and doesn’t stop until you intervene
- Caused by blood, bacteria or chemicals that leak into the abdominal cavity and cause peritonitis
- Student will lie very still, as movement causes pain, may keep legs flexed with knees to chest
- May have rebound tenderness
- Examples: late stage or ruptured appy, ruptured spleen, traumatic injury or perforated ulcer

### Referred Pain
Pain that originates in one area but manifests itself in another

Examples:
- Gallbladder pain radiates to shoulder and mid back
- Spleen radiates to left shoulder area
# Abdominal Pain

- Most common medical cause: gastroenteritis
- Most common surgical cause: appendicitis
- Acute surgical abdomen: pain come before vomiting
- Medical Conditions: vomiting starts first

## Causes of Abdominal Pain 2-18 yo

<table>
<thead>
<tr>
<th>Cause</th>
<th>Cause</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gastroenteritis</td>
<td>UTI/Pyelonephritis</td>
</tr>
<tr>
<td>Constipation</td>
<td>Toxin Ingestion</td>
</tr>
<tr>
<td>Intestinal Obstruction</td>
<td>Food Poisoning</td>
</tr>
<tr>
<td>Testicular Torsion</td>
<td>Trauma</td>
</tr>
<tr>
<td>Respiratory Illness-PNA</td>
<td>Appendicitis</td>
</tr>
<tr>
<td>Pancreatitis</td>
<td>Cholecystitis</td>
</tr>
<tr>
<td>Mesenteric Adenitis</td>
<td>HSP-Henoch-Schnolein</td>
</tr>
<tr>
<td>Sickle Cell</td>
<td>Purpura</td>
</tr>
</tbody>
</table>

## Causes of Abdominal Pain in Adolescents

<table>
<thead>
<tr>
<th>Cause</th>
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<tbody>
<tr>
<td>Trauma</td>
<td>Toxin Ingestion</td>
</tr>
<tr>
<td>Dysmenorrhea</td>
<td>Food Poisoning</td>
</tr>
<tr>
<td>Ectopic Pregnancy</td>
<td>PID</td>
</tr>
<tr>
<td>Testicular Torsion</td>
<td>Gastroenteritis</td>
</tr>
<tr>
<td>Constipation</td>
<td>Ovarian Cysts/Torsion</td>
</tr>
<tr>
<td>UTI/Pyelonephritis</td>
<td>Intestinal Obstruction</td>
</tr>
<tr>
<td>Appendicitis</td>
<td>Pancreatitis</td>
</tr>
<tr>
<td>Cholecystitis</td>
<td>Ureteral Colic</td>
</tr>
</tbody>
</table>
Causes of Abdominal Pain from Outside the Abdomen

Systemic:
- DKA
- Alcoholic ketoacidosis
- Uremia
- Sickle cell
- Myxedema
- Hyperparathyroidism

Toxic:
- Methanol poisoning
- Heavy metal toxicity
- Scorpion bite
- Black widow bite

GU:
- Testicular torsion
- Renal colic

Thoracic:
- MI
- Angina
- Pneumonia
- Pulmonary embolism
- Hemorrhagic pericardial effusion

Abdominal Wall:
- Muscle spasm
- Hernia
- Diverticulitis

Infectious:
- Rocky Mountain spotted fever
- Malaria
- Typhoid fever

Red Flags of Abdominal Pain

1. Bilious vomiting
2. Bloody stools or emesis
3. Night time waking with abdominal pain
4. Hemodynamic instability
5. Weight loss
6. History of intra-abdominal surgery
7. Marked abdominal distention with diffuse tympany
8. Abdominal trauma

Gastroenteritis

Inflammation of GI tract caused by an infection

Viral infections, mostly rotavirus: 75-90% of infectious diarrhea cases
- Rotavirus
- Norovirus
- Enteric adenovirus
- Astrovirus

Bacterial Cases: 10-20%
- Salmonella
- Campylobacter
- E coli
- Shigella
- Yersinia
- Cdiff

Parasites: 5%
- Giardia
- Cryptosporidium
**Gastroenteritis**

<table>
<thead>
<tr>
<th>Sx:</th>
<th></th>
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<tbody>
<tr>
<td>Diarrhea</td>
<td>Abdominal Pain or Cramping</td>
</tr>
<tr>
<td></td>
<td>Nausea and Vomiting</td>
</tr>
<tr>
<td></td>
<td>Fever</td>
</tr>
<tr>
<td></td>
<td>Clammy skin</td>
</tr>
</tbody>
</table>

| Sx of Dehydration: |                      |
|                   | Extreme thirst       |
|                   | Urine-dark, small amounts |
|                   | Dry skin and mouth   |
|                   | Sunken eyes/cheeks   |

**Dx:** Clinical Picture/History  
Stool Culture for prolonged diarrhea

**Tx:** Fluid Replacement

**Prevention:**  
Wash your hands!!!  
Food Safety  
Bottled water when traveling

Johnny is a 10 yo student who enters the clinic complaining of “belly pain”. He has already had lunch, but he didn’t really feel like eating. He points to his umbilicus and rates the pain as a 6. His temperature is 99.9 po. How would you proceed?
1. Complete your assessment including an examination of the throat
2. Send him back to class
3. Call his parent/guardian
4. Instruct parent/guardian of need for further eval with PCP

A. 2,3,4  
B. 1,2  
C. 1,3,4  
D. 1,3

Inflammation of the appendix  
Cause: no clear  
Can be seen at any age, more common 10-30 yo  
Sx: anorexia  
abdominal pain-starts dull umbilical pain, then becomes sharp gravitating to RLQ  
abdominal tenderness (+ McBurney’s sign)  
fever  
vomiting  
may take 4-48 hours to develop

Advanced Assessment for Appendicitis  
Rovsing Sign-pain in RLQ on left side palpation  

Psoas Sign- pain in RLQ when right hip hyperextended  

Obturator Sign- pain in RLQ on internal rotation of flexed right thigh
Appendicitis

Dx:
Clinical Picture
Lab Work- elevated WBC, U/A to r/o UTI
Imaging: US or CT Scan

Treatment:
Appendectomy

Which is the most worrisome?
If a student ingests:

1. One Magnet
2. One Metallic Object
3. Two Magnets
4. Two Metallic Objects
Magnet Ingestion

• Critical to determine how many magnets the student swallowed

• Single Magnet: low risk

• Two or more Magnets or a Magnet ingestion along with a metal object: is at risk for bowel necrosis, obstruction and perforation

Magnet Ingestion

• Time is important- complications can occur within 12 hours-immediate referral to ER

• Even if student admits to only ingesting one magnet, MD should get Xrays (two views) to verify. Two views are needed as the magnets could be stuck behind one another.

Magnet Ingestion

Dx: Self Disclosure
Clinical Picture/History
X-ray (two views)

Sx: May not have symptoms for 12-36 hours
Nausea, Vomiting, Abdominal Pain

Tx: Depends on Sx, as well as size, shape and # of magnets and/or other metallic objects ingested
Abdominal Trauma

Two types of trauma
- Blunt-MVA, Falls, Assaults
- Penetrating: Stab wounds, GSW

There are grading systems for the severity of the injury to the spleen, liver and kidneys.

Abdominal Trauma

Dx:
- Clinical Picture/History
- CBC, Metabolic Panel
- Imaging Studies

Incarcerated Hernia

- Portion of the intestines protrudes through the weakness in abdominal muscles
- Inguinal Hernia: occurs in the groin area

Sx of Hernia:
- Bulge in abdomen, groin or scrotum
- The area is usually painless

Sx of Incarcerated Hernia:
- Severe Pain
- Nausea, Vomiting
- No bowel movement
**Incarcerated Hernia**

**Dx:** Clinical Picture/History

**Tx:** Manual Reduction by MD
- Surgical Repair

**Concern:** Incarcerated hernia puts child at increased risk for Strangulated hernia—which causes tissue/bowel death and is a surgical emergency

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**GERD Gastroesophageal Reflux Disease**

Reflex of the stomach contents back up into the esophagus

**Sx:** Heartburn, Cough (nocturnal)

**Dx:** Clinical Picture/History
- UGI Endoscopy

**Tx:** Dietary
- Medications
- Lifestyle changes

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**Crohns**

Chronic inflammation of the colon

**Sx:** Abdominal Pain
- Diarrhea
- Weight Loss

**Tx:** Medications-
- Aminosalicylates
- Corticosteroids
- Antibiotics
- Biologics
- Drugs that suppress the immune system
- Nutrition Support
- Surgery
### Difference

<table>
<thead>
<tr>
<th></th>
<th>Crohn's</th>
<th>Ulcerative Colitis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location</td>
<td>May occur anywhere along GI tract</td>
<td>Usually only occurs in large intestine</td>
</tr>
<tr>
<td>Inflammation</td>
<td>May occur in patches</td>
<td>Continuous throughout large intestine</td>
</tr>
<tr>
<td>Pain</td>
<td>RLQ</td>
<td>LLQ</td>
</tr>
<tr>
<td>Appearance</td>
<td>Ulcers in digestive tract are deep and may extend into all layers of bowel wall</td>
<td>Ulcers do not extend beyond inner lining</td>
</tr>
<tr>
<td>Bleeding</td>
<td>Not common</td>
<td>common</td>
</tr>
</tbody>
</table>

### Kidney Trauma

**Generally protected by back muscles and ribs**

**Two types of trauma to kidney**
- a. blunt - car accident, sports injury
- b. penetrating – GSW, Stabbing

**Sx:**
- Hard to detect, may see discoloration in abdomen or on back where kidney is located
- Pain in abdomen or flank
- Hematuria

### Kidney Trauma

**Dx:**
- Clinical Picture/History
- Blood work
- Urinalysis
- US, CT Scan, IVP

**Tx:**
- Varies, depends on: condition of pt, severity of injury, presence of other injuries
- Bed rest and serial urines
- Surgical Intervention
**Pyelonephritis**

- Bacterial infection of the kidneys - most commonly Ecoli
- Can be acute or chronic
- Most often caused by the ascent of bacteria from the bladder up the ureters and infect the kidneys
- Conditions that create decrease urine flow increase chance of pyelo-stones, ureteral strictures, abdominal/pelvis masses

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**Pyelonephritis**

**Sx:**
- Urinary Discomfort - dysuria, urgency, frequency
- Back/Flank pain on affected side
- Fever or chills
- Malaise
- Nausea/Vomiting
- Hematuria
- Foul smelling urine

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**Pyelonephritis**

**Dx:**
- Clinical Picture and Patient History
- Urinalysis + bacteria and white cells
- Urine Cultures
- Blood Cultures
- Kidney US or CT Scan

**Tx:**
- Antibiotics X 5-14 days
  - (Cipro, Levaquin, Bactrim, Septra)
Prevention of UTI/Pyelonephritis

1. Increase fluids, especially water
   (Cranberries contain substances that prevent Ecoli from sticking to the bladder walls)
2. Empty bladder frequently- don’t postpone urination
3. Empty bladder before and after sex
4. Proper Hygiene-front to back
5. Take showers instead of baths

Renal Colic

Sx: Painful Urination
    Hematuria
    Sharp abdominal or flank pain, which may radiate to groin area
    Nausea and vomiting

Dx: Clinical Picture and History
    Blood and Urine Results
    Ultrasound

Tx: Depends on size and location of stone
    Pain medication
    Hydration
    Lithotripsy
    Surgical Intervention

Ovarian Cysts/Ovarian Torsion

Sx: Abdominal Pain, Nausea, Vomiting
    Acute onset of pain and colicky in nature

Dx: Clinical Picture/History
    Ultrasound

Tx: Laparoscopy
**PID – Pelvic Inflammatory Disease**
- Infection of the fallopian tubes, uterus or ovaries
- **Sx:** pain and tenderness in lower abdomen
  - foul smelling or abnormal colored discharge
  - pain during intercourse
  - spotting between periods
  - chills/fever
  - nausea, vomiting, diarrhea
  - anorexia
  - back pain
  - painful or frequent urination

**PID**
- **Dx:** Clinical Picture/History
  - Pelvic Exam
  - Cultures
  - US maybe a CT Scan
- **Tx:** Antibiotics
  - May need surgery I and D for abscesses
- Complications: Tubo-ovarian abscess
  - Infertility
  - Ectopic pregnancy

**Ectopic Pregnancy**
- **Sx:** Nausea, Vomiting, Lower abdominal pain, sharp pain on one side, dizziness, weakness, pain in shoulder (referred pain), vaginal bleeding
- **Dx:** Clinical Picture/History
  - HCG Levels
  - US
- **Tx:** Surgical - Laparoscopy
  - Medical - Methotrexate
Joey is a 14 yo who comes into the clinic c/o sudden onset of left testicular pain. On assessment, he describes the pain as a 8 out of 10. He denies any urinary symptoms, denies any trauma. He does have some lower abdominal pain and feels nauseated. What should you do?

a) Allow Joey to rest in the clinic  
b) Send him back to class  
c) Offer him ice to relieve the discomfort  
d) Contact his parent/guardian immediately  
e) Refer him to the emergency room  
f) Give him Tylenol for the pain  

1. A, C, F  
2. A, D, E  
3. B, C, F  
4. A, C, F

**Torsion of the Testicle**

- Testicle rotates-twists the spermatic cord → blood flow to testicle → sudden, severe pain and swelling
- Can occur at any age, but more common in 12-16 yo
- Causes: unknown, increased incidence in boys with Bell Clapper Deformity
Torsion of the Testicle

**RISK FACTORS:**
- Previous testicular torsion
- Family history of testicular torsion

**SYMPTOMS:**
- Sudden, severe pain in scrotum
- Swelling of scrotum
- Abdominal pain
- Nausea/Vomiting
- Testicle that is 🔄 or at an unusual angle

**Dx:** Clinical Picture/Exam and History
- Urinalysis
- Scrotal US

**Tx:** Emergency Surgery

**Complications:**
- Damage or death to testicle
- Male Infertility

**Recognition and Immediate Surgery is essential!**

Success rate:
- 95% if surgery is within 6 hours
- 20% after 24 hours
Torsion of the Testicle

http://kidshealth.org/teen/sexual_health/guys/torsion.html#

### sodom

Epididymitis

- Inflammation of epididymis
- **Sx:**
  - painful swelling of the epididymis and the associated testicle
  - fever, chills
  - groin pain
  - urinary symptoms
- **Dx:**
  - Clinical Picture/History
  - US
  - CBC, Urinalysis and Urine Culture
- **Tx:**
  - Antibiotics
  - Pain medication

**Remember:**

**TWIST**

- Testicular pain that is sudden.
- Swelling, redness, and/or tenderness in the scrotum.
- Nausea, vomiting, or fever.
- See a doctor right away.
- Time is critical.