

## Differentials

Eyes

## Red Flags

- Sudden, marked eye pain
- Visible flashes followed by partial, peripheral vision loss
- Developing tunnel vision or a central blind spot

## Eye Pain

- What conditions would present with eye pain as a symptom?

## Conjunctivitis (Pink Eye)

- **Typical biographical profile- OR Onset, circumstances & course-** following contact in daycare, schools & institutions; seborrhea & rosacea
- **Symptom characteristics-** red, burning, itching eye(s)
- **Aggravating & alleviating activities-** bright lights
- **Physical findings-** typical conjunctival injection, slight pain, purulent discharge & the lids may stick together during sleep; pupils & visual acuity are normal
- **Diagnostic studies-** usually unnecessary
- Could be bacterial or viral: bacterial more symptomatic
- Which is more common? Cause?
- Treatment options?

## Allergic Conjunctivitis

- **Similar features:**
- Painful, red eyes with normal acuity & pupils
- **Distinguishing features:**
- Persistent or seasonal episodes; other associated allergic complaints or known hay fever, allergic rhinitis & asthma

## Corneal Abrasion

- **Similar features:**
- Painful, red eye(s)
- **Distinguishing features:**
- The patient reports an eye injury, marked pain, photophobia & perilimbal injection or a circumcorneal flush in **one eye; decreased visual acuity is dependent on the extent of damage**
- Risk factors?



## Differentiate Retinal Detachment

- **Similar features:**
- Peripheral vision loss
- **Distinguishing features:**
- Secondary to trauma or existing retinopathy; flashes of light or multiple new floater may precede progressive quadrant visual loss

## Loss of Central Vision

- What conditions would present with loss of central vision as a symptom?

## Central Cataract

- **Typical biographical profile-** adults > 40 y/o
- **Onset, circumstances & course-** insidious over the course of many years
- **Symptom characteristics-** slowly progressing central vision loss in one or in both eyes
- **Aggravating & alleviating activities-** none
- **Physical findings-** central shadow in the red reflex
- **Diagnostic studies-** ophthalmology consult

## Differentiate Corneal Scar

- **Similar features:**
- central vision loss
- **Distinguishing features:**
- History of corneal injury

## Differentiate Macular Degeneration

- **Similar features:**
- slowly progressing central vision loss in one or in both eyes
- **Distinguishing features:**
- Altered color & configuration of the macula /fovea
- “Dry” and “wet” forms: presence of exudate or not
- Drusen bodies

## Differentials

Ears

## Red Flags

- Sudden or rapidly progressive hearing loss
- Vertigo
- Unilateral or pulsatile tinnitus
- Bleeding due to foreign object or pressure change injury

## Presentation Earache

- What conditions have earache as a symptom?

## Otitis Externa

- **Typical biographical profile-** people with seborrhea or eczema of the ear or who irritate the canal excessively cleaning or swimming
- **Onset, circumstances & course-**
- **Symptom intensity, quality, location & distribution-** earache
- **Associated symptoms-**
- **Aggravating & alleviating activities-**
- **Physical findings-** red, swollen canal with canal debris or discharge; hearing likely normal
- **Diagnostic studies-** usually not necessary

## Differentiate Auditory Tube Blockage

- **Similar features:**
- Earache
- **Distinguishing features:**
- Secondary to an upper respiratory infection, swollen adenoids or barotraumas; landmarks are prominent due to drum retraction; no signs of inflammation

## Differentiate Suppurative Otitis Media

- **Similar features:**
- Earache
- **Distinguishing features:**
- Secondary to an auditory tube blockage; fever, diminished hearing, red & bulging eardrum with possible purulent discharge, most often in pre-schoolers; Weber lateralizes to & Rinne´ is negative on the affected side

## Presentation Diminished or Absent Hearing

- What conditions have hearing loss as a symptom?

## Excessive Wax

- **Typical biographical profile-** Anyone but adult males are common
- **Onset, circumstances & course-** insidious or Q-tip use
- **Symptom intensity, quality, location & distribution-** hearing loss
- **Physical findings-** dark wax occluding the canal; Weber lateralizes to & Rinne´ is negative on the affected side
- **Diagnostic studies-** usually not necessary

## Differentiate Serous or Mucoïd Otitis Media (OME)

- **Similar features:**
  - hearing loss
- **Distinguishing features:**
  - Secondary to auditory tube blockage; normal, yellow or dark T.M. with possible air bubbles or fluid line; Weber lateralizes to & Rinne´ is negative on the affected side; no signs of inflammation; can persist for extended periods
- **Risk factors:** URI

## Differentiate Suppurative Otitis Media (Perforation)

- **Similar features:**
  - Hearing loss
- **Distinguishing features:**
  - Secondary to auditory tube blockage; fever, diminished hearing red & bulging eardrum with possible purulent discharge most often in pre-schoolers; Weber lateralizes to & Rinne´ is negative on the affected side

## Differentiate Otosclerosis (sclerosis and fixation of the ossicles)

- **Similar features:**
  - Hearing loss
- **Distinguishing features:**
  - Familial trait; no abnormalities of the canal or eardrum; Weber lateralizes to & Rinne´ is negative on the affected side

## Differentiate Noise Induced Hearing loss

- **Similar features:**
  - Hearing loss
- **Distinguishing features:**
  - Reported history of recreational or occupational noise exposure; no canal or middle ear signs; Rinne´ AC>BC but less than 2:1 ratio; **high frequencies 3000 to 6000 Hz are the first lost**

## Differentiate Presbycusis (age related)

- **Similar features:**
  - Hearing loss
- **Distinguishing features:**
  - Older patient who complains that others are mumbling or that he/she can't understand what's being said when background noise is present; Rinne´ AC>BC but less than 2:1 ratio; low frequency sounds & whispers are first lost

## Differential Diagnosis

Chest

## Red Flag Lung Symptoms

- Unprovoked, sudden onset of dyspnea, &/or chest pain
- Persistent or escalating dyspnea or coughing provoked or aggravated by mild exertion
- Yellow, green, rusty, pink frothy or blood streaked sputum
- Any unexplained weight loss

## Red Flag Lung Signs

- Diminished or absent breath sounds
- Displaced bronchial breath sounds (heard in vesicular locations)
- Dull, hyperresonant or tympanic percussive notes over the lung fields

## Presentation

- What respiratory conditions could present with **acute** fever, dyspnea, and/or cough?

## Acute Bronchitis

- **Typical Patient Profile** –preschoolers mostly, but anyone
- **Onset, circumstances & course**- often secondary to an URI
- **Symptom intensity, quality, distribution & duration**– fever, dyspnea & cough often secondary to a cold gradually wane within 7-14 days
- **Aggravating & Alleviating activities** – exertion
- **Physical exam findings** – possible coarse crackles & no other chest findings
- **Diagnostic Studies**– clinical findings; rarely x-ray

## Differentiate Whooping Cough

- **Similar features**
- Persistent, childhood cough, fever & malaise
- **Distinguishing features**
- After a week or two the cough turns into severe coughing attacks (up to 15 in a row) that end with a high-pitched “whoop” during the next inspiration (stridor)

## Differentiate Measles

- **Similar features**
- Childhood cough, cold & conjunctivitis
- **Distinguishing features**
- Koplik's spots appear 1-2 days before the minute maculo-papules, which rapidly coalesce
- Rubeola: "hard measles" or "red measles"
- Rubella: "German measles" or "three day measles"

## Differentiate Viral Pneumonia

- **Similar features**
- Most likely an adult with malaise, dyspnea cough
- **Distinguishing features**
- Fever persists beyond the expected 4-5 days; possible crackles & wheezes, CBC may help - *clinical differentiation may be impossible*
- **Causes:** influenza, RSV, herpes and varicella, adenovirus

## Differentiate Bronchopneumonia

- **Similar features**
- Fever, dyspnea & cough; possible crackles & wheezes
- **Distinguishing features**
- Persistent scattered crackles, wheezes & malaise; labs (sputum sample) & x-ray
- **AKA:** lobular pneumonia, named for its lung distribution, not pathogen
- Strep., staph., Klebsiella, E. coli, pseudomonas

## Differentiate Lobar Pneumonia

- **Similar features**
- Fever, dyspnea & cough; possible crackles & wheezes prior to consolidation
- **Distinguishing features**
- Higher fever, tachypnea, severe lethargy; **rusty** sputum, bronchial breath & spoken sounds transmitted better through the consolidation; increased fremitus & dull percussive note over that area; labs & x-ray
- Strep., pseudomonas, Klebsiella

## Differentiate Influenza

- **Similar features**
- Fever, dyspnea & cough; possible crackles & wheezes
- **Distinguishing features**
- Sudden onset, persistent higher fever, cough induced throat &/or chest pain; contact cases; positive serologic tests- *clinical differentiation may be impossible*

## Presentation

- What respiratory conditions would present with **chronic** or **recurrent** dyspnea & cough?

## Chronic Bronchitis

- **Typical Patient Profile** – 50 y/o adult exposed to cigarette smoke or pollution
- **Onset, circumstances & course**- Repeated attacks of a productive cough over several years
- **Symptom intensity, quality, distribution & duration**– chronic productive cough & exertional dyspnea
- **Aggravating & Alleviating activities** – Exertion
- **Physical exam findings** – scattered crackles & eventual wheezes
- **Diagnostic Studies**– clinical findings, labs, x-ray & spirometry

## Differentiate Emphysema

- **Similar features**
- Chronic productive cough & exertional dyspnea in an adult over 50
- **Distinguishing features**
- May be impossible to clinically differentiate early stages, since it results in hyperinflated alveoli due to the bronchial fibrosis of chronic bronchitis; eventually general hyperresonant percussion & diminished fremitus occur; auscultation may reveal breath & spoken sounds with superimposed expiratory wheezes

## Differentiate Secondary Tuberculosis

- **Similar features**
- Fever, dyspnea & cough; possible wheezes
- **Distinguishing features**
- Persistent cough (blood stained), dypnea & lethargy; history of contacts or prior TB diagnosis; labs & x-ray
- S.N.: primary TB is usually asymptomatic
- **If lung is fibrotic** -bronchial breath & spoken sounds are transmitted better through the consolidation, increased fremitus & dull percussive note over those areas may be heard

## Differentiate Bronchiectasis

- **Similar features**
- Chronic productive cough & exertional dyspnea in an adult over 50 (often secondary to the previous conditions)
- **Distinguishing features**
- Bronchoscopy
- S.N.: 50% of cases secondary to cystic fibrosis

## Differentiate Bronchogenic Neoplasm

- **Similar features**
- Chronic cough & dyspnea in an adult, smoker over 50
- **Distinguishing features**
- Difficult to differentiate from smoker's cough & other pneumonic conditions; x-ray, bronchoscopy & sputum cytology

## Differentiate Left-Sided Congestive Heart Failure

- **Similar features**
- Chronic cough & dyspnea in an adult, smoker over 50
- **Distinguishing features**
- History of heart disease, high cholesterol &/or BP, fine basilar crackles, orthopnea, added heart beats &/or sounds
- S.N.: Cor Pulmonale S&S may also be present with chronic lung disease

## Differentiate Asthma

- **Similar features**
- Dyspnea, cough & chest tightness; scattered wheezes & crackles
- **Distinguishing features**
- Allergy or exercise induced episodes of obstructive dyspnea usually beginning in early childhood

## Presentation

- What respiratory conditions would present with some degree of chest pain?

## Pleuritis (pleurisy)

- **Typical Patient Profile** – adults often with no history of lung problems
- **Symptom intensity, quality, distribution & duration**– sudden pleuritic pain
- **Onset, circumstances & course**- may be viral or follow serious lung pathology ([mesothelioma](#))
- **Aggravating & Alleviating activities** – coughing, deep breathing or movement
- **Physical exam findings** – possible friction rub
- **Diagnostic Studies**– clinical findings & x-ray

## Differentiate Spontaneous Pneumothorax

- **Similar features**
- Sudden, severe, continuous chest pain
- **Distinguishing features**
- Dyspnea parallels lung compression; fremitus, breath & spoken sounds are diminished or absent; tympanic percussive note; x-rays confirm dx
- **Who?** *Anyone, but taller and thinner body habitus is more common*

## Differentiate Pulmonary Embolus

- **Similar features**
- Sudden, severe, continuous chest pain; possible shock
- **Distinguishing features**
- History of phlebitis, prolonged sitting or bed rest; dyspnea marked, cyanosis; local crackles & wheezes aggravated by respiration or cough; hospital investigation
- **Risk Factors:** *clotting disorders, immobilization, long bone fractures, atherosclerosis*

## Cardiac Red Flag Symptoms

- Sudden onset of unprovoked or exertional chest, arm, neck or jaw pain
- Persistent or escalating dyspnea &/or cough
- Heart palpitations
- Bilateral foot/leg edema
- Cyanosis

## Cardiac Red Flag Signs

- Rapid, slow &/or irregular heart beat or pulse
- Diminished or absent pulse or heard bruit
- Added heart beats &/or sounds
- Sudden increase or drop in blood pressure

## Presentation

- What cardiovascular conditions would present with some degree of chest pain?

## Myocardial Infarct

- **Typical biographical profile**- middle aged or older, overweight, heavy smoker, diabetic, high BP, high LDL'S, claudication; personal or family history of atherosclerosis, angina or infarct
- **Onset, circumstances & course**- may be unprovoked
- **Symptom location, quality & distribution**- severe, continuous, substernal pain or tightness radiating to the arms, neck or jaws
- **Associated symptoms**- dyspnea; pale, perspiring & apprehensive
- **Aggravating & alleviating activities**- exertion; unrelieved by rest
- **Physical findings**- shallow, rapid or irregular pulse; drop in BP
- **Diagnostic studies**- EKG confirms

## Differentiate Angina Pectoris

- **Similar features**
- Exertion induced chest, arm or neck pain
- **Distinguishing features**
- Rest relieves the recurring episodes of discomfort

## Differentiate Pericarditis

- **Similar features**
- Chest pain
- **Distinguishing features**
- "Sticking" in nature- worse with deep breaths, coughing or twisting; friction rub consistent with the heart beat; hospital investigation

## Differentiate Dissecting Aneurysm

- **Similar features**
- Sudden, severe, continuous chest pain that may radiate to the arms or jaw
- **Distinguishing features**
- Impossible to differentiate clinically; immediate hospital investigation

## Presentation

- What gastrointestinal conditions would present with some degree of chest pain?

## Differentiate GERD

- **Similar features**
- Postprandial, persistent, burning chest pain
- **Distinguishing features**
- Recurrent, position related (lying) rather than exertional episodes; antacids relieve; eventually associated dysphagia (food sticking sensation); difficult clinical DD

## Differentiate Chronic Cholecystitis Episode

- **Similar features**
- Low substernal chest pain
- **Distinguishing features**
- Episodic pain follows fatty meals & may radiate to the right scapula; positive Murphy's sign; imaging confirms if stones are present

## Differentiate Peptic Ulcer

- **Similar features**
- Low substernal chest pain which may radiate through to the back
- **Distinguishing features**
- Food & antacids relieve the pains

## Differentiate

- **Similar features**
- Frontal Sinusitis Headache
- Muscle Tension Headache
- Common Migraine Headache
- Dissecting Vertebral Artery Aneurysm H/A

## Differential Diagnosis

Abdomen

## Gastrointestinal Red Flag Symptoms

- 1. Unexpected weight loss or rapid weight gain & pitting edema
- 2. Bloody or coffee ground vomit
- 3. Black or gray-colored stools; mucous, pus or blood in the stools
- 4. Pencil thin, ribbon-like stools or persistent constipation or diarrhea
- Jaundice

## GI Red Flag

- 5. **An acute "surgical" abdomen** – A patient who reports a history of sudden, severe, persistent, escalating or writhing abdominal pain has a presentation that often indicates the need for hospital investigation & emergency surgical intervention. The source of the pain is often due to **inflammation, perforation, obstruction, infarction or rupture of intra-abdominal organs**. Examples are acute cholecystitis, appendicitis, perforated peptic ulcer, strangulated hernia, superior mesenteric artery thrombosis, and splenic rupture.

## Gastrointestinal Red Flag Signs

- Unexplained abdominal distention or masses
- Visible peristalsis or pulsatile masses
- Absent or hyperperistaltic sounds
- Organomegaly &/or chronic fatigue

## Presentation

- What common abdominal conditions would present with abdominal pain, vomiting & diarrhea?

## Abdominal Pain, Vomiting & Diarrhea

### Acute Gastroenteritis (Stomach Flu)

- **Typical Patient Profile** –no specific profile
- **Initial onset, circumstances & course** – recently; may have been exposed to others with the diagnosis
- **Symptom intensity, quality, location & distribution**– mild, ache located around the umbilicus that worsens with peristalsis
- **Associated symptoms** – nausea, vomiting & diarrhea
- **Aggravating & alleviating activities** – worse eating & better not eating
- **Physical exam findings** – clicks & gurgles in the high normal range
- **Diagnostic Studies**– usually unnecessary; diagnosis via clinical finding
  
- Causes: 50-70% noroviruses; rotovirus (mc in kids); adenovirus, parvovirus; E. coli, salmonella, shigella, campylobacter, parasites
- You are contagious for at least 3 days (and up to two weeks) after symptoms

## Differentiate Food Poisoning

- **Similar features:**
- diarrhea, vomiting & abdominal pain
- **Distinguishing features:**
- differentiation is difficult clinically; others who ate the same food also have the symptoms; stool culture may identify a pathogen

## Differentiate Morning Sickness

- **Similar features:**
- diarrhea, vomiting & abdominal pain
- **Distinguishing features:**
- Difficult differentiation; known pregnancy or positive pregnancy test
  
- Other DDX? Peptic ulcers
- Is it really MORNING sickness?

## Differentiate Hepatitis

- **Similar features:**
- Bout of abdominal pain & vomiting
- **Distinguishing features:**
- Recurring bouts following a history of possible oral-fecal or co-mingled blood transmission; urine is dark & stools are grey; AST, ALT & alkaline phosphatase levels may indicate liver damage

## 5 types of hepatitis

- Hepatitis A (HAV): contaminated food or water, oral-fecal contact; hepatomegally acutely, but usually full recovery
- Hepatitis B (HBV): bodily fluid contacts (STD, needles, bites, sharing personal items, passed from mother to newborn); SERIOUS illness, chronic hepatomegaly; is a risk factor for cancer (MOST COMMON in US)
- Hepatitis C (HCV): same transmission as HBV; similar illness presentation, possible infection, leading to scarring and cirrhosis
- Hepatitis D (HDV): opportunistic infection if you already have HBV; same transmission
- Hepatitis E (HEV): uncommon in the US; contaminated water, oral-fecal contact; usually full recovery

## Differentiate Irritable Bowel Syndrome

- **Similar features:**
- Bouts of abdominal pain & diarrhea
- **Distinguishing features:**
- Recurrent bouts of diarrhea & constipation (altered bowel habits); usually young to middle age; may have a history of low fiber diet & overuse of laxatives (self-treatment, not thought to be causative)

## Differentiate Crohn's Disease

- **Similar features:**
- Bouts of abdominal pain & diarrhea
- **Distinguishing features:**
- Young adults; recurring bouts indicates the need for a CBC, upper GI study &/or colonoscopy
  
- Features: skip lesions, cobblestoning, affects any portion, but MC in ileum

## Differentiate Ulcerative Colitis

- **Similar features:**
- Recurrent bouts of diarrhea
- **Distinguishing features:**
- Young adults; recurring bouts of minimal abdominal pain with mucous, pus or blood streaked diarrhea, which indicates the need for colonoscopy
  
- Features: granulation, loss of haustra, usually in the large bowel, so diarrhea

## Differentiate Clostridium Difficile Colitis

- **Similar features:**
- Recurrent bouts of diarrhea
- **Distinguishing features:**
- History of **recent** antibiotic therapy
- Need to do a toxin assay to detect the toxin the bacterium produces in a stool specimen

## Differentiate Cholera

- **Similar features:**
- Recurrent bouts of diarrhea
- **Distinguishing features:**
- Exposure to poor sanitation & water purification; need a stool culture or cholera dipstick to differentiate; can be fatal within 24 hrs. if there is profuse diarrhea
- “Boil it, cook it, peel it, or forget it.”

## Differentiate Colon Cancer

- **Similar features:**
- Possible abdominal pain & diarrhea
- **Distinguishing features:**
- Persistent, escalating, colicky abdominal pain; mucous or blood in stools; 50+ males; palpable mass sometimes; need colonoscopy to differentiate

## Presentation

- What common abdominal conditions would present with **upper** abdominal pain (heartburn)?

## GASTROESOPHOGEAL REFLUX DISEASE (GERD)

- *Hiatal hernias may be a factor contributing to the incompetent esophageal sphincter*
- **Typical Patient Profile** – adult, male or female
- **Initial onset, circumstances & course** – slow intermittent progression over a few years period
- **Symptom intensity, quality, distribution & duration**– recurrent, frequent, substernal “heartburn” about an hour after eating
- **Associated symptoms** – Lump in the throat sensation has developed when swallowing.
- **Aggravating & Alleviating activities** –worse lying down especially at night; antacids help
- **Physical findings** – no significant finding
- **Diagnostic Studies**– imaging may reveal a hiatal hernia; endoscopic exam
- **Anyone not responding to antacids needs to be evaluated for esophageal or stomach cancer, which have similar S&S**

## Differentiate Chronic Cholecystitis

- **Similar features:**
- Recurrent indigestion & flatulence for a few hours after eating
- **Distinguishing features:**
- Female, forty, fat & flatulent whose symptoms are related to fatty foods & not relieved with antacids; positive Murphy’s sign & possible jaundice; **a bile duct stone may cause an acute episode (“Surgical Abdomen”)**

## Differentiate Duodenal Ulcer

- **Similar features:**
- Burning, gnawing abdominal pain
- **Distinguishing features:**
- An adult with epigastric pain 2-3 hours after eating, especially alcohol, spicy or fatty foods; barium radiographs & endoscopy differentiate
- **A perforated ulcer would present as a “surgical abdomen”**

## Differentiate (acute) Pancreatitis

- **Similar features:**
- A bout of upper abdominal pain
- **Distinguishing features:**
- Sudden, severe onset of symptoms lasting hours – days with associated fever, & vomiting; alcohol & eating worsen it; fetal position may help; Labs help differentiate
- **Late stage pancreatic cancer can present with similar S&S**
- **Causes:** gallstones, biliary diseases, alcohol use, viruses (mumps, coxsackie)

## Differentiate Gastric Cancer

- **Similar features:**
- A bout of upper abdominal (indigestion) pain
- **Distinguishing features:**
- Associated vomiting & unexpected weight loss; symptoms are unresponsive to ulcer or reflux treatments; endoscopy differentiates

## Presentation

- What common abdominal conditions would present with **lower** abdominal pain?

## DIVERTICULITIS

- **Typical biographical profile-** male or female over 40
- **Onset, circumstances & course-** last about 1-3 days
- **Symptom intensity, quality location, & distribution-** recurring episodes of sudden, severe LLQ pain
- **Associated symptoms-** diarrhea & rectal bleeding
- **Aggravating & alleviating activities-** settles rapidly with bed rest
- **Physical findings-** LLQ tenderness & guarding
- **Diagnostic studies-** contrast studies
- **Polyps are extensions INTO the bowel; diverticulitis lesions are extensions OUTSIDE the bowel**

## Differentiate Appendicitis

- **Similar features:**
- Lower abdominal pain
- **Distinguishing features:**
- Sudden, severe or escalating LRQ pain (“Surg. Abd.”) that migrated from umbilicus to McBurney’s point; positive Markle, Rovsing, Blumberg, psoas, & obturator signs; Labs help differentiate

### Differentiate Intestinal Obstructions

- **Similar features:**
- Some lower abdominal pain
- **Distinguishing features:**
- Adults (50+) with sudden, severe or escalating waves of abdominal pain (“Surg. Abd.”), distention, visible peristalsis & frequent high-pitched peristaltic sounds
- Special studies may be needed

### Differentiate Indirect Inguinal Hernia

- **Similar features:**
- Lower Abdominal pain
- **Distinguishing features:**
- Male with pain &/or inguinal mass that are worse when coughing sneezing or straining; digital &/or Zieman’s exams are positive

### Differentiate Femoral hernia

- **Similar features:**
- Lower abdominal pain
- **Distinguishing features:**
- Female with pain &/or femoral triangle mass that are worse when coughing sneezing or straining; digital &/or Zieman’s exams are positive

### Differentiate Direct Inguinal Hernia

- **Similar features:**
- Lower abdominal pain
- **Distinguishing features:**
- Male with vague pain &/or mass medial to the inguinal canal that are worse when coughing sneezing or straining; digital &/or Zieman’s exams are positive