CHAPTER 5

Chest Pain

Chest pain is a common and very distressing symptom for patients with a wide range of etiologies, including diseases of the respiratory, cardiac, musculoskeletal, GI, and psychological systems. The most common causes of chest pain are musculoskeletal or gastrointestinal in nature, but it is important that life-threatening causes of chest pain, including MI, unstable angina, aortic dissection, PE, tension pneumothorax, pericardial tamponade, and mediastinitis, are ruled out first. Typically, the patient's description of the chest pain can help the provider differentiate cardiac from noncardiac etiologies; however, women can present with atypical cardiac symptoms, such as fatigue, back pain, nausea, and abdominal pain, making differentiation more difficult.

Patients with the highest risk of cardiac issues include (but are not limited to) the following: males, 60 years or older, those with a known history of cardiac disease, pain that is worse with activity that is not reproducible by palpation, and pain that radiates to the arm, neck, or jaw. Comorbidities including diabetes, hyperlipidemia, hypertension, and tobacco use also put the patient at higher risk for a cardiac emergency. It is the nurse's priority to stabilize the patient's airway, breathing, and circulation, perform an ECG, assess the patient's risk factors, work quickly to help the provider figure out the underlying cause of the patient's chest pain, and call a rapid response or code team if the patient appears unstable. In this chapter, nursing intervention considerations and plan of care recommendations should reflect whatever the suspected cause is.

Differential Diagnosis Considerations

Common: anxiety, arrhythmia, asthma exacerbation, cocaine use, COPD exacerbation, costochondritis, esophageal spasm, esophagitis, GERD, heart failure, MI, PE, pneumonia, pneumothorax, PUD, rib pain, stable angina, unstable angina

Consider: acute chest syndrome, aortic dissection, biliary disease, cervical disc disease, cholecystitis, esophageal rupture, herpes zoster, hiatal hernia, mediastinitis, MVP, myocarditis, pancreatitis, pericardial tamponade, pericarditis, pleuritis, pulmonary HTN, sarcoidosis, sickle cell crisis

Questions to Ask the Patient/ Family/Witness/Yourself

- When did the chest pain start? Did it start gradually or suddenly?
- What were you doing before/when the symptoms started?
- Where is the pain exactly? Can you point to it?
- Is the pain constant or does it come and go? If intermittent, how long does it last? How often is it happening per hour/day?
- Can you describe the pain (pressure, sharp, cramping, dull, achy, ripping, burning, heavy)?
- What makes the chest pain better (certain positions, eating, medication, rest)?
- What triggers the pain or makes it worse (activity, breathing, certain positions, changing positions, coughing, eating, touching, psychological stress)?
- Does the pain radiate to the abdomen, back, flank, arm, jaw, or neck?
- How severe is your pain? Can you rate it on a scale from 0 to 10? Is it waxing and waning in severity?
- Do you have a history of chest pain? If so, does it feel similar? What have you done or used to treat it?
- Have you had any recent: CV/GI/orthopedic/thoracic surgery? immobilization such as prolonged time spent in bed or sitting? respiratory illness? trauma to the abdomen, back, or chest?
- Do you take any medication for your chest pain issues? If so, have you been taking your medication as prescribed? (if applicable)
- Do you use any inhalers? If so, have you been taking them as prescribed? (if applicable)
- Have you taken any new prescribed or over-the-counter medications? Have there been any recent changes to your current medication?

- Do you have a family history of heart disease or heart attacks?
- Do you smoke? How much (ppd)? How long have you been smoking? (if applicable)
- Do you have a history of drug use? What types and how much? Do you use on a daily basis? When was your last use? (if applicable)

Associated Signs/Symptoms: PAIN: pain anywhere else; GENERAL: fatigue, fever, weakness; CARDIOVASCULAR: edema, palpitations, PND, orthopnea; RESPIRATORY: cough, hemoptysis, painful breathing/coughing, dyspnea, sputum production, wheezing; GASTROINTESTINAL: belching, heartburn, nausea, swallowing difficulties, vomiting; NEUROLOGICAL: dizziness, syncope; PSYCHOLOGICAL: anxiety, confusion, feelings of impending doom

Recommended Assessments

- Vital signs
- Temperature
- Weight and nutritional status
- I/O
- Pain scale
  - Tolerable pain level
- General
  - Level of consciousness and orientation
  - Inspect: signs of acute distress, acute illness, affect, restlessness
  - Difficulty speaking due to breathlessness
- Skin
  - Inspect: cyanosis, diaphoresis, mottling, pallor, vesicular rash
  - Palpate: temperature
- Head/face/neck
  - Inspect: JVD, tracheal deviation
  - Auscultate: carotid bruits
- Cardiovascular
  - Auscultate: heart sounds, rate, rhythm
  - Palpate: heaves, thrills

- Respiratory
  - Inspect: chest asymmetry, respiratory effort, depth, pattern, use of accessory muscles
  - Auscultate: lung sounds, stridor
- Gastrointestinal
  - Auscultate: bowel sounds
  - Palpate: tenderness
- Musculoskeletal
  - Palpate: chest wall tenderness
- Extremities
  - Inspect: IV site
  - Palpate: capillary refill, edema, pulses

Past Medical History Considerations

Puts the patient at risk for differential considerations

- Bleeding/clotting disorder
- CAD
- Cancer
- Cardiac valve disorders
- Cardiomyopathy
- Cholelithiasis
- Diabetes
- Drug abuse/use
- DVT
- HTN
- Hyperlipidemia
- Immobilization
- Nicotine use
- PVD
- Sickle cell anemia

Reoccurrence/exacerbation should be considered

- Arrhythmias (various)
- Asthma
- COPD

- Heart failure
- Herpes zoster
- MI
- PE

Chronic conditions that can cause chest pain

- Angina (stable)
- Anxiety
- Arrhythmias (various)
- Cervical DDD
- GERD
- Heart failure
- MVP
- Pancreatitis
- PUD
- Pulmonary HTN
- Sarcoidosis

Medication Evaluation

Has GI tract inflammation as a side effect

- Ascorbic acid
- Bisphosphonates
- Chemotherapy
- Iron supplements
- NSAIDs
- Potassium supplements

Puts the patient at risk for differential considerations

- Birth control/HRT → PE

Used to treat common differential considerations

- Antibiotics → various respiratory infections
- Benzodiazepines → acute anxiety
- Beta blockers → arrhythmias, cardioprotection

- CCBs → arrhythmias
- Corticosteroids → airway inflammation
- Diuretics → fluid overload
- ICS, LABA, LAMA, SABA, SAMA, and combination inhalers → chronic lung disease
- Nitrates → angina
- NSAIDs → chest wall inflammation
- Opioids → acute pain
- PPIs, H2 antagonists, antacids → upper GI tract inflammation
- SSRIs → chronic anxiety

Lab Evaluation and Trends

- BMP/CMP
- BNP
- Cardiac enzymes
- CBC

Nursing Intervention Considerations

- Call for help or rapid response/code team if vital signs are unstable or there are signs of urgent distress
- Maintain a patent airway
  - Apply oxygen if hypoxic
  - Encourage cough and deep breathing
  - Chest splinting with a pillow to promote more effective coughing
  - Encourage slow relaxed deep breathing if hyperventilating
  - Suction as needed
  - Call respiratory therapy for signs of respiratory distress
- Verify patent IV if IVF or IV medication treatment is anticipated
  - Flush according to facility protocol; watch for swelling, erythema, pain, and other signs of infiltration
- ECG STAT

- Medications (if ordered or protocol allows)
  - ASA 324mg chewed if MI is suspected
  - NTG 0.4mg SL every 5 minutes × 3 doses if MI is suspected
  - PRN IV push morphine for severe chest pain if MI is suspected (should be avoided if possible)
  - PRN bronchodilator treatment per respiratory therapy if the patient is coughing or short of breath
- Diet
  - NPO if procedure or surgery is anticipated
  - Restrict fluids until discussion with the provider, if there are signs of fluid overload
  - Offer bland, simple foods that the patient can tolerate
  - Encourage heart healthy, low-sodium food choices
  - Avoid foods that trigger symptoms
  - Avoid caffeine
- Activity
  - Keep the patient in bed until discussion with the provider
- Positioning
  - HOB raised to comfort for respiratory distress
  - HOB raised for 2–3 hours after meals or at night for GI symptomology
  - Reposition every 2–4 hours or establish an individualized turning schedule
- Monitor
  - Stay with the patient until stable
  - Pain levels
  - Vital signs and trends
  - Weight trends
  - Oxygen saturation/pulse oximetry
  - Temperature trends
  - Telemetry/cardiac monitor
  - I/O
  - Orientation status changes

- Agitation levels
- Peripheral pulses
- Skin assessment every 8–24 hours
- Signs of decreased cardiac output such as weak pulses, cool skin, altered mental status, hypotension, oliguria, and mottling
- Signs of respiratory distress such as cyanosis, tachypnea, hypoxia, use of accessory muscles, diaphoresis, and adventitious lung sounds
- Signs and symptoms of fluid overload such as cough, adventitious lung sounds, dyspnea, tachypnea, weight gain, edema, JVD, and ascites

- Safety
  - Perform a fall risk assessment and implement the appropriate strategies
- Environment
  - Provide a calm, quiet environment and reduce stimulation
  - Maintain a well-lit environment
  - Provide distractions
  - Maintain a comfortable room temperature
  - Offer aromatherapy and/or music therapy (if appropriate)
  - Utilize a fan (if appropriate)
- Supportive care
  - Maintain effective communication between yourself, patient, and family
  - Provide emotional support and reassurance to the patient and family
  - Maintain a calm manner during patient interactions
  - Discuss plan of care with the patient and decide reasonable goals together
  - Notify the patient and family of changes in the plan of care
  - Identify barriers to care and compliance

- Promote skin care and integrity
- Provide light clothing and bed linen
- **Educational topics (as applicable to the patient):**
  - General information regarding the patient's chest pain and differential diagnosis considerations
  - Procedure and intervention explanation and justification
  - Explanation regarding referrals and specialist who may see them for this issue
  - New medication education including reason, side effects, and administration needs
  - Medication changes
  - Medication compliance
  - NTG home use
  - Pain scale and pain goals
  - Cough and deep-breathing techniques
  - Oxygen therapy and maintenance
  - Relaxation techniques and breathing exercises
  - Trigger avoidance
  - Telemetry
  - Energy conservation techniques: placing items within reach, sitting to do tasks, taking breaks in between activities, sliding rather than lifting, pushing rather than pulling
  - Proper positioning and turning schedule
  - Skin care
  - Stress reduction and management
  - Safety needs and fall risk
  - Fluid restriction
  - Caffeine restriction
  - DASH diet, BRAT diet, NPO diet
  - Avoidance of food/fluid that trigger symptoms
  - Weight loss, physical activity, and exercise needs
  - Home blood pressure monitoring

- Smoking cessation
- Drug cessation and support
- When to notify the nurse or provider
- Signs and symptoms of cardiac emergencies
- Signs and symptoms of respiratory emergencies
- Signs and symptoms of fluid overload
- Pressure injury prevention

ISBARR Recommendation Considerations

- Ask the provider to come assess the patient STAT if they are symptomatic, unstable, or at high risk for cardiac emergencies
- Transfer to the ICU if hemodynamically unstable, advanced medication management is required, or closer monitoring is needed
- Medication
  - Discontinue/change suspected causative medication
  - Hold oral medications if the patient is unable to tolerate or NPO
  - Discuss changing medication routes with the provider (and pharmacy) if the patient is NPO
  - Add ASA if indicated for MI
  - Add PPI, H2 antagonist or antacid for dyspepsia, heartburn, or other signs/symptoms of GERD
  - Add/change diuretics for signs of fluid overload
  - Add corticosteroids for airway inflammation
  - Add PRN NTG if indicated for MI or angina
  - Add PRN antiemetic for nausea
  - Add PRN and/or scheduled medication for anxiety or irritability
  - Add PRN and/or scheduled bronchodilator nebulizer treatments per respiratory therapy for coughing, dyspnea, or other signs of respiratory distress
  - Add PRN and/or scheduled pain medication

- IV fluid needs if oral intake is poor, there are signs of dehydration, and the patient is NPO or hypotensive
- ECG if repeat testing is needed
- Imaging (depending on the suspected cause)
  - Chest CT scan, chest X-ray
- Labs (depending on the suspected cause)
  - ABG
  - BMP/CMP
  - BNP
  - Cardiac enzymes
  - CBC
  - D-dimer
- Safety
  - Activity level changes
  - Fall risk protocol
- Monitoring needs
  - Daily weights
  - Strict I/O
  - Continuous O_2 monitoring
  - Telemetry/continuous cardiac monitoring
  - Vital signs including frequency and parameters to call the provider
- Supportive cares
  - Compression stockings or SCDs
- Change diet to (depending on the suspected cause)
  - NPO
  - BRAT or bland
  - Caffeine restriction
  - DASH, low sodium
  - Fluid restriction
- Referrals
  - Cardiology
- Ask if the provider wants anything else done
- Read back orders; ask that they enter all orders into the electronic medical record

ISBARR Template	
I **Introduction**	**Introduce Yourself and the Patient** • "Hello, Dr. Mirhoseini. This is Mina Nordness. I am the nurse for your patient Andrea Zimmerman in Room 603."
S **Situation**	**Sign/Symptom You Are Concerned About** • "I am calling because Ms. Zimmerman developed severe constant 10/10-chest pain five minutes ago. She is describing it as a pressure that is worse with deep breaths." **Associated Signs/Symptoms** • "She is also having constant shortness of breath and intermittent palpitations that are happening every two to three minutes."
B **Background**	**Vitals** • "She is tachypnic with a respiratory rate of 45, and tachycardic with a heart rate of 120. O_2 sat is 90% on room air and blood pressure is 160/92." **Exam** • "She is diaphoretic, pale, and her lungs are clear," **Past Medical History** • "and has no history of blood clots, CAD, or anxiety." **Labs and Medications** • "Her CBC and CMP had no abnormalities this morning, and she is not on any anticoagulants or estrogen replacements. She has been fairly immobile since being hospitalized and is rarely out of bed."
A **Assessment**	**Assessment** • "I am concerned about a pulmonary embolism."

ISBARR Template	
R **Recommendations** **R** **Read Back**	**Nurse's Recommendations, Interventions, and Read Back** • "I have placed her on four liters nasal cannula and her oxygen saturation is now at 95%. Twelve-lead ECG showed sinus rhythm, and there were no ST elevations. I have been taking vital signs every five minutes. Respiratory therapy is in the room monitoring the patient with me. Would you like cardiac enzymes, D-dimer, or other lab work? What about a chest CT or other imaging? Do you want anything else done at this time?" • "Dr. Mirhoseini, if I could read back your orders. You would like a STAT CT of the chest, CMP, CBC, D-dimer, and troponin. Call with results when they are available. Place patient on telemetry and keep her on continuous O_2 monitoring."

Disclaimer: This dialogue is factitious and any resemblance to actual persons, living or dead, or actual events is purely coincidental.

In order to avoid order discrepancies, it is recommended that all orders be entered by the provider in the electronic medical record.

Select Differential Diagnosis Presentations

Acute Chest Syndrome

Overview: vaso-occlusive crisis of the pulmonary vasculature in patients with sickle cell anemia

Patient may complain of: chills, fever, fatigue, chest pain, dyspnea, wheezing, coughing, sputum production

Objective findings: signs of acute distress/illness, fever, lethargy, warm skin, hypoxia, tachypnea, cough, sputum, use of accessory muscles, adventitious breath sounds

PMH considerations/risk factors: hx of sickle cell anemia, asthma, recent respiratory illness
Diagnostics: CBC, ECG, chest X-ray, chest CT

Angina (Stable)

Overview: chest pain caused by a decrease in myocardial oxygen supply that is improved with rest
Patient may complain of: fatigue, chest pain/tightness/heaviness that is worse with activity, better with rest or NTG, radiation of the pain to the left arm/neck/jaw, palpitations, dyspnea, activity intolerance, nausea, dyspepsia, dizziness, feelings of impending doom, anxiety; symptoms have a short duration
Objective findings: signs of acute distress, lethargy, diaphoresis, hypertension, tachycardia, murmur, weak pulses, sluggish capillary refill, tachypnea
PMH considerations/risk factors: hx of angina, CAD, HTN, heart failure, hyperlipidemia, diabetes, cardiac valve disorders, obesity, increased psychological stress, nicotine use, family hx of heart disease
Diagnostics: cardiac enzymes, ECG, stress test, coronary angiography

Angina (Unstable)

Overview: chest pain caused by a decrease in myocardial oxygen supply that is not improved with rest
Patient may complain of: fatigue, chest pain/tightness/heaviness that is worse with activity, not improved with rest or NTG, radiation of the pain to the left arm/neck/jaw, palpitations, dyspnea, activity intolerance, nausea, dyspepsia, dizziness, feelings of impending doom, anxiety; symptoms have a longer duration than stable angina
Objective findings: signs of acute distress, lethargy, diaphoresis, hypertension, tachycardia, murmur, weak pulses, sluggish capillary refill, tachypnea
PMH considerations/risk factors: hx of angina, CAD, HTN, heart failure, hyperlipidemia, diabetes, cardiac valve disorders,

obesity, increased psychological stress, nicotine use, family hx of heart disease

Diagnostics: cardiac enzymes, ECG, stress test, coronary angiography

Anxiety

Overview: psychiatric disorder that can cause intense fear and worry

Patient may complain of: fatigue, chest pain, palpitations, dyspnea, nausea, vomiting, abdominal pain, constipation/diarrhea, paresthesias, tremors, headache, insomnia, dizziness, mind racing, feelings of impending doom

Objective findings: signs of acute distress, irritability, inability to focus, diaphoresis, tachycardia, hypertension, tachypnea, muscle tension

PMH considerations/risk factors: hx of anxiety, depression, PTSD, insomnia, substance abuse, physical abuse, recent physical or emotional trauma, family hx of psychiatric diseases

Diagnostics: clinical diagnosis; workup to rule out more emergent causes may be indicated

Aortic Dissection

Overview: a tear in the intima layer of the aorta

Patient may complain of: severe chest/back pain described as ripping or tearing, abdominal pain, flank pain, dyspnea, nausea, dizziness, (pre)syncope, paresthesias, feelings of impending doom

Objective findings: signs of acute distress, altered mental status, diaphoresis, cool clammy skin, syncope, JVD, murmur, hypotension/hypertension, weak pulses or pulse deficit, sluggish capillary refill, tachypnea

PMH considerations/risk factors: hx of HTN, heart failure, cardiac valve disorders, connective tissue disorders, diabetes, substance abuse, pregnancy, nicotine use, male gender, older age

Diagnostics: ECG, TEE, chest X-ray, chest CT, aortography

Arrhythmia

Overview: any irregular heart rhythm

Patient may complain of: fatigue, generalized weakness, (pre) syncope, palpitations, chest pain, dyspnea, dizziness, anxiety

Objective findings: signs of acute distress, lethargy, irritability, diaphoresis, irregular heart rhythm, bradycardia/tachycardia, murmur, hypotension, tachypnea, seizures

PMH considerations/risk factors: hx of arrhythmia, CAD, HTN, heart failure, MI, cardiac valve disorders, diabetes, previous CV surgery, substance abuse, increased psychological stress, nicotine use, family hx of heart disease

Diagnostics: BMP/CMP, CBC, TSH, ECG, ECHO, Holter monitor/loop recorder/event recorder

Asthma Exacerbation

Overview: acute inflammation and swelling of the airway, progressively worsening asthma symptomology

Patient may complain of: activity intolerance, chest pain/tightness, coughing, dyspnea, wheezing, sputum production, insomnia

Objective findings: signs of acute distress, irritability, diaphoresis, cyanosis, breathlessness, hypoxia, tachypnea, cough, sputum, use of accessory muscles, adventitious breath sounds

PMH considerations/risk factors: hx of asthma, allergies, obesity, eczema, recent respiratory illness, nicotine use

Diagnostics: clinical diagnosis; chest X-ray, spirometry, and PEF may be considered

Cholecystitis

Overview: inflammation of the gallbladder

Patient may complain of: fever, chills, fatigue, RUQ/epigastric pain, right shoulder pain, nausea, vomiting, anorexia, dyspepsia

Objective findings: signs of acute distress/illness, lethargy, fever, diaphoresis, jaundice, tachycardia, RUQ/epigastric tenderness with guarding, positive Murphy's sign, palpable gallbladder
PMH considerations/risk factors: hx of cholelithiasis, obesity, female gender
Diagnostics: CBC, CMP, abdominal CT/US, HIDA scan

COPD Exacerbation

Overview: acute inflammation and swelling of the airway, progressively worsening COPD symptomology
Patient may complain of: worsening fatigue, activity intolerance and sputum production from baseline, chest pain/tightness, coughing, dyspnea, wheezing, hemoptysis, insomnia
Objective findings: signs of acute distress, lethargy, cyanosis, diaphoresis, hypoxia, breathlessness, cough, adventitious breath sounds, sputum, prolonged expirations, use of accessory muscles, barrel chest, digital clubbing
PMH considerations/risk factors: hx of COPD, asthma, allergies, GERD, recent respiratory illness, nicotine use
Diagnostics: clinical diagnosis; chest X-ray and spirometry may be considered

Costochondritis

Overview: inflammation of the cartilage that connects the ribs to the sternum
Patient may complain of: chest pain that is worse with deep breaths, movement, or touching; symptoms have a longer duration
Objective findings: tenderness over chest wall along sternum; exam is otherwise unremarkable
PMH considerations/risk factors: hx of chronic pain, trauma to the chest, recent CV/thoracic surgery, or respiratory illness
Diagnostics: clinical diagnosis; workup to rule out more emergent causes may be indicated

Esophagitis (Various Types)

Overview: inflammation of the esophagus

Patient may complain of: painful swallowing, dysphagia, chest pain, heartburn, upper abdominal/epigastric pain, dyspepsia, nausea, vomiting, signs of GI bleeding, dry coughing

Objective findings: oral herpes or thrush (depending on etiology), poor dentition, cough; exam is typically unremarkable

PMH considerations/risk factors: hx of esophagitis; GERD; hiatal hernia; cancer; immunosuppression; allergic diseases (food allergies, asthma, eczema); obesity; radiation therapy of the head, neck, and chest; alcohol abuse/use; nicotine use; NSAID use

Diagnostics: endoscopy with biopsy

Gastroesophageal Reflux Disease (GERD)

Overview: abnormal reflux of acid from the stomach back into the esophagus

Patient may complain of: sore throat, sour taste in mouth, dysphagia, chest pain or heartburn that may be worse lying flat or after meals, nausea, dyspepsia, epigastric pain, chronic coughing, insomnia

Objective findings: epigastric tenderness; exam is typically unremarkable

PMH considerations/risk factors: hx of GERD, hiatal hernia, obesity, diabetes, pregnancy, nicotine use, alcohol abuse/use

Diagnostics: clinical diagnosis

Heart Failure

Overview: broad term to describe pumping malfunction of the heart

Patient may complain of: fatigue, activity intolerance, chest pain, palpitations, dyspnea, orthopnea, PND, coughing, sputum production, weight gain/loss, anorexia, nausea, nocturia, insomnia

Objective findings: signs of acute distress, lethargy, diaphoresis, cyanosis, JVD, bradycardia/tachycardia, hypertension/

hypotension, displaced PMI, murmur, gallop, weak pulses, sluggish capillary refill, digital clubbing, edema, breathlessness, tachypnea, cough, adventitious lung sounds, sputum, hepatomegaly, ascites

PMH considerations/risk factors: hx of heart failure, HTN, CAD, cardiac valve disorders, MI, diabetes, arrhythmias, hyper/hypothyroidism, obesity, nicotine use, substance abuse, family hx of heart disease

Diagnostics: BNP, BMP/CMP, TSH, ECG, I/O, chest X-ray, ECHO, cardiac catheterization

Myocardial Infarction

Overview: decreased or no blood flow through the coronary arteries causing cardiac muscle death

Patient may complain of: fatigue, chest pain not improved with rest, radiation of the pain to the left arm/neck/jaw, palpitations, dyspnea, activity intolerance, abdominal pain, nausea, dizziness, anxiety, feelings of impending doom; symptoms have longer duration than stable angina

Objective findings: signs of acute distress, lethargy, irritability, altered mental status, diaphoresis, cool clammy skin, hypertension/hypotension, tachycardia/bradycardia, arrhythmia, murmur, ST elevations, pathologic Q waves, weak pulses, sluggish capillary refill, tachypnea

PMH considerations/risk factors: hx of MI, CAD, HTN, heart failure, hyperlipidemia, diabetes, cardiac valve disorders, sedentary lifestyle, NSAID use, nicotine use, substance abuse, family hx of heart disease, older age

Diagnostics: cardiac enzymes, ECG, stress test, coronary angiography

Pancreatitis

Overview: inflammation of the pancreas

Patient may complain of: fatigue, chills, fever, epigastric/upper abdominal pain, radiation of the pain to the back, worse with movement, nausea, vomiting, dyspepsia, diarrhea

Objective findings: signs of acute distress/illness, lethargy, fever, diaphoresis, pallor, jaundice, tachycardia, hypotension, upper abdominal/epigastric tenderness, abdominal distention, positive Cullen's sign or Grey Turner sign (abdominal ecchymosis)

PMH considerations/risk factors: hx of chronic pancreatitis, hypertriglyceridemia, cholelithiasis, GI cancer, recent GI surgery or trauma to the abdomen, nicotine use, alcohol abuse/use

Diagnostics: amylase, lipase, abdominal CT/US

Peptic Ulcer Disease

Overview: ulcers that develop in the lining of a stomach and/or duodenum

Patient may complain of: chest pain, dyspepsia, epigastric pain, heartburn, pain relief with food or antacids, nausea, signs of GI bleeding

Objective findings: nonspecific epigastric tenderness; exam is typically unremarkable

PMH considerations/risk factors: hx of PUD, *Helicobacter pylori* infection, NSAID use, recent travel outside of the United States, nicotine use, alcohol abuse/use

Diagnostics: CBC, *H. pylori* serum/breath/stool testing, occult stool, endoscopy with biopsy

Pneumonia

Overview: infection of the air sacs in one or both lungs causing inflammation and fluid accumulation

Patient may complain of: chills, fever, fatigue, chest pain/tightness, dyspnea, wheezing, coughing, sputum production, hemoptysis, activity intolerance, anorexia, nausea, vomiting, headache

Objective findings: signs of acute distress/illness, lethargy, altered mental status (elderly), fever, tachycardia, tachypnea, use of accessory muscles, cough, sputum, hypoxia, adventitious breath sounds, dullness to percussion over consolidation, pleural friction rub

PMH considerations/risk factors: hx of COPD, asthma, immunosuppression, dysphagia, immunization status, recent/current hospitalization, intubation, nicotine use, alcohol abuse, older/younger age

Diagnostics: CBC, sputum culture, chest X-ray

Pneumothorax

Overview: abnormal air or fluid in the pleural cavity causing lung collapse

Patient may complain of: sudden onset of chest pain, palpitations, dyspnea, coughing, anxiety, feelings of impending doom

Objective findings: signs of acute distress, tachycardia, hypotension, tachypnea, diminished/absent/unilateral breath sounds, uneven chest excursion, tracheal deviation, hypoxia, cough

PMH considerations/risk factors: hx of Marfan syndrome, COPD, cystic fibrosis, asthma, TB, trauma to the chest/back, thin body habitus, recent thoracentesis or pulmonary biopsy, family hx of pneumothorax, nicotine use, male gender

Diagnostics: chest X-ray

Pulmonary Embolism

Overview: a blood clot in the pulmonary vasculature

Patient may complain of: chills, fever, chest pain, pain with deep breaths, palpitations, activity intolerance, dyspnea, coughing, hemoptysis, abdominal pain, dizziness

Objective findings: signs of acute distress, fever, pallor, cyanosis, diaphoresis, tachycardia, hypotension, S3/S4 heart sounds, tachypnea, hypoxia, cough, signs of DVT

PMH considerations/risk factors: hx of DVT, PE or CVA, bleeding/clotting disorder, cancer, pregnancy, HRT/birth control use, IV drug use, recent surgery, immobility, nicotine use

Diagnostics: D-dimer, chest CT, V/Q scan, chest X-ray

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