

## Chapter 1: Signs, Symptoms, and Presentations

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Signs and symptoms do not exist as an island by themselves, but must be looked at in the greater context of the entire clinical picture. All the patient’s information such as age, past medical history, prior surgeries, behavioral risk factors, and other data help us to intelligently complete the diagnostic puzzle. Classic presentations taken directly from authoritative textbooks often predominate on board exams. In real life, patients frequently skip the book and present with their own collection of complaints and findings, often differing from the classic by varying degrees. This list of signs and symptoms discussed is taken directly from the Model for the Clinical Practice of Emergency Medicine.

### GENERAL PRESENTATIONS

#### Altered mental status

Altered mental status (AMS) is a relative term, and includes many distinctly different clinical states such as delirium, dementia, coma, and psychiatric conditions. Delirium is abrupt in onset, and characterized by a fluctuating course of confusion and disordered attention. It may be caused by infection, dysfunction of a variety of organ systems, an acute neurologic event, hypoxia, hypoglycemia, and a variety of drugs and medications. Table 1-1 lists the classic diagnosis to consider when evaluating altered mental status in conjunction with certain other complaints or findings.

#### TABLE 1-1

#### Classic Diagnosis with Altered Mental Status

<u>Clinical Presentation of AMS and ...</u>	<u>Consider...</u>
<b>Visual or auditory hallucinations</b>	<b>Delirium</b>
<b>Auditory hallucinations</b>	<b>Psychiatric causes</b>
<b>Insulin or oral hypoglycemics</b>	<b>Hypoglycemia</b>
<b>Fruity smell on breath</b>	<b>Ketosis / Hyperglycemia</b>
<b>Alcohol smell on breath</b>	<b>Alcohol intoxication</b>
	<b>Hypoglycemia</b>
	<b>Head trauma</b>
<b>Confabulation</b>	<b>Thiamine deficiency</b>
<b>Headache</b>	<b>Acute CNS event or infection</b>
	<b>Carbon Monoxide</b>
<b>Pinpoint pupils</b>	<b>Narcotic use</b>
	<b>Pontine bleed</b>

**Infants/ Children**

**Accidental ingestion  
Hypoglycemia  
Intussusception**

**Young adults**

**Substance abuse**

**Elderly / demented patients**

**Urinary tract infection  
Polypharmacy  
Depression**

**Unequal pupils**

**Head trauma / herniation  
Brain aneurysm**

**Focal neurologic findings**

**Acute CNS event, abscess**

**Enlarged thyroid**

**Myxedema coma**

**Fever**

**Meningitis, encephalitis  
Brain abscess (HIV?)  
Sepsis  
Seizure**

**Very high fever, add ...**

**Heat stroke  
Cocaine intoxication**

**History of seizures**

**Post-ictal state**

**Supratherapeutic drug levels**

**Head trauma**

**Asterixis, liver disease**

**Hepatic encephalopathy**

**Chronic Renal Failure**

**Acid Base disorder  
Electrolyte disturbance**

**History of COPD / CHF / MI**

**Hypoxia**

**History of HIV / AIDS**

**Brain abscess  
Toxoplasmosis  
Cryptococcus**

**Hypotension**

**Acute cardiac event  
Hypoxia  
Sepsis  
Trauma  
Drug ingestion**

**Syncope**

**Acute neurologic event  
Pulmonary embolism  
Dysrhythmia**

**Severe hypertension  
... With papilledema**

**Acute CNS event  
...Hypertensive encephalopathy**

The mnemonic “AEIOU TIPS” is helpful to recall the various causes of altered mental status quickly.

**TABLE 1-2: AEIOU TIPS for Altered Mental Status**

**A Alcohol, acidosis, Addison’s  
E Encephalopathy  
I Infection (meningitis), ingestion, iron  
O Opiates, oxygen (hypoxia)\*  
U Uremia  
T Trauma, thyroid,  
I Inflammatory (vasculitis), Intussusception  
P Psychiatric  
S Salicylates**

\*When considering narcotics as an etiology for AMS, several narcotics, such as meperidol and propoxyphene, in overdose do not cause small pupils. Propoxyphene may require much larger doses of naloxone to reverse its effects.

Emergent measures in the evaluation of the patient with altered mental status include an assessment of bedside glucose level, oxygen saturation, and the patient’s ability to protect the airway.

### **Anxiety**

Anxiety is commonly associated with lower acuity states of psychiatric disorders, but such statements as the sensation of an “impending sense of doom” have been associated with significant medical issues such as pulmonary embolism or ventricular fibrillation. Always consider psychiatric disorders after a thorough medical evaluation. Other medical causes of anxiety include hypoxia from any etiology, hyperthyroidism or thyroid storm, and withdrawal syndromes. Autonomic signs such as palpitations, chest tightness, sweats, and tremulousness commonly accompany anxiety states, making it more difficult to differentiate from certain medical etiologies. The alteration in mental status associated with hypoglycemia can mimic anxiety. Several over the counter drugs, prescription medications, and drugs of abuse can produce symptoms of anxiety, to include niacin, ginseng, caffeine, laxatives, thyroid medications, stimulants, beta agonists, theophylline, antidepressants, benzodiazepines, ketamine, ecstasy, cocaine, LSD, and PCP.

### **Apnea**

Apnea, the cessation of breathing for longer than 10-20 seconds, should always be considered abnormal, and in general signifies a significant disorder. Neonates should be evaluated for sepsis, and admitted for monitoring. Apnea may be the first sign of RSV infection and bronchiolitis. In adults, consider respiratory failure, sepsis, high spinal cord injury or elevated intracranial pressure as a cause. Other neurologic or neuromuscular diseases, and metabolic alkalosis can cause apnea. Obesity is commonly associated with sleep apnea in adults.

**Ataxia**

Ataxia is commonly attributed to either a sensory problem (severe peripheral neuropathies) or motor issues, such as acute cerebellar vascular events (look for headache or other focal neurologic findings). Acute cerebellar hemorrhage presents with ataxia, nausea, vomiting, and severe headache, and is a neurosurgical emergency. Ataxia is also a common symptom of anti-convulsant toxicity, or metabolic deficiencies associated with alcoholism. Ataxia, altered mental status, and ophthalmoplegia suggests the Wernicke syndrome, and should be treated with thiamine. Confabulation is another classic component of the Wernicke-Korsakoff syndrome, but is not universally present, and clears fairly rapidly with treatment .

**Back Pain**

Back pain is most commonly associated with lower acuity diagnosis, but can imply an emergency situation. A list of critical and emergent situations associated with back pain is given in Table 1-3. Always consider an abdominal or genitourinary source for the back pain as well (peptic ulcer, pancreatitis, stone, pyelonephritis).

**Table 1-3  
Classic Diagnosis Associated with Back Pain**

<u>Clinical Presentation of Back Pain and ....</u>	<u>Consider...</u>
<b>Risk factors of coronary artery disease, Family history of vascular disease</b>	<b>Abdominal aortic aneurysm</b>
<b>Fever and low back pain</b>	<b>Epidural abscess UTI, prostatitis</b>
<b>History of cancer Age greater than 50 ...With neurologic deficit</b>	<b>Spinal column metastatic lesion ...cord compression</b>
<b>Trauma</b>	<b>Vertebral body fracture or compression</b>
<b>Urinary or bowel incontinence, Decreased rectal tone, Perianal numbness</b>	<b>Cauda equina syndrome</b>
<b>Radicular syndromes</b>	<b>Herniated disc</b>

**Pain with walking, pain in bilateral legs**

**Spinal stenosis**

**Peripheral vascular disease**

### **Bleeding**

Patients with significant, recurrent abnormal bleeding should be evaluated for disease processes affecting the clotting system and platelets. Patients with Hemophilia can present with a normal PT, PTT, and bleeding time. Patients with Von Willebrand disease will have normal platelet counts, increased bleeding times (which are typically not measured in the ED), and low von Willebrand Factor levels. Aspirin, warfarin, or heparin injection should always be considered as a potential contributor to bleeding of any source.

### **Crying and/or Fussiness**

Excessive crying is most commonly due to intestinal colic, with an incidence of 10-15% of all neonates. Table 4 lists other potentially related conditions. All require physician diligence to uncover the etiology. It is always helpful to gather a thorough history from the parents including whether or not this is a first child. After serious pathology has been excluded, some first time parents simply need reassuring to help them cope with a crying child.

#### **Table 4**

#### **Conditions associated with Excessive Crying / Fussiness in Infants**

Occult infection

Inborn error of metabolism

Congenital heart disease

Dehydration

Herpes encephalitis

Corneal abrasion

Hair Tourniquet (toe, penis)

Stomatitis

Trauma: subdural hematoma, fractures (Accidental vs. Non accidental injuries)

#### **Inadequate feeding (especially in the breast fed child)**

### **Cyanosis**

Although it is not unusual to see cyanosis in the first few minutes after birth, central cyanosis in infants generally requires admission and thorough evaluation. Unlabored tachypnea and cyanosis imply cyanotic heart disease and right-to-left shunting. Labored breathing with grunting and retractions suggests a pulmonary issue such as pneumonia. Irregular, shallow breathing and cyanosis is associated with sepsis, meningitis, or elevated intracranial pressure, due to cerebral edema or intracranial hemorrhage. Cyanosis is also associated with dyshemoglobinemias, such as methemoglobinemia (chocolate brown blood) and carboxyhemoglobinemia (cherry red cyanosis), which may present with a normal PaO<sub>2</sub>. Peripheral cyanosis can be due to reduced cardiac output, cold exposure, or arterial or venous obstruction to blood flow.

### **Dehydration**

**Signs of dehydration** include **changes in mental status, sunken eyes, absent tears, dry mucous membranes, decreased urine output, and delayed capillary refill.** The most common cause of dehydration in children in the United States is **viral gastroenteritis.**

Dehydration in adults and children can also be a result of environmental conditions and an inability to care for self.

### **Dizziness**

Dizziness is a layperson's term that can signify weakness, lightheadedness or feeling of presyncope, balance problems, or vertigo. Further questioning by the healthcare provider is required to elucidate the meaning and true symptoms. One must consider anemia, dysrhythmias, myocardial infarction, hypovolemia, vasovagal event, infection, or psychiatric problems such as anxiety disorder with hyperventilation, and depression when patient's present with this vague complaint. Vertigo, commonly referred to as dizziness, is detailed later in this chapter.

### **Edema**

Edema, the collection of fluid in spaces where it would not normally occur, can be due to a variety of reasons. Peripheral edema, ranging from trace to 4+ and pitting, may be due to sodium overload, renal disease, hepatic disease, or cardiac disease. Other causes include vascular insufficiency, discontinuation of diuretics, and heat edema, a mild, self-limited swelling of the dependent extremities upon new exposure to a hot environment. Edema may also occur in other areas, such as the abdomen (ascites), the lungs (cardiac or non-cardiac pulmonary edema), the scrotum and genitalia, or the brain (high altitude, malignancy, infection, diffuse injury, pediatric diabetic ketoacidosis). Edema of the upper extremities and face is seen with the Superior Vena Cava Syndrome, most commonly associated with a malignancy, and caused by compression, infiltration, or thrombosis. Similar processes involving the inferior vena cava result in pelvic congestion and lower extremity edema. Deep venous thrombosis of an extremity results in edema of the affected limb. Peripheral edema is commonly associated with certain medications, such as nifedipine. Peripheral edema in pregnancy can be normal; beware of generalized edema, hypertension, and proteinuria in later pregnancy as they indicate the presence of preeclampsia.

### **Failure to thrive**

Failure to thrive (FTT) is a general term applied most commonly to the pediatric population, signifying the failure to meet normal weight, size and other developmental milestones. FTT may be a sign of underlying illness, but also raises the possibility of child neglect or abuse. Signs include lack of subcutaneous tissue, protruding ribs, or loose folds of skin over the buttocks. Malnutrition, dehydration, electrolyte abnormalities, and behavioral disturbances can be present. Adults, especially the elderly, can also present with FTT, which may likewise be due to neglect or abuse, medical or psychiatric illness, a decline in mental status such as dementia, and the general inability to care for self.

### **Fatigue**

Fatigue, a general sense of becoming tired with minimal or no exertion, can be a symptom of a wide range of medical or psychiatric illnesses. Look for corresponding signs of an infectious disease, anemia, cardiac disease, hypoxia, inflammatory condition or autoimmune process, metabolic abnormality, endocrine disorder, environmental changes, pregnancy, or depression. Medications may contribute to or cause fatigue as well.

## Feeding Problems

Feeding problems in infants can be multifaceted, including caregiver inexperience. Poor feeding is also recognized as a nonspecific sign of neonatal illness, and should be the clinician's initial pursuit.

## Fever

Fever, an abnormally elevated body temperature (generally greater than 100.5° F core temperature or 99.5° F oral temperature), may accompany a wide variety of conditions, both normal and pathologic. Infectious disorders are the most common cause of fever, but a variety of non-infectious conditions may cause an elevated temperature as well. (See table 1-5). Fever generally leads to an alteration of other vital signs, including tachycardia and tachypnea as the body attempts to cool itself. Medications or drugs, typhoid fever, brucellosis, leptospirosis, viral myocarditis, endocarditis, Lyme disease, and Rheumatic fever may cause bradycardia and fever. Life threatening causes of fever include sepsis (look for hypotension), meningitis (stiff neck, headache, altered mental status, meningococcal petechial rash), brain abscess (focal neurologic deficit), epiglottitis (airway obstruction), pneumonia (respiratory failure), and peritonitis (abdominal pain). Fever in an immunocompromised patient (chemotherapy, neutropenia, splenectomy patient, transplant recipient, newborn) must be considered an emergency no matter how good the patient looks. Deterioration can be rapid and fatal. When in doubt as to the etiology of the fever, if the patient appears ill, collect blood cultures and administer broad spectrum antibiotics. It is also important to remember that some cancers can present with fever.

**Table 1-5**

### Emergent Non-infectious causes of Fever

<u>Clinical Presentation of Fever and ...</u>	<u>Consider...</u>
Chest pain, shortness of breath	Acute MI Pulmonary embolism Pulmonary infarction Pulmonary edema / CHF
Recent neuroleptic use	Neuroleptic Malignant Syndrome
Altered mental status	Heat Stroke Cocaine use Thyroid storm Cerebrovascular accident Intracranial hemorrhage Acute adrenal insufficiency Seizure
Blood transfusion	Transfusion reaction
Transplant patient	Transplant rejection

## **Hypotension**

Hypotension, generally accepted as an adult systolic blood pressure less than 90 mm Hg., should be viewed as a sign of significant disease. Some patients may have a natural blood pressure in the range of 80 –90 mmHg, so comparison to previously documented vital signs is recommended.

Table 1-6 Causes of Hypotension

### **Table1- 6**

#### **Causes of Hypotension**

Volume depletion	Dehydration Blood loss
Cardiogenic	Acute MI Cardiac failure Massive PE Cardiac depressants (drugs, poisonings) Valve failure
Loss of peripheral vascular tone	Cervical spine injury Sepsis Anaphylaxis Poisoning Medications

Hypotension accompanied by altered mental status, nausea and vomiting, and hyperpigmentation of the mucosa or skin suggests Addison's disease (adrenal insufficiency). Hypotension accompanied by evidence of decreased organ perfusion and function is known as shock, although early shock states may exhibit normal blood pressures. Hypotension rarely exists with severe head injury, except as a terminal event, and therefore other causes of inadequate blood pressure should be searched for in the traumatized patient.

## **Jaundice**

Jaundice is a yellowish discoloration of the skin, sclera, or mucous membranes, and results from elevations of the bilirubin level. Unconjugated bilirubin elevations occur from increased bilirubin production, or a problem in the liver affecting the uptake and conjugation of bilirubin. Elevation of conjugated bilirubin occurs with intrahepatic or extrahepatic cholestasis and decreased excretion of conjugated bilirubin.

An indirect fraction of bilirubin greater than 85% suggests an unconjugated bilirubin elevation, while a direct fraction of 30% or greater suggests a conjugated bilirubin problem. Jaundice is first demonstrated in the sclera at total bilirubin levels greater than 2 mg/dl. Table 1-7 reviews some causes of jaundice. Kernicterus is due to toxic levels of

bilirubin in the neonatal brain, and is characterized by lethargy and poor feeding, and may progress to muscular rigidity, opisthotonos, seizures, and death.

**Table 1-7**

**Causes of Jaundice**

<u>Other presenting signs / factors</u>	<u>Consider...</u>
Newborn:	Physiologic jaundice (most common) Breast milk jaundice (2 <sup>nd</sup> most common) ABO incompatibility / hemolysis Sepsis / TORCH infection Intrahepatic or extrahepatic structural disease Hypothyroidism Congenital metabolic / genetic disorders
Sudden onset, fever, tender liver	Hepatitis
Heavy ethanol use	Alcoholic hepatitis Cirrhosis
Family history, asymptomatic	Gilbert syndrome
Older patient, painless	Malignancy (pancreatic or hepatobiliary)
Known prior malignancy, Hard nodular liver	Hepatic metastases
Prior biliary tract disease Inflammatory bowel disease	Biliary tract scarring or stricture
Cholecystitis	Common bile duct gallstone
Hepatomegaly, edema, JVD	Chronic heart failure
Anemia	Hemolysis
Pregnancy	Fatty liver of pregnancy Cholestasis of pregnancy

Jaundice in the setting of pelvic inflammatory disease and right upper quadrant pain suggests perihepatitis or the Fitz-Hugh-Curtis syndrome.

**Joint Pain and/or Swelling**

The number of joints involved classifies joint pain. A monoarthritis involves one joint, an oligoarthritis involves 2-3 joints, and a polyarthritis involves more than three. Septic

arthritis is the most worrisome condition, characterized by a red, hot, swollen and painful joint. It may be associated with systemic signs of illness such as fever, chills, and malaise. Staphylococcus and gram negatives are the most common causative organisms. Patients with sickle cell disease are prone to infection with Salmonella. A young adult with pustular skin lesions, a migratory arthritis or tenosynovitis, and systemic symptoms preceding a monoarthritis or oligoarthritis suggests gonococcal arthritis. The classic triad of urethritis, conjunctivitis, and arthritis supports the diagnosis of Reiter's Syndrome. Crystalline joint disease (gout, pseudogout) is brought on by minor trauma, surgery, or dietary indiscretions, and most commonly affects the first MTP joint, the ankle, or the knee. Fluid from the inflamed joint reveals the typical crystals and an inflammatory response. Ankylosing spondylitis is associated with the radiograph findings of bamboo spine, with sacroilitis and squaring of the vertebral bodies. The disease is associated with the HLA-B27 antigen. Rheumatoid arthritis may be associated with a variety of inflammatory conditions, such as pericarditis, myocarditis, pneumonitis, pleural effusions, and mononeuritis multiplex. The disease is chronic, systemic, polyarticular, and associated with morning stiffness, fatigue, myalgias, and depression. The distal interphalangeal joints are generally spared. Osteoarthritis typically involves the DIP joints, and has a lack of constitutional symptoms. Lyme arthritis classically follows the primary symptoms of Lyme disease by variable amounts of time (weeks to years), is a monoarticular or symmetric oligoarthritis primarily of the large joints and requires antibiotic therapy to eradicate the organism.

**Limp**

**Limp** may occur for a variety of reasons, including several serious disease processes. A child with a limp requires due diligence in excluding serious etiologies. Table 1-8 examines causes of limp by age and etiology. Exclude serious causes first. The child will often refuse to bear weight and assume the frog-leg position (hip flexed, abducted, and externally rotated) when the hip is involved and the joint capsule swollen. Injury and arthritis are the most common etiologies in the adult population.

**Table 1-8**

**Classic Etiologies of Limp in the Child**

<u>Other presenting signs / factors</u>	<u>Consider...</u>
Boys, age 3-10 Inflammatory process involving hip or knee Little or no systemic symptoms	Toxic synovitis
Fever, malaise, decreased feeding	Septic joint
Boys, age 11-13, peak up to age 17 May be bilateral Insidious process No systemic symptoms	Slipped Capital Femoral Epiphysis
Boys, age 2-10 15% bilateral	Perthes Disease (avascular necrosis of femoral head)

## No systemic symptoms

### Lymphadenopathy

Lymphadenopathy is a marker of our immune response to a wide variety of infectious organisms, and may be widespread or focal. Persistent, generalized lymphadenopathy requires further evaluation. Lymph nodes generally remain small, but can become quite large (tennis ball size) and suppurative in certain disease processes, such as Cat Scratch Fever. Prominent, firm, persistent nodes suggest metastatic malignancy. An abnormal chest radiograph in children and young adults with cervical lymphadenopathy is strongly associated with malignant neoplasm, commonly lymphoma. Other disease processes, such as granulomatous disease and autoimmune disorders present with persistent lymphadenopathy. Fever of varying degrees is a common presenting finding for many of these disease processes.

### Malaise

Malaise is defined as a vague feeling of debility or lack of health, often indicative of or accompanying the onset of an illness. Malaise is associated with infectious diseases, environmental conditions such as heat illness, and other processes such as menstruation. As a non-specific complaint, it may result from a variety of medical and psychiatric conditions, to include electrolyte abnormalities, hematologic and oncologic disease, connective tissue disorders, metabolic irregularities, chronic pain syndromes, and depression.

### Paralysis

Paralysis is the loss of strength or impairment of motor function due to a lesion of the neural or muscular mechanism. Paralysis may be focal, such as the isolated cranial nerve seven weakness of *Bell's Palsy*, or more widespread, such as paralysis following a stroke, or spinal cord injury. The most common cause of a bilateral Bell's Palsy is *Lyme disease*. The saliva of certain ticks may induce a general paralysis, known as Tick Paralysis, which is readily reversible upon removal of the offending tick. The *Guillain-Barre* syndrome often presents as an ascending paralysis with loss of deep tendon reflexes. The *Eaton Lambert Syndrome* is characterized by muscular weakness that improves with repetitive muscle use, in contrast to the weakness of *Myasthenia Gravis*. Myasthenia Gravis primarily affects ocular or bulbar muscles; weakness is exacerbated by repetitive muscle use. *Familial periodic paralysis* (FPP) is hereditary, affects primarily Asian males, and may be associated with hyperkalemia, hypokalemia, or normal potassium levels. Attacks generally follow high carbohydrate intake. *Thyrotoxic periodic paralysis* is similar to FPP, but is associated with hyperthyroidism. *Botulism* is a toxin mediated illness presenting as a descending, symmetric paralysis and can lead to respiratory failure. Infantile botulism is commonly associated with the ingestion of honey in children less than one year of age. *Paralytic shellfish poisoning* results from the ingestion of shellfish exposed to toxins produced from dinoflagellates and other marine microbiologic lifeforms. Blooms of these organisms are commonly associated with "Red Tides" in our oceans. *Polymyositis* and *Dermatomyositis* are the most common inflammatory muscular conditions, and present primarily with proximal muscle weakness. Paralysis of an

affected limb may occur with acute arterial occlusion, vascular injury, or acute compartment syndrome. A scuba diving mishap can cause spinal decompression syndrome, with distal weakness progressing proximally, and arterial gas embolism. *Todd's paralysis* is the reversible, focal paralysis that occurs in some post seizure patients. *Complicated migraine* cephalgia may include reversible focal weakness. These patients may be at increased risk for stroke later in life.

### **Paresthesia and Dysesthesia**

Paresthesias are abnormal sensations, such as prickling, burning, numbness, tingling, and hyperesthesia. Dysesthesia implies that the abnormal sensation is unpleasant. A variety of conditions affecting nerve transmission cause these sensations. Pure sensory strokes can lead to numbness. Any nerve lesion, whether vascular, demyelinating, or compressive may cause these symptoms. Other causes include vascular insufficiency to a limb, decompression illness, frostbite, and a variety of electrolyte abnormalities. *Ciguatera toxin*, from the ingestion of affected large fish, can cause perioral dysesthesia lasting up to a year, and is associated with a hot-cold reversal phenomenon. Cold stimuli are perceived as hot, and vice versa. Alcohol may cause symptoms to reoccur. In addition chronic burning feet syndrome, similar to an alcoholic or diabetic peripheral neuropathy, may result. The combination of paresthesias and wrist drop implicate *lead poisoning*. Perioral paresthesias occur with *hyperventilation* and subsequent acute acid-base and electrolyte changes. *Hypocalcemia* is also associated with perioral and peripheral paresthesias.

### **Poisoning**

A specific agent may be identified for a variety of Toxidromes. These are listed in **Table 1-9**

#### **Table 1-9**

#### **Agents used in Poisonings and Specific Symptoms of Toxidromes**

Acetaminophen Amanita mushrooms	Hepatic injury
Narcotics	Depression of CNS, respirations, Miosis
Sympathomimetics (cocaine, amphetamines)	Agitation, mydriasis, tachycardia, Hyperthermia, diaphoresis, hypertension
Cholinergics (organophosphates, carbamates)	SLUDGE: Salivation, lacrimation, urination, defecation, gastric emptying fasciculations
Anticholinergics (atropine, scopolamine)	Altered mental status, dry mm. urinary retention, hyperthermia, mydriasis (Mad as a hatter, hot as a hare, red as a beet, dry as a bone)

Salicylate toxicity (aspirin, oil of wintergreen)	Altered mental status, respiratory alkalosis Metabolic acidosis, tinnitus, hyperpnea, Tachycardia, GI symptoms
Insulin Oral hypoglycemics	Altered mental status, hypoglycemia Hypertension, tachycardia, diaphoresis
Serotonin syndrome	Altered mental status, “wet dog shakes”, Increased muscle tone, hyperreflexia, Hyperthermia
Beta-blockers Calcium channel blocker Clonidine	Bradycardia, hypotension
Digoxin	High grade AV block Hyperkalemia
INH	Seizures unresponsive to usual treatment, history of tuberculosis
Tricyclic antidepressants	Tachycardia, hypotension, widened QRS Ventricular dysrhythmias, seizures

### **Pruritus**

Pruritus, an itching sensation, occurs from a variety of reasons. Pruritus in an allergic reaction may be the first sign of anaphylaxis. Itching occurs with significant liver or renal disease, as an occult manifestation of malignancy, or from parasitic infections. Other causes include aging, dry skin, contact dermatitis, heat rash, medication side effects, and unknown reasons. HIV disease is associated with chronic rash and pruritus. Treatment is symptomatic with antihistamines and occasionally corticosteroids either topically or systemically and then directed at the underlying etiology if one can be identified.

### **Rash**

**Rashes** are skin eruptions, with a variety of appearances, and arise from a multitude of causes. Rashes may be a manifestation of a local irritation, malignancies, infectious disease, endocrine disorders, autoimmune processes, nutritional disorders, or a systemic reaction to allergens/medications. Rashes can be asymptomatic, or life threatening.

**Table 1-10** contains a list of important rashes.

### **Table 1-10**

### **Important Rashes for the EP**

<u>Disease</u>	<u>Description, associated factors</u>
Impetigo	Bullae, crusting, Staphylococcus, Streptococcus
Erysipelas	Red plaque, sharply demarcated border Fever, systemic symptoms
Scarlet fever	Exudative pharyngitis Red rash, punctate, blanches, rough, sandpaper feel Accentuated at flexural creases (Pastia's lines) Strawberry red tongue
Rocky Mountain Spotted Fever	Fever, headache, myalgias, systemic illness Rash appears day 3 Red macules progressing to maculopapular and petechial Ankles and wrists first, central spread Tick bite, Rickettsia rickettsii
Hand, foot and mouth (and buttock) disease	Fever, anorexia, sore mouth Rash day 2-3, mouth first Painful, ulcerating oral lesions Palms, soles, buttocks Enterovirus
Erythema infectiosum appearance (Fifth disease)	Abrupt, bright red, slapped cheek  Circumoral pallor Fever, systemic symptoms
Measles	URI prodrome, fever, Coryza, conjunctivitis Tiny white spots on buccal mucosa first (Koplik's spots); Red, blanching maculopapular rash Head to feet spread
Infectious mononucleosis	Worst exudative pharyngitis you've ever seen Splenomegaly, lymphadenopathy Generalized maculopapular rash, soft palate petechia Ampicillin or amoxicillin cause rash
Chickenpox (Varicella)	Diffuse dewdrop on rose petal rash (Clear vesicles on a red base)

Roseola infantum	Abrupt, high fever Maculopapular rash on neck, trunk, and buttocks Develops as fever resolves
Erythema nodosum	Tender, discrete nodules on shins, extensor prominences, up to 5 cm; sarcoid, other diseases
Kawasaki disease	Mucocutaneous lymph node syndrome Conjunctivitis, rash, lymphadenopathy Oropharyngeal mucous membranes involvement
Pityriasis rosea	Initial herald patch Pink, maculopapular patches over ribs (Christmas tree distribution)
Erythema multiforme Stevens-Johnson syndrome	Malaise, myalgias, fever, diffuse pruritus Erythematous papules develop later Infection, medications
Erythema chronicum migrans (Lyme disease: Borrelia burgdorferi)	Systemic symptoms, Target lesion Expanding rash with red, nonscaling border Geographic distribution of illness tick bite (often missed)
Toxic Epidermal necrolysis (TEN)	Generalized warm, tender erythema to skin Skin shears with lateral pressure (Nikolsky sign) Systemic illness, toxic appearing
Toxic shock syndrome (TSS) Streptococcal TSS	Fever, diffuse erythema Subsequent desquamation Mucous membrane involvement Multi system manifestations Tampon use, wound packing
Meningococemia	Headache, fever, stiff neck Petechia, hemorrhagic vesicles

### **Sudden Infant Death Syndrome (SIDS)**

Consider potential child abuse with SIDS, especially with a similar history in a sibling. Infants with sleep apnea are at increased risk for SIDS. Accidental asphyxiation and hyperthermia play a part in some SIDS deaths. **Approximately 90% of all SIDS deaths occur during the first 6 months of life.** In those rare circumstances where the event is witnessed, it is noted that the baby suddenly becomes cyanotic, apneic, and limp without emitting a cry or struggling. There is a

high frequency of upper respiratory infections preceding the fatal event. The term *apparent life-threatening event (ALTE)* is used when intervention or resuscitation are effective after such an episode. Infants with an **ALTE** are often siblings of SIDS victims, and have frequent or prolonged apnea. Physiologic abnormalities in these babies include diminished chemoreceptor sensitivity to hypercarbia and hypoxia, problems with control of heart and respiratory rate, and impaired vagal tone.

### **Sleeping Problems**

Sleep disturbances are a common symptom of psychiatric disorders, including depression, mania, and anxiety. Careful questioning may indicate a problem with substance abuse. Look carefully for findings suggesting cardiac or pulmonary disease. The typical Pickwickian body habitus, or spousal complaints of excessive snoring should suggest sleep apnea. These patients will typically be fatigued and prone to falling asleep during normal waking hours.

### **Syncope**

Syncope, a transient loss of consciousness, is generally a benign event, but can portend a life threatening illness, particularly in the elderly. A *vasovagal episode* is usually benign. A patient typically has warning symptoms such as lightheadedness, nausea, or diaphoresis, and an appropriate stimulus, such as blood drawing, or fear. Certain situations may predispose to benign syncope, such as urination, defecation, or fits of coughing. *Orthostatic syncope* may be due to volume depletion, or simple postural changes, autonomic dysfunction, or medications. *Cardiac syncope* may be due to tachydysrhythmias such as ventricular tachycardia, bradydysrhythmias such as third degree heart block, or structural abnormalities, such as aortic stenosis in the elderly, or hypertrophic cardiomyopathy in younger patients. *Pulmonary embolism* can cause significant cardiac outflow problems, and lead to syncope. Less common as an etiology is *cerebrovascular disease*, usually associated with focal neurologic deficits or symptoms. Drop attacks, although not truly associated with a loss of consciousness, are sudden falls due to a brief loss of muscle tone, and are seen with vertebrobasilar ischemia, excessive movement of the odontoid with compression of the brain stem in a patient with an unstable C1-C2 vertebral body articulation, the chronic tonsillar herniation of a Chiari malformation, or severe, congenital cervical spinal stenosis. Syncope in a patient with a sudden, severe headache should suggest a *subarachnoid hemorrhage*.

### **Tremor**

Tremor is seen in a variety of acute and chronic conditions in the ED. Tremor is usually seen in the extremities, but may be present in the head and neck as well. Perioral tremor (the rabbit syndrome) is seen with acute extrapyramidal syndromes. Tremor is seen with multiple withdrawal syndromes, and chronic alcohol use as well. Tremor in a neonate is associated with neonatal abstinence syndromes, particularly with amphetamine-exposed babies. Tremor is seen in a variety of neurologic conditions, and may be classified as being present at rest, with action (postural), or with intention (kinetic tremor). The symptoms of Parkinson's disease include the classic pill-rolling tremor. Medications and elements causing tremor include mercury, copper, (Wilson's disease) lead, arsenic,

amiodarone, tricyclic antidepressants, beta agonists, dopamine agonists, neuroleptics, lithium, amphetamines, theophylline, caffeine, and valproic acid. Table 1-11 identifies additional causes of tremor.

**Table 1-11**

**Causes of Tremor**

<u>Clinical Presentation includes Tremor and ....</u>	<u>Consider...</u>
Tachycardia, hypertension Nausea, anorexia, anxiety Abstinence of 6-24 hours with prior heavy use	Alcohol withdrawal
Nervousness, tachycardia, sweating Altered mental status	Hypoglycemia
Muscle weakness, hyperreflexia, tetany Positive Chvostek's or Trousseau's sign Dysrhythmia	Hypomagnesaemia
Cerebellar findings, "hung up" reflexes Generalized non pitting edema Bradycardia, altered mental status Thick tongue, hyponatremia, hypothermia	Hypothyroidism
Bipolar disorder, lethargy Dehydration, change in medication	Lithium toxicity
Altered mental status, chronic lung disease Headache, asterixis, blurred vision	CO <sub>2</sub> narcosis
Altered mental status, fever, agitation Myoclonus, ataxia, diaphoreses Hyperreflexia, shivering, diarrhea (Wet dog shakes)	Serotonin syndrome

**Weakness**

Weakness is a general term often used to signify anything from malaise to myalgias. It commonly accompanies the complaint of dizziness, hence the classic "weak and dizzy". The clinician should evaluate the patient for anemia, electrolyte disturbances, dehydration, occult infection (especially UTI's or prostatitis), hepatic or renal dysfunction, hyperglycemia, or hypothyroidism. Weakness with anorexia, nausea and vomiting, hypotension, and changes in mucosal or cutaneous pigmentation suggests Addison's disease. Polypharmacy or medication side effects should always be considered in the elderly patient. In the patient with a cardiac history, consider the possibility of silent ischemia or dysrhythmia. If the patient has a pacemaker, consider the possibility of malfunction. Please see the discussion under "paralysis" for other possible etiologies.

## Weight loss

While it might be hard to believe in America today, weight loss can be unintentional and a symptom of significant illness. Virtually any chronic, debilitating disease, to include chronic infectious disease, malignancy, heart disease, pulmonary disease, autoimmune illness and a variety of other processes can be linked with weight loss. Use the clues in Table 1-12 to evaluate the etiology of weight loss.

### Table 1-12 Causes of Unintentional Weight Loss

#### Clinical Presentation includes Weight Loss and... Consider...

HIV disease Chronic diarrhea Weakness	HIV wasting syndrome
Hyperpigmentation, hypotension Altered mental status Nausea and vomiting	Addison's Disease
Dysphagia, chest pain, Regurgitation, coughing	Achalasia
Smoking history Family history of malignancy Change in bowel habits / caliber of stool Painless jaundice Chronic cough, fatigue	Malignancy
Fever, abdominal pain Bloody diarrhea	Infectious diarrhea Crohn's disease Colitis
Polydipsia, polyuria, polyphagia	New onset diabetes mellitus
Dental erosions, electrolyte disturbances Dysrhythmias, depression, female	Eating disorder
Itchy rash of foot (or other entry point), Diarrhea, anemia	Hookworm infestation
Palpitations, nervousness Heat intolerance, tachycardia Exophthalmos, goiter	Hyperthyroidism
Painless Lymphadenopathy	Lymphoma

## **ABDOMINAL PRESENTATIONS**

### **Abnormal vaginal bleeding**

Abnormal vaginal bleeding is best classified as related to pregnancy, unrelated to pregnancy, pre-menarchal, and post-menopausal. In pre-pubertal girls, vaginitis is the most common cause of pelvic pain and vaginal bleeding. Intermittent bleeding and foul discharge should suggest a *vaginal foreign body*, and bleeding with trauma to the genital area should alert the physician to the possibility of sexual abuse. In post-menopausal women, malignancy accounts for 40% of bleeding, while other causes include the use of exogenous estrogens and *atrophic vaginitis*.

Vaginal bleeding in pregnancy is best addressed by the relationship to the last menstrual period. The classic triad of a missed period, abdominal pain, and vaginal bleeding suggest an *ectopic pregnancy*. Vaginal bleeding in the first 20 weeks of pregnancy with a closed os is termed a threatened *abortion*, becomes an inevitable abortion when the cervix dilates, and a complete abortion with passage of all fetal tissue. Incomplete abortion occurs with the partial passage of fetal tissue, and is most common between 6 and 14 weeks gestational age. A missed abortion occurs with fetal death and failure to pass tissue. A septic abortion occurs with evidence of infection during any part of a miscarriage, presenting with pelvic pain, fever, cervical motion or uterine pain, and purulent discharge.

*Placenta previa* is the implantation of the placenta over the cervical os, and is generally a cause of vaginal bleeding in the second half of pregnancy. The patient presents with painless, bright red vaginal bleeding. Pelvic examination should be deferred and the diagnosis made by ultrasound when the diagnosis is suspected. *Abruptio placentae* involves the early separation of the placenta from the uterine wall, and presents during the second half of pregnancy as painful vaginal bleeding, abdominal and uterine pain, increased uterine tone, and fetal distress. Bleeding may be contained within the uterine cavity, masking the severity of the process.

*Dysfunctional uterine bleeding* is the general term used for non-pregnancy related vaginal bleeding in woman of childbearing age and a normal pelvic examination. *Anovulatory cycles* lead to irregular cycles, prolonged bleeding, and bleeding between periods. Other causes include uterine fibroids, polyps, cervicitis, malignancy, trauma, or foreign body.

### **Anuria**

The lack of any urine output at all is known as anuria. It occurs in chronic renal failure, although some patients with CRF produce some quantity of urine. Acute renal failure for the most part leads to oliguria rather than anuria in the short-term, although urine output may remain above oliguric levels (400 ml/day). Post renal azotemia leading to anuria occurs in less than 5% of patients with acute renal failure. Pre renal causes of anuria would include severe dehydration or blood loss. Complete occlusion of blood flow to the kidneys (or kidney) such as renal artery thrombosis or aortic dissection would cause anuria, but are unusual. Obstruction of the urine outflow may be caused by benign

prostatic hypertrophy, alone or in conjunction with acute inflammation (prostatitis) or various medications (narcotics, anticholinergics, antihistamines). An unusual cause of complete urine outflow is bilateral obstructing renal calculi (rare). Anuria has occurred when fungal bladder infections form fungus balls large enough to occlude the urethra. Whenever a urinary catheter fails to produce urine output, remember to irrigate the catheter, ensuring patency and correct placement.

**Ascites**

Ascites is often a result of hepatic failure and portal hypertension. Ascites occurs with a variety of processes, which hinder forward flow, such as constrictive pericarditis or tricuspid regurgitation. Other signs of liver disease /cirrhosis include spider angioma, testicular atrophy, gynecomastia, muscle wasting, and superficial bruising. Inflammatory conditions of the abdomen such as pancreatitis can be associated with ascites. Malignancy of the abdomen or pelvis may cause ascites due to metastasis to the liver and subsequent liver disease, or direct extension into the abdominal cavity. Patients on peritoneal dialysis suffer from iatrogenic ascites. These patients can subtly manifest spontaneous bacterial peritonitis. Patients with ascites should have a paracentesis to identify the exact etiology of the fluid. At times a paracentesis is needed for therapeutic purposes( rather than diagnostic) to relieve the pressure of the protuberant abdomen and allow the patient to breath more easily.

**Colic**

Intestinal Colic is thought to be a common cause of excessive crying in the newborn. The cause is unclear, and may be related to diet or other factors. Examination and lab findings are unremarkable. Colic is not generally an ED diagnosis.

**Constipation**

**Constipation**, the presence of difficult to pass, hard stools, is a common gastrointestinal complaint. **Acute constipation** necessitates an evaluation for **bowel obstruction**, suggested by **vomiting and obstipation** (the inability to pass rectal gas). Physical examination should focus on detecting **abdominal masses, hernias, and hematochezia** (consider **inflammatory disease or diverticulitis**). **Chronic constipation** is associated with a variety of disease processes, as listed in **Table 1-13**.

**Table 1-13**

**Chronic Constipation**

<u>Cinical Presentation of Constipation and ...</u>	<u>Consider...</u>
<b>Cold intolerance</b>	<b>Hypothyroidism</b>
<b>Chronic pain</b>	<b>Narcotic use</b>
<b>Diverticulitis</b>	<b>Inflammatory stricture</b>
<b>Nephrolithiasis</b>	<b>Hyperparathyroidism</b>

## **Cramps**

Abdominal cramps are a non-specific marker of gastrointestinal distress and are generally of a non-emergent nature. Cramps may accompany constipation, as the intestines contract to move hard stools forward, or diarrhea and vomiting, as peristalsis occurs in a hyperactive fashion. A variety of infectious disorders, inflammatory bowel conditions, and irritable bowel syndrome will present with significant abdominal cramping.

Muscle cramps can be associated with electrolyte disturbances (especially hyperkalemia and hypocalcemia), dehydration, heat illness, *tetanus*, *end-stage renal disease*, *respiratory alkalosis*, and a variety of medications with cholinergic effects. They can occur post dialysis in chronic renal failure, if too much fluid is removed.

Menstrual cramps are a common cause of abdominal-pelvic pain, and can be severe. Dysmenorrhea presents with *painful cramping of the lower abdomen and may be accompanied by sweating, tachycardia, headaches, nausea, vomiting, diarrhea, and tremulousness*. *Endometriosis, an aberrant location of glands and stroma normally found in the uterus, can present with significant, cyclical cramping pain of the abdomen and pelvis, infertility, bowel obstruction, hematuria, gastrointestinal bleeding, and other symptoms.*

## **Diarrhea**

Not to be confused with an occasional loose stool, diarrhea implies the frequent and massive discharge of intestinal contents through the anus. Causes of bloody diarrhea are discussed under hematochezia. Causes of diarrhea are legion, and include infectious agents, inflammatory processes, food allergies, misuse of laxatives, and a variety of medications and toxins. Traveler's diarrhea is by far the most common travel related illness due to contamination of water or food, and changes in the bowel flora with *E. coli*. In addition to bacteria, viruses (rotavirus, Norwalk agent) and parasites are also common culprits. The most common parasite to cause diarrhea worldwide is *Giardia*.

Immunocompromised patients and especially AIDS patients are prone to significant diarrhea from a variety of agents such as Cytomegalovirus, Cryptosporidia, *Isospora belli*, *Cyclospora*, MAC, and others. In addition, a majority of the agents used to combat the progression of HIV cause diarrhea as a side effect.

## **Dysmenorrhea**

Painful menstruation, which may be accompanied by sweating, nausea and vomiting, diarrhea, headaches, and tremulousness, is classified as primary (not associated with pelvic pathology), and secondary. Primary dysmenorrhea occurs in young woman, with an estimated prevalence of 75%. Causes of secondary dysmenorrhea include pelvic congestion, cervical stenosis, endometriosis and adenomyosis, pelvic infection, adhesions, and stress. Endometriosis is generally associated with infertility and chronic pelvic pain, although the range of symptoms is great.

## **Dysuria**

The most common cause of **dysuria** is infection of the urinary tract. **Table 1-14** discusses other causes of this common complaint.

**Table 1-14 Causes of Dysuria**

<u>Clinical Presentation of Dysuria and ...</u>	<u>Consider...</u>
Elderly males	Prostatitis BPH
Postmenopausal females	Atrophy and dryness
Females	Trauma of intercourse Sensitivity to scented items
Unprotected intercourse Penile discharge Penile lesions	Sexually transmitted disease
Vaginal discharge	Vaginitis (yeast, Trichomoniasis) Foreign body
Back pain, hematuria	Calculi Neoplasm
Associated spondyloarthropathy	Reiter's syndrome Behcet's syndrome Lupus
Biking, horseback riding, running	Dysuria related to strenuous physical activity
Pyuria with negative urine culture	Tuberculosis Chlamydia
Children Associated UTI's	Congenital abnormality of GU tract

**Hematemesis**

Vomiting of blood is associated with upper GI bleeding (proximal to the ligament of Treitz) from a variety of causes, including *peptic ulcer disease*, gastritis, esophagitis, and duodenitis. *Esophageal varices* are often the culprit in the alcoholic patient, or the patient with chronic liver disease and portal hypertension. Repetitive non-bloody vomiting may be followed by hematemesis as a *Mallory-Weiss tear* of the esophagus occurs. Hematemesis in the neonate occurs with *necrotizing enterocolitis*. Penetrating neck trauma and hematemesis should lead to the investigation of an esophageal injury. *Gastritis* progressing to hematemesis in the elderly is often caused by chronic NSAID use. *Acute iron ingestion* causes local toxicity and upper GI bleeding, in association with

altered mental status, an anion gap acidosis, and shock. Melena, the passage of black stools, is also associated with upper GI bleeding.

### **Hematochezia**

Hematochezia refers to the passage of bright red or dark red / maroon stools, and is a sign of lower GI bleeding. It may occur with upper GI bleeding with rapid passage of the blood through the GI tract. Please see the section on rectal bleeding as well. The Hemolytic Uremic syndrome (E. coli 0157:H7) is generally preceded by bloody diarrhea 1-2 weeks before the onset. A variety of other enteric pathogens cause an invasive enteritis and bloody diarrhea. Campylobacter is associated with wilderness waters, Salmonella is linked to poultry and pet turtles, and Vibrio parahaemolyticus with raw seafood. Vibrio vulnificans is associated with seawater exposure, liver disease, and invasive bullous ulcers of the extremities. Shigella in addition to bloody diarrhea commonly causes high fevers and seizures. Prior antibiotic use is associated with the development of Clostridia difficile overgrowth. Consider Cytomegalovirus in the HIV patient. Noninfectious causes of lower GI bleeding include diverticulosis (the most common cause of massive lower GI bleeding), angiodysplasia, cancer or polyps, and inflammatory bowel disease. In the child, intussusception is classically associated with currant jelly stool, intermittent abdominal pain, and altered mental status. A Meckel's diverticulum may cause pain similar to appendicitis, or can cause massive, painless lower GI bleeding. Food dyes and milk allergy should be considered when other causes have been excluded. Henoch Schonlein purpura is a systemic vasculitis causing abdominal pain and lower GI bleeding and a typical, purpuric rash of the lower extremities and buttocks.

### **Hematuria**

Hematuria can be very frightening to the patient, as a little blood goes a long way. Hematuria may be grossly visible to the eye, or microscopic. The most common etiologies are infection, generally associated with burning, frequency, or voiding small amounts. Systemic symptoms may also be prominent, especially fever, back pain, and vomiting. Malignancies of the kidney or bladder may present with hematuria, and require timely evaluation. Sudden onset of severe back, flank or abdominal pain with hematuria suggests renal or ureteral calculus, although abdominal aortic aneurysm should never be overlooked with these symptoms in the patient with risk factors for the disease. Trauma may lead to hematuria from a variety of sources, to include renal contusion, hematoma, or laceration, or bladder injury. Blood at the urinary meatus and a high-riding prostate post blunt trauma suggests urethral injury. Simple or complex cysts of polycystic kidney disease are associated with flank pain and hematuria. Additional etiologies of hematuria include glomerulonephritis from a variety of causes, radiation treatment, papillary necrosis, renal arteriovenous fistula, bladder neck varicosities, interstitial cystitis, and urethral prolapse. Hematuria and hemoptysis suggests Goodpasture's syndrome. Consider foreign bodies of the GU tract in children or adults at risk for such behavior. Hematuria following pharyngitis suggests a post-streptococcal glomerulonephritis. Other systemic diseases associated with hematuria include lupus, sickle cell anemia, infectious mono, Henoch-Schonlein purpura, and endocarditis. Cyclic hematuria consider endometriosis affecting the bladder.

## Nausea and Vomiting

These symptoms may be directly related to a gastrointestinal disease, or to a variety of other processes, both benign and serious. Vomiting in a woman of childbearing age should always prompt a pregnancy test. Excessive vomiting in the first trimester occurs with hyperemesis gravidarum. Vomiting in the third trimester with hypertension is associated with preeclampsia. Emesis following head trauma, or associated with severe headache suggests elevated intracranial pressure. Vomiting with a red, painful eye should focus the clinician on a diagnosis of glaucoma. In the patient with cardiac risk factors, nausea and vomiting may be an associated symptom with chest pain of cardiac origin, or may be the sole manifestation of an inferior wall myocardial infarction. Emesis in a patient with vascular disease suggests intestinal ischemia. Vomiting in a diabetic occurs with diabetic ketoacidosis, or with a history of abdominal surgery consider intestinal obstruction. Projectile vomiting in an infant suggests pyloric stenosis, or may be a sign of volvulus, intestinal atresia, or malrotation of the gut. Biliious vomiting speaks against gastric outlet obstruction. Vomiting in the patient on chronic medications (digoxin, lithium) suggests drug toxicity. One of the most common causes of vomiting is a viral gastroenteritis, which may present with or without diarrhea, and commonly will produce evidence of an ileus on abdominal radiographs. A history of prior abdominal surgery should always prompt consideration of adhesions and subsequent bowel obstruction, which may be complete or partial.

## Abdominal Pain

Abdominal pain can be a marker of significant disease, or may be present in a variety of more benign conditions. Important distinguishers with abdominal pain include type of pain (sharp, crampy), timing (constant, intermittent), relation to food or bowel movement, associated symptoms (vomiting, fever), and radiation (to the back, testicles, shoulder). Symptoms of referred pain suggest specific diagnosis as well. Table 1-15 identifies some of the more common causes of abdominal pain and their associated risk factors and findings.

**Table 1-15 Etiologies of Abdominal Pain**

<u>Clinical Presentation of Abdominal Pain and...</u>	<u>Consider...</u>
Cardiac disease, vascular disease Age greater than 50, radiation to back, Butt, hip, testicles Hypotension	Abdominal aortic aneurysm
Periumbilical pain, migrating to RLQ	Appendicitis Meckel's Diverticulum
RUQ pain, Murphy's sign Female, fertile, overweight, age 40	Cholecystitis
General abdominal pain	Pancreatitis

Heavy alcohol use, history of gallstones  
Radiates to the back

Sudden onset, severe flank pain  
Radiates to genitalia  
Hematuria

Renal, ureteral calculus

Right upper quadrant pain  
Pelvic pain, STD

Fitz-Hugh-Curtis syndrome  
(perihepatitis)

Epigastric pain  
Radiates to back  
Melena  
NSAID use, alcohol use

Peptic ulcer, duodenal ulcer  
Gastritis

LLQ pain, constipation  
Blood in stool

Diverticulitis

Vomiting feculent material  
Constipation, obstipation

Bowel obstruction  
Intussusception  
Volvulus

Projectile vomiting  
Newborn, male  
Palpable cherry pit in epigastric area  
Visible peristalsis

Pyloric stenosis

Age 3 mo. to 6 yrs  
Intermittent symptoms  
Currant jelly stool, sausage shaped mass

Intussusception

Bilious vomiting in neonate

Malrotation of the gut  
Volvulus

Focal pain and swelling

Hernia  
Incarcerated hernia

### **Pelvic pain**

Pelvic pain in the non-pregnant female has a variety of causes, and is outlined in Table 1-16.

#### **Table 1-16 Etiologies of Pelvic Pain**

Clinical Presentation of Pelvic Pain and ...      Consider...

Cervical motion tenderness  
Fever

Pelvic inflammatory Disease  
Tubo-ovarian abscess

Risk factor for sexually transmitted diseases

Vaginal discharge  
Vulvar erythema / irritation

Vulvovaginitis

Adnexal pain  
Normal menstrual cycles

Ovarian cysts

Hypotension

Ruptured hemorrhagic corpus luteum

Sudden onset, severe pain  
Unilateral pain and mass

Ovarian torsion

Onset with menses  
Dyspareunia  
Dysmenorrhea

Endometriosis

Enlarged uterus or palpable uterine mass

Leiomyomas

Weight gain, increased thirst  
In vitro fertilization in process  
Severe form with pericardial effusion,  
Hepatorenal failure, ascites, thromboembolism

Ovarian hyperstimulation syndrome

### **Peritonitis**

The classic signs of peritonitis (inflammation of the peritoneum, associated with exudates and pus) include abdominal pain to palpation, rebound tenderness (pain worse when releasing focal palpation), and guarding. Fever, anorexia, nausea, vomiting, loose stools or constipation may also be present. Specific peritoneal signs include the ileopsoas sign (pain with passively extending the hip or actively flexing the hip against resistance), the obturator sign (internal or external rotation of the flexed hip causes pain), the heel tap sign (painful pushing on the heel of the patient causing abdominal jiggling), and percussion tenderness (pain to gentle percussion). Peritonitis is the most common complication of peritoneal dialysis. Table 1-15 (under abdominal pain) lists the more common causes of peritonitis by location of abdominal pain.

### **Rectal pain and Rectal bleeding**

Hemorrhoids are the most common cause of painless rectal bleeding, usually noted upon wiping. Hemorrhoids may be internal or external. They may be complicated by pain, prolapse, or thrombosis. A thrombosed hemorrhoid is evident by a deep purplish discoloration and a palpable clot. Anal fissures, superficial linear tears of the anal canal, lead to painful (sharp, ripping pain with bowel movements) rectal bleeding. These are generally midline, and associated with hard stools. The examiner may see a sentinel pile. Fissures not in the midline should raise the suspicion of more worrisome diagnosis, such as Crohn's disease, ulcerative colitis, carcinoma, or sexually transmitted diseases.

Cryptitis occurs with anal spasm and trauma from the hard bowel movements, leading to inflammation of the anal glands. Anorectal abscesses cause deep, throbbing pain, and may invade deep spaces. Drainage and bleeding may occur spontaneously. Swelling and discoloration will be visible, and fever may be present. These, as well as other inflammatory bowel conditions, may lead to the development of fistula in ano, with a persistent bloody, foul smelling discharge present. Consider a carcinoma of the rectum or sigmoid colon in all patients over age 40 with pain, bleeding, or a change in stool size. Rectal prolapse presents with an obvious protruding mass, bleeding, and pain. A history of foreign bodies in the rectum is often not readily elicited, but should be considered. Bloody diarrhea with fever and abdominal cramping suggest inflammatory bowel disease, or infection with an invasive organism.

### **Urinary incontinence**

Among the most common causes of urinary incontinence is simple stress incontinence, often occurring in older woman with a history of multiparity. Incontinence may be caused by straining or coughing. Urinary retention can present as overflow incontinence due to any of the reasons listed below. Serious problems leading to urinary incontinence include any of the spinal cord syndromes (anterior, central, Brown – Sequard, conus medularis), and the cauda equina syndrome. Incontinence is also associated with acute transverse myelitis, multiple sclerosis, and organophosphate poisoning.

### **Urinary Retention**

The patient most likely to present with acute urinary retention is an elderly male with benign prostatic hypertrophy. Urinary retention in these patients may present as overflow incontinence, confounding the history. Prostate cancer, severe prostatitis, and bladder neck contracture are other causes. In females, the most common cause of urinary retention is an atonic bladder, resulting from years of infrequent voiding. In younger patients, consider multiple sclerosis, tabes dorsalis, diabetes mellitus, and syringomyelia. Other, less frequent causes include phimosis, paraphimosis, and urethral stenosis. Urethral foreign bodies, to include calculi, may also contribute. Medications can cause urinary retention acutely, and include agents with antihistamine or anticholinergic effects or stimulants (ephedrine, amphetamines), which increase the tone of the bladder neck. Other neurologic causes include spinal shock, and the spinal cord syndromes, including the cauda equina syndrome (pain radiating into one or both legs, numbness in the perineum, and trouble starting or stopping urination or defecation). After ruling out other etiologies, consider psychogenic urinary retention.

## **CHEST**

### **Chest Pain**

Causes of chest pain are legion, and it is imperative that the EP addresses all potentially lethal etiologies in the evaluation process. Chest pain is generally judged by the company it keeps, but diseases such as acute cardiac syndrome and pulmonary embolism frequently present with “atypical” symptoms and types of pain. Table 1-17 addresses the classic presentations of the most concerning o common diagnosis.

#### **Table 1-17 Classic Diagnoses Associated with Chest Pain**

Clinical Presentation of Chest Pain and...

Consider...

**Radiation to L. shoulder, neck, jaw**  
**Associated nausea, shortness of breath, sweating**  
**Induced by activity, alleviated by rest**  
**Occurs in early awakening period**  
**Chest "pressure"**  
**Risk Factors for CAD**

**Acute MI**  
**Acute Coronary Syndrome**

**Rapid onset, severe pain**  
**Migrates distally**  
**Tearing sensation**  
**Vascular Disease Risk Factors**  
**Associated with pregnancy**  
**Associated neurologic deficit**  
**Discrepancy in peripheral pulses**  
**New pericardial rub or valve failure**

**Aortic Dissection**

**Pleuritic pain, sudden onset**  
**Pain may be recurrent**  
**Dyspnea, relative hypoxemia**  
**Syncope**  
**Risk factors, associated with pregnancy**  
**Anxiety**

**Pulmonary embolism**

**Pleuritic pain, sudden onset**  
**Dyspnea**  
**Trauma (but also spontaneous)**  
**... With hypotension and altered mental status**

**Pneumothorax**

**Tension pneumothorax**

**Pain preceded by vomiting**  
**Located along the esophagus**  
**Persistent and unrelenting**  
**Increased by swallowing and flexion of the neck**

**Esophageal rupture**

**Dull, aching, or pleuritic**  
**May be positional: increased supine**  
**Radiation to trapezial ridge**  
**Recent viral illness**  
**Uremia, SLE, cancer**  
**Dyspnea, fever**  
**Rub?**  
**... If hypotensive, narrow pulse pressure**

**Pericarditis**  
**Associated myocarditis**

**Cardiac tamponade**

**Cough**

Cough is the rapid expulsion of air from the airways to clear mucous, liquid, or foreign material. A cough reflex is initiated in response to any source of irritation of the tracheobronchial tree. Any irritative process such as inflammation or infection of the upper or lower respiratory system may lead to cough. Certain medications, such as ACE inhibitors, cause cough as a side effect. Cough, rather than wheezing may be the presenting sign of reactive airway disease. Cough is a significant pathway for the spread of infectious disease.

### **Hemoptysis**

Hemoptysis, the expectoration of blood from the bronchopulmonary system, is generally classified as minor or major based on the amount of blood involved. Major hemoptysis is generally due to advanced pulmonary malignancy (erosion into blood vessels), trauma (pulmonary contusion, tracheobronchial disruption), or vasculitides (Goodpasture's syndrome, Wegner's granulomatosis). Minor hemoptysis is generally caused by repetitive coughing, irritation of the airways, or pulmonary infection. Hemoptysis with chest pain should prompt consideration of pulmonary embolism. Hemoptysis with dyspnea on exertion, orthopnea, and a heart murmur suggests mitral valve stenosis. Pulmonary tuberculosis should be considered until proven otherwise for all infectious etiologies. Superinfection with Aspergillosis in the patient with tuberculosis may lead to the formation of large, invasive fungus balls and fatal, massive hemoptysis.

### **Hiccup**

Also known by the Latin term "singultus", have been associated throughout the medical literature with a variety of conditions, including ants in the external auditory canal, sarcoidosis, multiple sclerosis, and subphrenic abscess. In practice, many cases of hiccups remain of idiopathic origin.

### **Palpitations**

Palpitations, the sensation of irregular and/ or strong beating of the heart, may accompany a variety of dysrhythmias, or may have no cardiac etiology at all. Remarkably, some patients with significant cardiac dysrhythmias or other problems may have no sense of palpitations at all. Evaluation should be directed towards cardiac issues, electrolyte abnormalities, and the use of stimulants. Frequently, a specific cause is elusive, and the patient remains otherwise asymptomatic.

### **Shortness of Breath or Dyspnea**

Dyspnea is the subjective sensation of difficult, labored, or uncomfortable breathing. A patient may complain of dyspnea, and lack objective findings. The majority of causes of dyspnea are cardiac or pulmonary (two thirds). Dyspnea commonly accompanies chest pain with coronary artery disease, or it may be the sole presentation of an acute coronary syndrome as an "anginal equivalent." Likewise, dyspnea may accompany many other cardiac disease states, such as pericarditis or pericardial effusion, the cardiomyopathies, and left sided congestive heart failure. Dyspnea may be the sole presentation of a pulmonary embolus. Other pulmonary causes include a variety of chronic lung conditions such as asthma, emphysema, cystic fibrosis, or pulmonary hypertension. Acute pulmonary causes include pneumothorax, airway foreign body, allergic reactions,

and respiratory infections. Other non-cardiopulmonary causes include acid-base disorders, medications, anemia, infection, toxins, high altitude, poor conditioning, and others. Symptoms of altered mental status, hypotension, or respiratory failure require immediate intervention by the clinician, while in other circumstances the search for the etiology may proceed at a more relaxed pace.

### **Tachycardia**

Tachycardia is defined by age, with a heart rate of 100 or greater used in adults. Tachycardia accompanies a host of diseases (of the body or the mind) and symptoms, and like other cardiac symptoms, should be judged by the company it keeps. Determination of the origin of the fast heart requires a good history, physical examination, and electrocardiogram. Please examine Table 1-18 for more on some of the causes of tachycardia.

#### **Table 1-18 Classic Diagnoses Associated with Tachycardia**

Clinical presentation of tachycardia and... Consider...

Outdoor exposure	Hypothermia (typically replaced by bradycardia)
Altered mental status	Hypoglycemia Hypoxia Illicit drugs
Fever and altered mental status	Hyperthermia/ heat stroke Thyroid storm Sepsis Cocaine Neuroleptic Malignant Syndrome Delirium tremens Serotonin syndrome
Episodic palpitations, diaphoresis, headache	Pheochromocytoma
Chest pain	Acute MI Pericarditis Pulmonary embolism Pneumothorax
Dyspnea	Pulmonary edema Allergic reaction Pulmonary embolism
Fever	Infection Cocaine Dehydration

Trauma, or blood loss	Anemia Pain
Overdose/ suicide attempt	Stimulants Cyclic antidepressants Anticholinergics Antihistamines Calcium channel antagonists, ethanol, iron, nitrites, arsenic, salicylates Many others...
Alcohol or substance abuse	Withdrawal syndromes
History of hypertension	Beta-blocker withdrawal

### **Wheezing**

“All that wheezes is not asthma” is the mantra, additionally; the worst asthma (with little airflow) may have no wheezing at all! Wheezing describes the musical, high-pitched sounds produced by the flow of air through obstructed central and lower airways. Of note inspiratory stridor may be confused with wheezing. (Table 1-24) Causes of airway obstruction, and therefore wheezing, include asthma (increased secretions, smooth muscle constriction, muscle hypertrophy, peribronchial inflammation), bronchiolitis, COPD, transient hyper reactivity of the airway, and foreign body. Cardiovascular causes of wheezing include congestive heart failure (cardiogenic pulmonary edema), ARDS (noncardiogenic pulmonary edema), and pulmonary embolism Gastroesophageal reflux can induce wheezing via aspiration of gastric contents, or by mediation of a vagal reflex arc. Like stridor, wheezing can also be psychogenic and created by the patient. Wheezing is generally accompanied by dyspnea.

### **HEAD AND NECK**

#### **Diplopia**

Binocular Diplopia commonly occurs with disorders of the extraocular muscles, or of the cranial nerves supplying them III,IV,and VI). Diplopia, ptosis, and a CN III palsy with pupillary sparing suggests a diabetic cranial mononeuropathy as the cause. Please see Table 1-19 for other causes of diplopia.

#### **Table 1-19 Diplopia**

Clinical Presentation of Diplopia and...\_\_\_\_\_ Consider...

#### **Monocular**

**Lens dislocation**  
**Lens opacities (cataracts)**

**Binocular**  
**Vertigo, vomiting, ataxia, tinnitus**  
**Hemiparesis**  
**Unilateral facial weakness**

**Vertebral artery dissection**

**Binocular, with Bulbar symptoms**

**Botulism**  
**Myasthenia Gravis**

**Trauma**  
**Medial or inferior orbit injuries**

**Nerve / muscle entrapment**

**Binocular**  
**Intranuclear ophthalmoplegia**

**Multiple sclerosis**

### **Dysphagia**

Dysphagia, or difficulty in swallowing, should be differentiated fromodynaphagia, or pain on swallowing. Clarify if the trouble occurs with swallowing liquids or solids. An inability to swallow liquids or saliva indicates an obstruction, usually due to a food bolus and/or an underlying stricture of the esophagus. A variety of neurologic and neuromuscular disorders may lead to dysphagia, including stroke, amyotrophic lateral sclerosis, and myasthenia gravis. Other obstructive etiologies include Superior vena cava syndrome, thyroid enlargement, neck masses, and local abscesses. Dysphagia in a child can be associated with the ingestion of a foreign body.

### **Eye pain**

Eye pain is generally due to trauma, infection, or inflammation. Table 1-20 uses other findings to differentiate among the causes.

#### **Table 1-20 Eye Pain**

Clinical Presentation of Eye Pain and... Consider...

**Vesicular rash, involving tip of nose**  
**Headache**  
**Dendritic lesion by fluorescein staining of cornea**  
**Red eye**

**Herpes Keratitis**

**Periorbital swelling and erythema**  
**Proptosis**  
**Fever**  
**Pain on eye movement/ restriction of movement**

**Orbital cellulitis**

**Red eye, may be focal**  
**Contact lens wear**  
**Fluorescein stain defect with infiltrate,**  
**shaggy borders**

**Corneal ulcer**

## **Hypopyon**

**“Something in my eye”**

**Red eye, may be focal**

**Pain relief with topical anesthetic**

**Fluorescein uptake**

**Corneal abrasion**

**Foreign body**

**Metal rust ring**

**Linear abrasion noted to conjunctiva**

**Conjunctival abrasion**

**Foreign body**

**Blunt ocular trauma**

**Hyphema**

**Decreased visual acuity**

**...With proptosis**

**Ruptured globe**

**...Retrobulbar hematoma**

**Chemical exposure**

**Acid or alkali burn**

**(Irrigate!!!!)**

**Blunt ocular trauma, 1-2 days ago**

**Red eye (ciliary flush)**

**Photophobia**

**Mildly decreased visual acuity**

**Anterior chamber cells / flare**

**Pain not relieved with topical anesthetics**

**Traumatic iritis**

**Red eye (ciliary flush)**

**Photophobia**

**Mildly decreased visual acuity**

**History of autoimmune disease**

**Pain not relieved by topical anesthetics**

**Iritis / uveitis**

**Focal injection below bulbar conjunctiva**

**Normal visual acuity**

**Dull pain**

**Episcleritis**

**Red eye (ciliary flush)**

**Midposition pupil**

**Headache**

**GI symptoms**

**Elevated intraocular pressure**

**Acute glaucoma**

**Red eye, history of corneal transplant  
photophobia**

**Transplant rejection**

Herpetic keratitis requires immediate involvement of the ophthalmologist. Always consider the presence of an ocular foreign body with conjunctiva or corneal abrasions. If a ruptured globe is suspected, cover the eye and consult an ophthalmologist.

### **Headache**

Headache is a non-specific finding in a variety of disease processes or in normal states. Specific headache patterns and their associated symptoms must be recognized and acted upon rapidly by the EP. See Table 1-21 for more details. Nausea and vomiting are non-specific symptoms associated with a number of headache syndromes, including trauma, glaucoma, tumor, and migraine cephalgia.

**Table 1-21 Classic Diagnoses associated with Headache**

<u>Clinical Presentation of Headache and...</u>	<u>Consider...</u>
<b>Fever, stiff neck</b>	<b>Meningitis</b>
<b>“Worst headache of my life”</b>	<b>Subarachnoid hemorrhage</b>
<b>Worse in morning upon waking History of cancer</b>	<b>Brain tumor</b>
<b>Immunocompromised state HIV disease / AIDS Fever variable</b>	<b>Brain abscess, Intracranial infection</b>
<b>Trauma, loss of consciousness ...Lucid period and then deterioration</b>	<b>Intracranial bleed ... Epidural bleed</b>
<b>Female, obese Visual complaints</b>	<b>Pseudotumor cerebri (Idiopathic intracranial hypertension)</b>
<b>Transient scotomata Subsequent headache GI symptoms ... With transient focal neurologic deficit</b>	<b>Classic migraines  ... Complicated migraine</b>
<b>Eye pain, red eye, mid-position pupil Abdominal pain, vomiting</b>	<b>Acute glaucoma</b>
<b>Hemicrania, rhinorrhea, congestion Partial Horner’s syndrome (transient) Male</b>	<b>Cluster headache</b>
<b>Increased at night, or cold exposure Associated with polymyalgia rheumatica Scalp tenderness Tender, inflamed temporal artery</b>	<b>Temporal arteritis (Giant Cell)</b>

**Severe, unilateral posterior headache**  
**Facial pain**  
**Neurologic deficit**

**Vertebral dissection**

**Unilateral headache**  
**Ipsilateral partial Horner's syndrome**  
**Contralateral hemispheric findings**

**Carotid dissection**

**Post dural puncture**  
**Relieved when supine**  
**Neck stiff, backache**  
**Facial pain**  
**Exacerbated by chewing, shaving, smoking**  
**Excruciating, lightning pains**  
**Distribution of branches of CN V**

**Post dural puncture headache**

**Trigeminal neuralgia**  
**(tic douloureux)**

### **Loss of Hearing**

Acute hearing loss is most commonly idiopathic, but may be related to viral illness, vascular disease, hematologic disease (leukemia, sickle cell disease), or metabolic abnormalities. Unilateral hearing loss with tinnitus should prompt an evaluation for acoustic neuroma. Benign and reversible, cerumen impaction is easily diagnosed and remedied.

### **Loss of vision**

In the absence of trauma **acute loss of vision or reduction in visual acuity** requires immediate evaluation for potentially reversible causes, such as **acute glaucoma** and **central retinal artery occlusion**. Symptoms and the diagnosis they suggest are listed in Table 1-22.

**Table 1-22 Loss of Vision**

Clinical Presentation of Vision Loss and...

Consider...

**Painful, red eye**  
**Midposition pupil**  
**Headache**  
**GI symptoms – pain, N/V**

**Acute glaucoma**

**Red desaturation (decreased color vision)**  
**Afferent pupillary defect**  
**May have pain with eye movement**

**Optic neuritis**  
**(anterior or retrobulbar)**

**Sudden, painless loss**  
**History of amaurosis fugax**  
**Partial field cut or complete**  
**Whitening of the retina**  
**Cherry red spot at macula**

**Central retinal artery occlusion**

**Acute, painless**  
**“Blood and Thunder” fundus**  
**(Edema, cotton wool spots, hemorrhage)**

**Central retinal vein occlusion**

**Headache, jaw pain**  
**History of Polymyalgia rheumatica**  
**Scalp or temporal artery tenderness**  
**Fever, fatigue**  
**Elevated ESR and CRP**

**Temporal arteritis (Giant cell)**

**Visual loss, full or partial**  
**Preceded by visual “floaters”**  
**or flashes of light**

**Retinal detachment**  
**Vitreous hemorrhage**

### **Rhinorrhea**

Rhinorrhea is most commonly associated with a viral URI or seasonal allergies. Purulent rhinorrhea suggests a bacterial process or sinusitis. The presence of a discharge from any orifice should always prompt a search for a foreign body, especially in a child, and the nose is no exception. Clear rhinorrhea, dripping out the nose or down the throat following head trauma suggests a basilar skull fracture and dural leak. Similar symptoms following certain ENT procedures or neurosurgical procedures should also raise the suspicion of a post-operative leak. Suspect cerebrospinal fluid leak when a drop of the discharge collected on a piece of filter paper produces a rapidly advancing ring, or halo.

### **Sore throat**

Sore throat (pharyngitis) is most commonly caused by viral illness. This may be difficult to differentiate clinically from a bacterial or other infectious process. Table 1-23 differentiates causes of a sore throat. Etiologies include overuse (yelling at a rock concert), chemicals (aspiration of gasoline) or foreign bodies (swallowed chicken bones).

#### **Table 1-23 Sore Throat**

Clinical Presentation of Sore Throat and...

Consider...

**URI symptoms**

**Common viruses**

**Exanthem**

**Mild erythema and edema of pharynx**

**HIV disease / AIDS**

**Candida esophagitis**

**Other immunocompromised state**

**CMV**

**Thrush**

**Odynophagia**

**Fever, significant sore throat**

**Infectious Mononucleosis\***

**Thick, white exudates**

**Splenomegaly**  
**Generalized lymphadenopathy**

**Vesicles on an erythematous base**  
**Painful oral ulcers**

**Herpes infection**

**Fever**  
**Tonsillar exudates**  
**Erythema of pharynx**  
**Cervical adenopathy**  
**Scarlet fever rash**

**Group A beta hemolytic strep**

**Fever**  
**Gray-green pseudomembrane**  
**Hoarseness**  
**Tender, diffuse cervical adenopathy (“Bull neck”)**

**Diphtheria**

**Mild erythema & symptoms**  
**Concomitant GU symptoms**  
**History of oro-genital sex**

**Gonococcus**  
**Chlamydia trachomatis**

**Chronic tonsillitis**  
**Multiple trials of antibiotics**  
**“hot-potato” voice**  
**trismus, drooling**  
**inferior, medial displacement of the tonsil**  
**contralateral deflection of the uvula**

**Peritonsillar abscess**

**Dysphagia, intense neck pain, limitation of cervical motion, fever**  
**Cervical lymphadenopathy**  
**Muffled voice**  
**Respiratory distress**  
**Stridor and neck edema in children**  
**Inflammatory torticollis**

**Retropharyngeal abscess**

\*A significant portion (90%) of patients with infectious mononucleosis will develop a diffuse macular rash from the interaction of the virus and the use of amoxicillin or Ampicillin. These patients are then often mislabeled as penicillin allergic.

### **Stridor**

Stridor is an audible noise caused by an obstruction of airflow at the trachea or above. Table 1-24 identifies some of the common causes and clues to their diagnosis.

**Table 1-24 Stridor**

Clinical Presentation of Stridor and ...	Consider...
<b>Expiratory stridor</b> <b>High fever</b> <b>Drooling</b>	<b>Epiglottitis</b> <b>Pharyngeal abscess</b>
<b>Expiratory stridor without fever</b>	<b>Supraglottic foreign body</b> <b>Congenital defect</b> <b>Hypertrophied tonsils</b>
<b>Biphasic stridor</b>	<b>Vocal cord paralysis</b> <b>Foreign body at the vocal cords</b> <b>Laryngomalacia</b>
<b>Inspiratory stridor</b> <b>High-pitched stridor</b> <b>Fever</b>	<b>Croup</b> <b>Bacterial tracheitis</b>
<b>Inspiratory stridor without fever</b>	<b>Congenital</b> <b>Foreign body</b> <b>Acquired subglottic stenosis</b>

Stridor is much more likely to be found in a child with an infectious etiology than in an adult due to the relative size of the airways. Stridor is also an easily produced psychosomatic symptom.

### **Tinnitus**

Tinnitus, a ringing or buzzing sensation in the ear, is most commonly associated with otologic disease, including hearing loss and acoustic neuroma. Intermittent bouts of tinnitus, hearing loss, and vertigo define Meniere's disease. Tinnitus can be objective, and heard by the examiner when applying a stethoscope to head and neck structures near the ear. Common causes include vascular tumors, A-V malformations, and arterial bruits. Aspirin, loop diuretics, and Aminoglycoside can cause tinnitus.

### **Vertigo**

**Vertigo** is defined as a sense of rotation and disequilibrium, and is generally accompanied by **nausea and vomiting**. There are a multitude of causes, some of which are important to expediently address. The clinician should be able to determine if there is a peripheral or central (more worrisome) cause. Clues to discriminate central vs. peripheral are provided in Table 1-25.

#### **Table 1-25 Peripheral versus Central Vertigo**

Clinical Presentation of Vertigo and ...	Consider...
--	-------------

**Worsened with movement**  
**Sudden onset, severe symptoms**  
**Hearing normal**  
**Nystagmus present, but extinguishes**  
**Normal neurologic examination**

**Peripheral etiology**

**Present when lying still**  
**Headache**  
**Nystagmus, other symptoms present at all times**  
**Tinnitus, or hearing problem present**  
**Focal neurologic abnormalities**

**Central etiology**

Vertigo following scuba diving should suggest the presence of a perilymphatic fistula, requiring surgical repair. Central positional vertigo also exists, and is suggested by positional vertigo, no latency of nystagmus / vertigo, prolonged duration (over 20 seconds) of nystagmus/vertigo, and non-fatiguing of nystagmus. Many commonly prescribed medications, including anticonvulsants and diuretics, can cause vertigo.

## **OTHER SPECIFIC SIGNS, SYMPTOMS, AND PRESENTATIONS**

### **Blue dot sign**

This is the appearance of the cyanotic, torsed appendix testis, a mullerian duct remnant. The “blue dot” can be visualized through the scrotal skin on the affected side, and occurs in about 20% of affected cases.

### **Chvostek’s sign and Trousseau’s sign**

Tapping the muscles of the face leading to spasm is a positive Chvostek’s sign. This is primarily clinical evidence of severe hypocalcemia. Trousseau’s sign refers to carpopedal spasm and paresthesias when the upper arm is compressed by a tourniquet or blood pressure cuff and also occurs with hypocalcemia. Both findings also occur with Hypomagnesemia.

### **Hamman’s crunch**

Mediastinal emphysema causes a crunching noise as the heart beats.

### **Homan’s sign**

This refers to pain in the calf upon passive plantar flexion of the foot and stretching of the gastrocnemius. It is discussed as a potential sign of deep venous thrombosis.

Unfortunately, the finding is unreliable.

### **Hutchinson’s sign**

This sign describes a herpetic rash involving the tip of the nose. This site indicates the likely involvement (76% chance) of the cornea due to the shared innervation of the two areas by the nasociliary nerve.

### **Ice Rink sign**

Fluorescein staining of the cornea reveals multiple vertically oriented linear corneal abrasions under cobalt blue lighting, indicative of the presence of a foreign body under the upper eyelid. Each time the patient blinks or moves the eye, another mark is made.

### **Murphy sign**

Palpation in the right subcostal area during deep inspiration produces pain. Described as a positive Murphy sign, it is indicative of acute cholecystitis. The sign may be elicited by the hand of the examiner, or by the ultrasound probe during examination of the right upper quadrant.

### **Nikolsky sign**

Minimal lateral skin pressure results skin sloughing. This sign is seen in patients with Toxic Epidermal Necrolysis and Staphylococcal Scalded Skin Syndrome,.

### **Phalen's sign**

The patient is asked to fully flex the wrist for 60 seconds while the forearm is held vertically. Numbness or paresthesias in the distribution of the median nerve suggests a carpal tunnel syndrome.

### **Prehn's sign**

This refers to the relief of pain upon elevation of the scrotum in cases of epididymitis. Unfortunately, it is unreliable for the differentiation of causes of testicular pain.

### **Seidel's Test**

This test indicates a perforation of the globe. It is termed positive when fluorescein stain is placed on the surface of the cornea and streaming of the aqueous humor is noted under cobalt blue light.

### **Snuffbox tenderness**

The abductor pollicis longus, extensor pollicis brevis, and the extensor pollicis longus tendons border the anatomical snuffbox. It overlies the scaphoid carpal bone. Tenderness upon palpation is a clinical sign of an oft-occult scaphoid (or navicular) fracture.

### **Seatbelt sign**

This refers to a pattern of bruising on the lower abdomen from the seatbelt of a restrained motor vehicle collision victim. Its presence should raise the suspicion for an enteric or mesenteric injury.

### **Tinels's sign**

This test is positive for median nerve compression at the wrist when light tapping over the nerve produces pain or paresthesias in the distribution of the nerve.

### **Finkelstein's test**

In de Quervain's tendonitis the tendons of the anatomical snuffbox are inflamed. Finkelstein's test is the relatively specific for this condition. The thumb is held in the

palm by the fingers and the wrist is deviated in the ulnar direction, stretching the affected tendons, and resulting in pain near the radial styloid.

**Sister Mary Joseph nodule**

This subcutaneous periumbilical nodule represents the metastasis of a gastric carcinoma, and is named after the nun who first recognized its occurrence.

**Virchow node**

For obscure reasons, the first sign of an occult gastric neoplasm is often the metastasis of the disease to the supraclavicular lymph nodes, known as a Virchow node.

**Vin Rose urine**

This refers to the red wine color of urine post iron poisoning deferoxamine therapy. This color results from the iron chelation and elimination in the urine.