

Symptom/Sign	Definition
>arthralgia	Joint pain;
>fatigue, weakness	Tiredness; Lassitude; Prostration; Exhaustion; Weakness (non-neurological); Lethargy; See "muscular weakness."
>fever	In the hospital, common conditions with fever less than 102 F: Acute cholecystitis; MI; Phlebitis; PE; Viral hepatitis; Wound infections; Cystitis; Conditions with fever greater than 102 F: Cholangitis; Pericarditis; Suppurative thrombophlebitis; Septic PE; Nonviral hepatitis; Deep abscesses; Bowel infarction; Pyelonephritis; (PE: pulmonary emboli); [ID, p. 62] Fever may accompany rheumatologic disorders, SLE, gout, sarcoidosis, hyperthyroidism, & cancer. [Merck Manual, p. 1153-60]
>fever, biphasic or relapsing	A biphasic fever pattern is one in which the initial fever breaks and then returns again. Diseases with biphasic fever include Colorado tick fever, Dengue fever, Leptospirosis, Brucellosis, Lymphocytic choriomeningitis, Yellow fever, Poliomyelitis, Smallpox, Rat-bite fever (<i>Spirillum minus</i>), Chikungunya fever, Rift Valley fever, Ebola-Marburg viral diseases, Lassa fever, and Echovirus (Echo 9) infection. Diseases with remittent fevers include Upper respiratory infections (viral), Malaria, Rheumatic fever (acute), Legionellosis, Mycoplasma infections, Tuberculosis, and Endocarditis, infective. Other conditions with intermittent fevers are Leishmaniasis (visceral), adult Still's disease (adult juvenile rheumatoid arthritis), intra-abdominal abscesses, Kawasaki disease, peritonitis, Gram-negative sepsis, and Toxic shock syndrome. [ID, p. 55] "The differential diagnosis of infectious diseases causing fevers that may relapse or have biphasic patterns includes but is not limited to Colorado tick fever, yellow fever, dengue fever, lymphocytic choriomeningitis, brucellosis, malaria, leptospirosis, chronic meningococemia, rat-bite fever, and infection with echovirus 9 or Bartonella species." [Harrison ID, p. 718]
>myalgia	Aches and pains in the muscles;
>relative bradycardia	Slow heart rate; Relative bradycardia (relative to fever): below 140 for 105, below 130 for 104, below 120 for 103, below 110 for 102, & below 100 for 101 deg F. [ID, p. 56] In some infections (e.g., typhoid fever, tularemia, brucellosis, dengue) pulse rate does not increase commensurate with degree of fever. [Merck Manual, p. 1151]
E dysphagia	Difficulty swallowing caused by either local injury (mouth, throat, and esophagus) or central nervous system disease;
E epistaxis	Nosebleed; "Most epistaxis occur secondary to local trauma (including nose blowing and picking) and drying of the nasal mucous membrane." [Merck Manual, p. 827]
E nasal ulcers	Sores in the nose;
E pharyngitis	Sore throat;
E rhinitis	Runny nose, rhinorrhea; Common colds are caused by rhinoviruses (30%-50%) and other viruses (coronoviruses, influenza, parainfluenza, RSV, and certain enteroviruses). The cause of about 1/2 of all common colds is unknown. [CCDM, p. 120]
E stomatitis	Inflammation of the mouth or sores in the mouth; 20-30% of adults have recurrent aphthous ulcers (cause unknown); Rare viral causes of stomatitis are Epstein-Barr, influenza, CMV, and HIV; Acute necrotizing ulcerative gingivitis is caused by fusospirochetal bacteria; [Merck Manual, p. 815-8]
G abdominal mass	An enlarged organ, cyst, tumor, or abscess in the abdominal cavity;
G abdominal pain	
G blood in stool	Bloody diarrhea; Hematochezia (red blood in stool from intestinal bleeding); Melena (black stool from digested blood);
G constipation	
G diarrhea	
G fecal leukocytes	Pus in stool; Inflammatory diarrhea; In community-acquired diarrhea, fecal leukocytes

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	suggest <i>C. jejuni</i> , <i>C. difficile</i> , <i>Salmonella</i> , or <i>Shigella</i> ; [ABX Guide: Diarrhea, Acute (Community-Acquired)] Detected by Gram stain or, more reliably, by lactoferrin; [PPID, p. 197] In inflammatory diarrhea, the fecal lactoferrin latex agglutination titer is 1:50 or higher. <i>C. difficile</i> and <i>E. histolytica</i> can cause positive lactoferrin results even if they destroy fecal leucocytes. [PPID 7th Ed., p. 1345] Fecal lactoferrin is useful in identifying inflammatory diarrhea and to determine if <i>C. difficile</i> toxin should be performed. [Cecil, p. 1789]
G hematemesis	Blood in vomitus;
G hepatomegaly	Liver enlargement; Causes of fever and hepatomegaly include: amebic liver abscess, babesiosis, <i>Bartonella</i> species infection, brucellosis, Chagas' disease, clonorchiasis, echinococcosis, fascioliasis, histoplasmosis, malaria, mononucleosis, viral hepatitis, opisthorchiasis, psittacosis, relapsing fever, Rocky Mountain spotted fever, schistosomiasis, syphilis, toxocariasis, tuberculosis, tularemia, typhoid fever, typhus, visceral leishmaniasis. [ID, p. 62]
G jaundice	Yellow color of skin and sclerae (white part of the eyes) due to elevated bilirubin; Increased bilirubin is caused by liver disease, bile duct obstruction, or hemolytic anemia. When the bilirubin level exceeds 2-3 mg/dl, jaundice becomes visible. [Merck Manual, p. 212]
G liver function test, abnormal	An abnormal laboratory test, usually referring to elevated liver enzymes in the blood due to liver injury; Other causes of granulomatous hepatitis are coccidioidomycosis, blastomycosis, cryptococcosis, aspergillosis, mucormycosis, nocardiosis, toxocariasis, influenza B, and Whipple's disease. [Cecil, p. 1128-35] AIDS-related cholangitis is most likely related to infection with cytomegalovirus, <i>Cryptosporidium</i> , or <i>Microsporidia</i> . [Merck Manual, p. 246]
G nausea, vomiting	
H anemia	Decreased red blood cells or decreased hemoglobin;
H eosinophilia	Infections that may cause eosinophilia include hookworm, filariasis, schistosomiasis, echinococcosis, coccidioidomycosis, brucellosis, cat-scratch fever, and mycobacterial disease. [Merck Manual, p. 1094] The most common causes of eosinophilia in a returning traveler are schistosomiasis and strongyloidiasis. Serology tests are available for these two diseases. A normal eosinophil count is 5000/mm ³) may be seen in strongyloidiasis, tropical pulmonary eosinophilia (filariasis), visceral larva migrans, and trichinellosis. [PPID, p. 3575, 3577] See Table 102-7 for causes of eosinophilia with fever and abdominal pain or intestinal irregularities. [PPID, p. 1281]
H hemolysis	"Hemolysis is suspected in patients with anemia and reticulocytosis." [Merck Manual, p. 935] "Intravascular hemolysis is uncommon; it results in hemoglobinuria when the Hb released into plasma exceeds the Hb-binding capacity of plasma-binding proteins (eg, haptoglobin, a globulin normally present in concentrations of about 1.0 g/L in plasma)." [Merck Manual, p. 1046] Urine dipsticks detect hemoglobin or myoglobin. [Wallach, p. 304] "Free hemoglobin and myoglobin are detected by dipstick; a negative urinary sediment with strongly heme-positive dipstick is characteristic of either hemolysis or rhabdomyolysis, which can be differentiated by clinical history and laboratory testing." [Harrison, p. 292]
H hypergammaglobulinemia	In the evaluation of splenomegaly, hypergammaglobulinemia (increased gamma globulin in the blood) suggests: 1.) a chronic infection such as malaria, kala-azar, brucellosis, or TB; 2.) hepatic cirrhosis; 3.) sarcoidosis; or 4.) collagen vascular diseases. [Merck Manual, p. 1091] "Polyclonal gammopathy is characteristic of HIV, African trypanosomiasis, kala-azar, and non-acute malaria." [ID, p. 161] Polyclonal gammopathy: chronic infections, sarcoidosis, cirrhosis, autoimmune diseases, and parasitic diseases; [Wallach, p. 1001]
H leukocytosis	Increased white blood cells; Normal white blood cell count equals 4,500-10,000 per microliter; Patients with bacterial infections--may have a normal WBC count, but increased bands and other immature WBCs referred to as a left shift. [Harrison, p. 385] Leucocytosis (neutrophilia) in acute fever: sepsis, abscess, amebiasis (usually), leptospirosis (usually),

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	Still's disease, and lymphoma (uncommon); [Cohen, p. 685] WBC counts are typically low in viral hemorrhagic fevers early in the course, but may be elevated later. [Cohen, p. 1249] Leukocytosis is a normal response to a bacterial or fungal infection. [PPID, p. 926] Elevated lymphocyte counts are common in viral infections, e.g., mononucleosis and hepatitis, and also in pertussis. [Cecil, p. 1262-3]
H leukopenia	Decreased white blood cells; normal white blood cell count equals 4,500-10,000 per microliter; Neutropenia = less than 500 cells/mm ³ or less than 1000 cells/mm ³ with predicted decline to less than 500 cells/m ³ ; [ABX Guide: Fever and Neutropenia] Common in many viral infections, e.g., rubella and influenza, and in severe sepsis; In returned travelers, it accompanies malaria, typhoid, brucellosis, rickettsial diseases, and visceral leishmaniasis. [Cohen, p. 685] Leukopenia is common in patients with typhoid fever, brucellosis, Rocky Mountain spotted fever, Colorado tick fever, and ehrlichiosis. In cases of bacterial sepsis, children are more likely to have leukopenia. [PPID, p. 929]
H lymphadenopathy	Enlargement of lymph nodes, either regional or generalized and either acute or chronic; Ulceroglandular and oculoglandular are two types of regional lymphadenopathy associated with a skin entry wound or conjunctivitis, respectively. [PPID, Table 97-1] Causes of chronic lymphadenopathy include syphilis, HIV, TB, histoplasmosis, cryptococcosis, lymphoma, sarcoid, cat scratch disease (localized), and metastatic cancer (localized). Stony hard lymph nodes suggest cancer or actinomycosis. Rubbery lymph nodes suggest lymphoma. [ABX Guide] "Pain and tenderness typically distinguish lymphadenitis from lymphadenopathy." [Merck Manual, p. 984] Lymphadenopathy is very common in childhood; it is benign in about 80% of cases. [Cohen, p. 172] See "entry wound with lymph nodes," "lymphadenitis, acute," "oculoglandular syndrome," and "nodular lymphangitis."
H splenomegaly	Enlargement of the spleen; Causes of fever and splenomegaly include: Babesiosis, Brucellosis, Chagas disease, Histoplasmosis, Malaria, Mononucleosis, Psittacosis, Relapsing fever, Rocky Mountain spotted fever, Schistosomiasis, Subacute bacterial endocarditis, Syphilis, Toxocariasis, Tuberculosis, Tularemia, Typhoid fever, Typhus, Visceral leishmaniasis. [ID, p. 62, Table 5.12] Causes of mild splenomegaly include sepsis, hepatitis, and lepromatous leprosy and erythema nodosum leprosum. Mild splenomegaly is present in about 5% of cases of acute hepatitis. [Cohen, p. 1095, 411]
H thrombocytopenia	Low platelet count; Signs of severe thrombocytopenia include petechiae, ecchymoses at sites of minor trauma, and mucosal bleeding. [Merck Manual, p. 1065] Acute thrombocytopenia, but not chronic thrombocytopenia, is associated with sepsis and is short-lived. Drugs are the most common cause of thrombocytopenia in the hospital. Infections associated with thrombocytopenia include measles, rubella, dengue, hemorrhagic fevers, EBV, CMV, varicella, mumps, HIV, TSS, trypanosomiasis, malaria, ehrlichiosis, typhus, and Rocky Mountain spotted fever. [ID, p. 160] Thrombocytopenia is common in severe sepsis. [PPID, p. 926] See Table 126-2 "Key clinical features of viral hemorrhagic fevers." [Cohen, p. 1250]
N confusion, delirium	Delirium is "A state of temporary mental confusion and clouded consciousness resulting from high fever, intoxication, or shock and characterized by anxiety, tremors, hallucinations, delusions, and incoherence" [American Heritage Dictionary] Delirium is a sign of high fever, especially in children and elderly patients. [Cohen, p. 679] Infectious causes include encephalitis, meningitis, pneumonia, sepsis, and pyelonephritis. [Merck Manual, p. 1810]
N headache	Head pain; Cephalgia;
N lethargy	Impaired or altered consciousness; See "stupor, coma." "Less severely impaired levels of consciousness are often labeled as lethargy or, if more severe, obtundation." [Merck Manual, p. 1656] Encephalopathy;
N muscle weakness	Not fatigue, but weakness of the muscles; reduced strength; Weakness of specific muscles is a focal neurological sign seen in encephalitis and other CNS infections. Acute

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	rhabdomyolysis with myoglobinuria is associated with the weakness observed in many systemic infections, e.g., influenza, adenovirus, SARS, Mycoplasma pneumoniae, Legionella pneumophila, HIV, Epstein-Barr, measles, varicella, dengue, parvovirus B19, West Nile virus, bacterial sepsis, leptospirosis, brucellosis, and rickettsial infections. [PPID, p. 1224] Urine dipsticks detect hemoglobin or myoglobin; [Wallach, p. 304] Neurological weakness is caused by disease of upper motor neurons, lower motor neurons, neuromuscular junction, and muscle. Unlike weakness, fatigue has no temporal or anatomical pattern, and patients complain of being tired, not of inability to do specific tasks. Common causes of fatigue are acute illnesses, cancer, chronic infection, anemia, endocrine disorders, and organ failure (heart, renal, and liver). [Merck Manual, p. 1598, 1603]
N opisthotonus	Abnormal rigidity & arching of the back most common in cases of meningitis, especially in infants; Opisthotonus also occurs in cases of strychnine poisoning, rabies, & tetanus.
N paresthesia	Tingling or numbness;
N seizure	Convulsion; Febrile seizures occur in children less than 6 years of age (especially 6-18 months) with fever >38 deg C (100.4 deg F); [Merck Manual, p. 2374]
N stiff neck	A stiff neck with flexion indicates meningeal irritation from subarachnoid hemorrhage or an infectious process such as meningitis. [Merck Manual, p. 1844] Meningismus;
O conjunctivitis, acute	Inflammation or infection of the conjunctiva of the eyes; Pink eye; Includes conjunctival injection (Arenaviral hemorrhagic fever, Crimean-Congo hemorrhagic fever, HFRS, Pertussis, Rocky Mountain spotted fever, and West Nile virus infection) and conjunctival suffusion (Kyasanur forest disease, Leptospirosis, and Toxic shock syndrome); Conjunctival injection and suffusion are redness without exudate or discharge;
O oculoglandular syndrome	Parinaud's oculoglandular syndrome; A unilateral conjunctival ulcer or conjunctivitis associated with swelling of the preauricular lymph node; Cat-scratch disease is the most common cause in the US. Other causes are TB, syphilis, lymphogranuloma venereum, chancroid, tularemia, mononucleosis, mumps, and some fungal infections. [ID, p. 1245; Guerrant, p. 1005; PPID, p. 1229, 1399]
R chest pain	Chest pain, made worse by breathing (pleuritic), or otherwise;
R cough	
R dyspnea	Shortness of breath;
R hemoptysis	Coughing up blood; Causes of hemoptysis in developing countries include tuberculosis, mycoses, echinococcosis, paragonimiasis, amoebiasis, leptospirosis, and melioidosis. [Guerrant, p. 987] "In the primary care setting, the most common causes of hemoptysis are acute and chronic bronchitis, pneumonia, tuberculosis, and lung cancer." [www.aafp.org]
R sputum production	Coughing up phlegm;
R wheezing	Wheezing is the result of airway narrowing. [Merck Manual, p. 363]
S cellulitis or rash, circinate	Circular or ring-shaped; Erythema migrans (EM) is a red papule that slowly expands and typically reaches a diameter of at least 5 cm. The enlarging papule often clears centrally to create a annular (shaped like a ring) rash. It is the first sign of Lyme disease in about 70%-80% of cases. EM may be single or multiple. [CCDM, p. 363] "In about 70% to 80% of patients, EM develops at the site of the tick bite." [PPID, p. 2728] Unlike EM lesions, cellulitis tends to be tender and pruritic. [Cohen, p. 466] "Bacterial cellulitis rarely occurs at the most common sites of erythema migrans and does not demonstrate central clearing or a target-like appearance." [Cecil, p. 1934] Ring-like rashes occur in other diseases, e.g., ringworm and the concentric rings (target lesions) of erythema multiforme. Other circular rashes are cellulitis, erysipeloid, erysipelas, and erythrasma.
S entry wound with lymph nodes	An infectious agent enters through the skin and provokes regional lymphadenopathy as in ulceroglandular tularemia. Not included are sexually transmitted papules or ulcers with

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	regional lymphadenopathy.
S lymphadenitis, acute	Tender, inflamed lymph nodes; may be associated with lymphangitis and have a tendency to suppurate (drain pus) or form buboes, e.g., in cat-scratch disease, scrofula, tularemia, melioidosis, glanders, lymphogranuloma venereum and plague; [PPID, p. 1231-2] <i>Campylobacter jejuni</i> , <i>Yersinia enterocolitica</i> , and <i>Salmonella enteritidis</i> can cause mesenteric lymphadenitis and pseudoappendicitis. [PPID, p. 2489] "Pain and tenderness typically distinguish lymphadenitis from lymphadenopathy." [Merck Manual, p. 984]
S lymphangitis	Acute inflammation of lymph vessels, most commonly caused by Streptococcal cellulitis; [Merck Manual, p. 985] Group A Streptococci and <i>S. aureus</i> are common causes. Rare causes are <i>Pasteurella multocida</i> , nocardia, atypical mycobacteria, <i>Sporothrix schenckii</i> , filariasis, & <i>Rickettsia sibirica mongolitmonae</i> . [ABX Guide] Streptococcal lymphangitis is common. Occasional causes are <i>S. aureus</i> , & <i>P. multocida</i> . Occasional causes of chronic lymphangitis are <i>S. schenckii</i> & <i>M. marinum</i> . Other causes are rare or very rare. [PPID, p. 1236]
S nodular lymphangitis	Cutaneous inoculation, usually of an extremity, followed by the development of nodules in the draining lymphatics that may ulcerate or drain. <i>Sporothrix schenckii</i> , <i>Nocardia brasiliensis</i> , <i>Mycobacterium</i> , and <i>Leishmania brasiliensis</i> are the most important causes in the U.S. [Am Fam Physician 2001;63:326-32] "Rope-like lymphangitis" has been described in 11 patients infected with <i>Rickettsia sibirica subsp mongolotimonae</i> , one of the 14 members of the spotted fever rickettsioses. [Cohen, p. 1809] In the United States, <i>S. schenckii</i> is the most common cause of chronic lymphangitis. <i>M. marinum</i> is an occasional cause. Rare causes are <i>N. brasiliensis</i> , <i>W. bancrofti</i> , <i>N. asteroides</i> , <i>L. brasiliensis</i> , <i>F. tularensis</i> , and other nontuberculous mycobacteria. [PPID, p. 1236] Leading causes are sporotrichosis, leishmaniasis, nocardiosis, and <i>M. marinum</i> infection. [ABX Guide]
S papules or plaques	Papule: a raised, swollen area of the skin < 10 mm in diameter; Plaque: a raised skin lesion or confluent papules > 10 mm in diameter; [Merck Manual, p. 932] Includes maculopapular rash; See Table 57-1 in PPID.
S petechiae and ecchymoses	Tiny (< 3 mm) nonblanchable foci of extravasated blood in the skin with larger areas being called ecchymoses or purpura; Caused by thrombocytopenia or platelet dysfunction; [Merck Manual, p. 933; PPID, p. 738] <i>Staphylococcus aureus</i> , adenovirus, congenital cytomegalovirus, and rubella virus infections may cause petechial purpuric eruptions. [Cohen, p. 156] Diffuse petechial lesions may occur in critically ill patients and are associated with peripheral gangrene (purpura fulminans), consumptive coagulopathy, and shock. [PPID, p. 738] Purpura fulminans is a manifestation of DIC and a complication of Group A streptococci, <i>N. meningitidis</i> , <i>S. aureus</i> , and pneumococcus infections. [PPID, p. 1195] "Most patients presenting with a petechial or purpuric rash have a viral infection." [Harrison ID, p. 493]
S pustule	Pustules are elevated, superficial lesions containing pus. Pustules are seen in folliculitis, acne, chloracne, pustular psoriasis, anthrax, and orf. Pustules may occur from bacterial or fungal skin infections. [Merck Manual, p. 933] "Cutaneous abscesses are usually painful, tender, fluctuant, erythematous nodules, often with a pustule on top." [ID, p. 1159]
S rash (exanthem)	A skin eruption caused by an infectious disease; an exanthema; 1% to 8% of patients taking antibiotics have a cutaneous reaction. Consider a drug reaction in patients with a maculopapular rash, especially when palmoplantar involvement. [PPID p. 735] Other causes of a macular or papular rash are adenovirus, cytomegalovirus, and disseminated fungal infections (<i>Blastomyces dermatitidis</i> , <i>Candida spp.</i> , <i>Coccidioides immitis</i> , <i>Cryptococcus neoformans</i> , <i>Fusarium spp.</i> , and <i>Histoplasma capsulatum</i>). [Cohen, p. 156]
S rash on palms	Rash on palms of hands and soles of feet; 1% to 8% of patients taking antibiotics have a cutaneous reaction. Consider a drug reaction in patients with a maculopapular rash, especially when palmoplantar involvement. [PPID p. 735] Causes of fever and rash on palms

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	and soles: erythema multiforme, hand-foot-and-mouth disease, Neisseria infection, Rocky Mountain spotted fever, rat-bite fever (<i>S. moniliformis</i>), infectious endocarditis, secondary syphilis, toxic shock syndrome, and varicella-zoster infection; [Cecil, p. 1771]
S skin blister or vesicles	Vesicular eruption; Small blisters; Vesiculobullous dermatoses; Blister forms at inoculation site;
S skin or subcutaneous nodule	"Nodules are firm papules or lesions that extend into the dermis or subcutaneous tissue. Examples include cysts, lipomas, and fibromas." [Merck Manual, p. 633]
S ulcer of skin	Injury to the top layers of the skin to produce a crater or "open sore";
S urticaria	Hives; Itchy red papules that are transient; the papules may be localized or widespread; See "Differential Diagnosis of Pruritic and Urticarial Skin Lesions." [Guerrant, p. 959-61]
S warty growth of the skin	Warty or verrucous growth of the skin caused by an infection; papillomata;
S skin lesion, linear or serpiginous	A serpiginous or snake-like rash is seen in cutaneous larva migrans. [Merck Manual, p. 710]
U hematuria	Blood in the urine; Normal urine may contain as many as a few red blood cells (RBCs) per high-powered field (hpf) when examined under the microscope. Less than 3% of normal people have >3 RBCs/hpf. Vigorous exercise before urine collection may cause microscopic hematuria. [Wallach, p. 761-2]
U pyuria	Pus in urine;
X cystic or cavitory lesions	See "Differential Diagnosis of a Cavitory Lesion on Chest Radiograph." [ID, p. 544]
X hilar lymphadenopathy	Enlargement of lymph nodes in the mediastinum is one of the many causes of mediastinal masses; [Merck Manual, p. 490] The most common causes of mediastinal lymphadenopathy are sarcoidosis, tuberculosis, fungal infection, histoplasmosis, and cryptococcosis (in AIDS patients); Anthrax causes necrotic, edematous hilar and mediastinal lymph nodes; [PPID, p. 1229] See "mediastinal widening."
X lung infiltrates	Abnormal pulmonary density visible on chest x-ray caused by infection (pneumonia) or chemical irritant (pneumonitis); varies from minimal "fluffy" fluid densities to frank consolidation;
X pleural effusions	Collection of fluid in the pleural space (between the lungs and chest wall); Tropical infectious diseases that cause pleural effusions include tuberculosis, paragonimiasis, cryptococcosis, toxocariasis, echinococcosis, amebiasis, sparganosis, and gnathostomiasis. [Guerrant, p. 987t]
*acute renal failure	The most common cause of acute renal failure in the ICU is acute tubular necrosis. [Harrison, p. 39] Acute kidney injury (AKI), formerly called acute renal failure, is a functional or structural defect in the kidney that manifests itself within 48 hours. The reduction in kidney function is associated with serum creatinine increase of 0.3mg/dL or 50% above baseline. Oliguria (greater than 0.5 ml/kg/hour for more than 6 hours) is another manifestation of AKI. [Cecil, p. 756]
*ARDS	Acute respiratory distress syndrome (ARDS) is characterized by 1.) severe hypoxemia, 2.) bilateral pulmonary infiltrates, and 3.) absence of heart failure. Common causes include sepsis, pneumonia, aspiration, and severe trauma. Less common causes include drowning, drug overdose, pancreatitis, fat embolism, and smoke or corrosive gas inhalation. [Cecil, p. 635] "Thus the end result of the pulmonary events in sepsis is the development of interstitial edema and pulmonary hypertension, the hallmarks of ARDS." [Cohen, p. 485]
*arthritis	Causes of acute arthritis include: <i>N. gonorrhoea</i> , <i>S. aureus</i> , streptococci, <i>B. burgdorferi</i> , <i>H. influenza</i> , <i>P. multocida</i> , <i>S. moniliformis</i> , <i>S. minus</i> , <i>Salmonella</i> , parvovirus B19, hepatitis B, hepatitis C, rubella, varicella, mumps, adenoviruses, coxsackie viruses, and EBV. Causes of chronic arthritis include <i>M. tuberculosis</i> , <i>C. immitis</i> , <i>H. capsulatum</i> , <i>C. neoformans</i> , <i>B. dermatitidis</i> , <i>S. schenckii</i> , and <i>Brucella</i> sp. [Merck Manual, p. 312-17] "Viral arthritis often

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	involves multiple joints as a component of a systemic infection and generally does not lead to long-term morbidity." Causes of Reiter's syndrome (reactive arthritis) include Chlamydia trachomatis, Salmonella, Shigella, Yersinia, Campylobacter, and HIV infections. [PPID, p. 1302, 1355-6]
*bleeding tendency	"Hemorrhage occurs in most cases with some of the VHF's (e.g., South American hemorrhagic fevers) or in less than half in others (e.g., Lassa fever) and seems to require thrombocytopenia plus capillary damage." [PPID 7th Ed., p. 3996] "Impaired hemostasis may entail endothelial cell, platelet, or coagulation factor dysfunction. Disseminated intravascular coagulopathy (DIC) is frequently noted, especially with Ebola, Marburg, and Crimean-Congo hemorrhagic fever virus infections." [Cecil, p. 2150-1] "DIC that evolves rapidly (over hours or days) causes primarily bleeding. Severe, rapidly evolving DIC is diagnosed by demonstrating thrombocytopenia, an elevated PTT and PT, increased levels of plasma D-dimer (or serum fibrin degradation products), and a decreasing plasma fibrinogen level." The four main causes of DIC are infection, shock, cancer, and complications of obstetrics. In severe cases of DIC, patients have bleeding from IV sites, ecchymoses at sites of IM injections, and GI bleeding. [Merck Manual, p 976]
*blindness	Permanent and severe loss of vision from infection of the eye or brain (cortical blindness);
*bowel obstruction	Blockage of intestines;
*brain abscess or lesion	Bacteria isolated from brain abscesses are usually anaerobic. [Merck Manual, p. 1850] Most commonly cultured are streptococci and staphylococci. S. pneumoniae, H. influenzae, L. monocytogenes, and Salmonella spp. are rarely isolated. Fungal causes (mainly in the immunosuppressed) include Candida spp., Aspergillus spp., mucormycosis, and Scedosporium spp. Fungi that cause meningitis can also cause abscesses (cryptococcosis, blastomycosis, histoplasmosis, and coccidioidomycosis). Parasitic causes include Toxoplasma gondii, Trypanosoma cruzi, Entamoeba histolytica, Schistosoma spp., Paragonimus spp. and Taenia solium. [PPID, p. 1165-6]
*cancer	Infectious agents that cause cancer: Epstein-Barr virus (Burkitt lymphoma & Hodgkin lymphoma, nasopharynx); Hepatitis B & C (liver); HIV (Kaposi sarcoma, Hodgkin lymphoma, non-Hodgkin lymphoma); Human papillomavirus (cervix, vulva, vagina, penis, anus, oral cavity, oropharynx, & tonsil); HTLV1 (leukemia); H. pylori (stomach); Clonorchis sinensis & Opisthorchis viverrini (bile duct, liver); Schistosoma haematobium (bladder); [Cecil, T183-2]
*cirrhosis	Chronic liver disease with fibrosis and portal hypertension;
*cranial neuropathy	"Neuropathy refers to injury to one or more nerves at any level along their pathways and is termed cranial or peripheral based on the nerve involved." [ID, p. 1365] Occurs infrequently in cases of viral encephalitis unless accompanied by brain stem infection. [PPID, p. 1148] In acute bacterial meningitis, cranial nerve palsies are caused by meningeal inflammation or increased CSF pressure. [Cohen, p. 213]
*encephalitis	Inflammation of the brain;
*endocarditis	Inflammation of the tissue lining the heart's cavity and valves; Fungal causes (rare) include Candida, Aspergillus, Histoplasma, Blastomyces, Coccidioides, Cryptococcus, Scedosporium prolificans, and Mucor; [PPID, p. 1008]
*epididymo-orchitis	Inflammation of epididymis and testis; Acute epididymitis is unilateral painful swelling with or without urethritis--must differentiate from testicular torsion, tumor, and trauma. C. trachomatis and N. gonorrhoea are the most likely pathogens in younger males under 35, and urinary pathogens are most likely in older males or after instrumentation of urinary tract; Enterobacteriaceae may be causal in men who have sex with men; [Harrison, p. 552]
*erythema nodosum	Bacterial causes include streptococcus, tuberculosis, leprosy, Yersinia enterocolitica, tularemia, campylobacter, and salmonella. Fungal causes include coccidioidomycosis, histoplasmosis, and blastomycosis. Other causes include sarcoidosis, drugs, pregnancy,

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	inflammatory bowel disease, mononucleosis, lymphogranuloma venereum, and malignancies. [Merck Manual, p. 688; ID, p. 61] Other known causes are infections by hepatitis B, herpes simplex, HIV, measles, parvovirus B19, varicella, diphtheria, Q fever, chancroid, M. marinum, N. meningitidis, syphilis, sporotrichosis, ascariasis, giardiasis, toxoplasmosis, and filariasis. [PPID, p. 737] Other causes are leptospirosis, inflammatory dermatophyte infections, and upper respiratory tract viruses. [Cohen, p. 157] Other causes are cytomegalovirus, African trypanosomiasis, cryptococcosis, and trichophyton (deep-seated infection). Idiopathic in up to 40% of cases; [Guerrant, p. 951]
*glomerulonephritis	Inflammation of kidneys involving capillaries of the renal glomeruli; Glomerulonephritis in malaria and subacute endocarditis are probably secondary to Type III or immune-complex mediated hypersensitivity. [Cohen, p. 25] Infectious causes of nephrotic syndrome include: post-streptococcal, secondary syphilis, bacterial endocarditis, hepatitis B & C, HIV infection, mononucleosis, CMV, malaria, toxoplasmosis, schistosomiasis, and filariasis. [Cecil, p. 762] Glomerular disorders (nephritic or nephrotic syndrome) are characterized by elevated serum creatinine, hematuria, and/or proteinuria. Other infectious causes are mycoplasma, N. meningitidis, S. typhi, S. pneumoniae, sepsis, coxsackievirus, herpes zoster, measles, mumps, varicella, C. albicans, C. immitis, and rickettsial infections. [Merck Manual, p. 2389]
*hepatitis	"Hepatitis is an inflammation of the liver characterized by diffuse or patchy necrosis. Major causes are specific hepatitis viruses, alcohol, and drugs. Less common causes include other viral infections (eg, infectious mononucleosis, yellow fever, cytomegalovirus infection) and leptospirosis. Parasitic infections (eg, schistosomiasis, malaria, amebiasis), pyogenic infections, and abscesses that affect the liver are not considered hepatitis. Liver involvement with TB and other granulomatous infiltrations is sometimes called granulomatous hepatitis, but the clinical, biochemical, and histologic features differ from those of diffuse hepatitis. Various systemic infections and other illnesses may produce small focal areas of hepatic inflammation or necrosis." See Table 28-1. Selected Diseases or Organisms Associated with Liver Inflammation." [Merck Manual, p. 246-9]
*mediastinitis	Inflammation of the mediastinum (an anatomical compartment located in the chest cavity between the lungs); "A widened mediastinum on chest radiograph in a previously healthy patient with evidence of overwhelming flu-like illness is essentially pathognomonic of advanced inhalational anthrax and should prompt immediate action. [Inglesby TV et al. Anthrax as a Biological Weapon. JAMA.1999;281:1735-1745] The main causes of mediastinitis are esophageal perforation, infection of head and neck, infection from other sites, and cardiothoracic surgery. Unusual causes are anthrax, brucellosis, actinomycosis, paragonimiasis, and Streptococcus pneumoniae. [PPID, Table 87-1 & 87-3]
*meningitis	Meningitis is inflammation of the meninges, the membranes that cover the brain and spinal cord. Causes of chronic meningitis include TB, cryptococcosis, coccidioidomycosis, histoplasmosis, blastomycosis, syphilis, brucellosis, toxoplasmosis, and Lyme disease.
*myelitis	Myelitis (also called transverse myelitis or myelopathy) is inflammation of the spinal cord, often immune mediated. Symptoms include leg weakness, sphincter dysfunction, sensory loss, and reflex changes. Infectious causes (uncommon) include VZV, HSV, CMV, EBV, polio, enteroviruses, HIV, HTLV1, hepatitis A & C, dengue, Japanese encephalitis, measles, mumps, TB, syphilis, Lyme disease, rickettsia (RMSF & scrub typhus), M. pneumoniae, brucellosis, listeriosis, B. henselae, C. neoformans, C. immitis, B. dermatitidis, H. capsulatum, schistosomiasis, VLM, echinococcus, T. solium, trichinosis, and malaria. [ABX Guide] Transverse myelitis refers to myelitis of both halves of the spinal cord. The cause of transverse myelitis is usually not determined, but it may be caused by direct invasion by viruses, Borrelia burgdorferi, varicella-zoster virus, tuberculosis, or syphilis. [Cohen, p. 223-4] Most commonly caused by multiple sclerosis; May be caused by drugs (amphetamines, IV heroin, or antiparasitic/antifungal drugs). Infectious causes include mycoplasma, Lyme

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	disease, syphilis, TB, and viral meningoencephalitis. Transverse myelitis following vaccines suggests an autoimmune mechanism. Symptoms of transverse myelitis include neck or back pain, ascending weakness, numbness of the lower extremities, and difficulty voiding with progression to paralysis, urinary retention, constipation, and loss of bowel control. [Merck Manual, p. 1807] "Transverse myelitis also may occur as a complication of syphilis, measles, Lyme disease, and some vaccinations, including those for chickenpox and rabies." Associated infections include varicella zoster, herpes simplex, cytomegalovirus, Epstein-Barr, influenza, echovirus, HIV, hepatitis A, and rubella. [National Institute of Neurological Disorders and Stroke website]
*myocarditis	Inflammation of the heart muscle; See 67 infectious causes; [PPID, Table 86-1]
*osteomyelitis	Hematogenous osteomyelitis follows bacteremia and usually affects the spine and the metaphyses of long bones. The most common causes of hematogenous osteomyelitis are Staphylococcus aureus, Haemophilus influenza, and in infants, Group B streptococci. Patients with sickle cell disease are susceptible to Salmonella osteomyelitis. [ID, p. 1225-6]
*pancreatitis	Inflammation of the pancreas; Cause is usually noninfectious (alcohol, gallstones, medications, triglycerides, post-ERCP). Infectious causes include viruses (mumps, coxsackie virus, CMV, varicella-zoster, HSV, HIV, and hepatitis B), bacteria (mycoplasma, mycobacteria, Legionella, Leptospira, and salmonella), Fungi (Cryptococcus when HIV infected, PCP, and aspergillus), and parasites (toxoplasma, cryptosporidia, Strongyloides, and ascaris). [ABX Guide] Pancreatic Infection without Acute Pancreatitis: M. tuberculosis, M. avium-intracellulare, Actinomyces, Nocardia asteroides, Cryptococcus neoformans, Coccidioides immitis, Paracoccidioides brasiliensis, Histoplasma capsulatum, Candida spp., Mucormycosis, Pneumocystis jirovecii, Leishmania donovani, Entamoeba histolytica, Strongyloides stercoralis, Schistosoma haematobium, Paragonimus westermani, Clonorchis sinensis, Echinococcus granulosus; [PPID, p. 970]
*paralysis	"Impairment or loss of esp. the motor function of the nerves;" [The Oxford Dictionary and Thesaurus. New York: Berkley Books, 1997] Palsy;
*parotitis	Acute infection and enlargement of one or both parotid glands; Mumps parotitis is usually bilateral. S. aureus is the most common etiology in suppurative infections. Other possible causes are coxsackievirus, influenza virus, parainfluenza virus 1 and 3, LCM, CMV, and HIV. TB, actinomycosis, and HIV can cause chronic parotitis. [ID, p. 427] Silaloadenitis;
*pericarditis	Inflammation of the pericardium, the membrane that encloses the heart; See "Causes of Acute Pericarditis." [ID, p. 590] See Table 86-3 in PPID and 46.3 in Cohen.
*peripheral neuropathy	Inflammatory or toxic neuropathy that impairs nerve function (sensory and/or motor); "Neuropathy refers to injury to one or more nerves at any level along their pathways and is termed cranial or peripheral based on the nerve involved." [ID, p. 1365] "Guillain-Barre syndrome is an acute, usually rapidly progressive inflammatory polyneuropathy characterized by muscular weakness and mild distal sensory loss." [Merck Manual, p. 1788]
*pneumonia	Infection of the lungs;
*pneumonitis	"Pneumonitis is a general term that refers to inflammation of lung tissue. Although pneumonia is technically a type of pneumonitis because the infection causes inflammation, most doctors are referring to other causes of lung inflammation when they use the term 'pneumonitis.' Factors that can cause pneumonitis include exposure to airborne irritants at your job or while you participate in your hobbies. Some types of cancer treatments as well as dozens of drugs also can cause pneumonitis. Difficulty breathing — often accompanied by a cough — is the most common symptom of pneumonitis. Specialized tests are necessary to make a diagnosis. Treatment focuses on avoiding irritants and reducing inflammation." [Mayo Clinic website, 2014]
*pulmonary edema	"Pulmonary edema is a condition caused by excess fluid in the lungs. This fluid collects in

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	the numerous air sacs in the lungs, making it difficult to breathe. In most cases, heart problems cause pulmonary edema. But fluid can accumulate for other reasons, including pneumonia, exposure to certain toxins and medications, trauma to the chest wall, and exercising or living at high elevations. [Mayo Clinic website]
*rhabdomyolysis	Acute rhabdomyolysis & myoglobinuria are associated with the myalgia & weakness observed in many systemic infections, e.g., influenza, adenovirus, SARS, Mycoplasma pneumoniae, Legionella pneumophila, HIV, Epstein-Barr, measles, varicella, dengue, parvovirus B19, West Nile virus, bacterial sepsis, leptospirosis, brucellosis, & rickettsial infections. [PPID, p. 1224] Urine dipsticks detect both hemoglobin & myoglobin. [Wallach, p. 304] "Rhabdomyolysis is commonly associated with myoglobinuria, and if this is sufficiently severe it can result in ARF [Acute Renal Failure]. Weakness, myalgia and tea-colored urine are the main clinical manifestations. The most sensitive laboratory finding of muscle injury is an elevated CK [creatinine kinase] level. In the absence of myocardial or brain infarction, CK >5000 U/l indicates serious muscle injury." [PMID 15774072] Rhabdomyolysis is caused by viruses (influenza, HIV, coxsackievirus, Epstein-Barr) & bacteria (legionellosis, tularemia, & pneumococcal pneumonia). Acute renal failure occurs in about 1/2 of cases. [Cecil, p. 702]
*sepsis	Sepsis is an inflammatory response that includes fever, tachycardia, and leukocytosis caused by a microbial infection. Septicemia (bacteremia) is simply the presence of microbes in the blood. [Harrison, p. 129-30] Infections by bacteria, viruses, rickettsiae, mycobacteria, fungi, and parasites may be complicated by sepsis. Severe sepsis is associated with "organ dysfunction, perfusion abnormalities, and hypotension." [ID, p. 561] In 3000 ICU patients in Europe, the causative organism was identified in only 60% of cases with severe sepsis; Gram positive bacteria caused 40%, Gram negatives caused 38%, and fungi (mainly Candida spp.) caused 17% of cases. [Cohen, p. 480] "Some patients [with bacteremia] are asymptomatic or have only mild fever. Development of symptoms such as tachypnea, shaking chills, persistent fever, altered sensorium, hypotension, and GI symptoms (abdominal pain, nausea, vomiting, diarrhea) suggests sepsis or septic shock. Septic shock develops in 25 to 40% of patients with significant bacteremia." [Merck Manual, p. 1164]
*shock	Cardiovascular collapse; Circulatory collapse; "Septic shock develops in 25 to 40% of patients with significant bacteremia." [Merck Manual, p. 1164]
*stupor, coma	Stupor: "The patient can be awakened only by vigorous physical stimulation." Coma: "The patient usually cannot be aroused, and the eyes do not open in response to any stimulation." [Merck Manual, p. 1656] See "lethargy."
*uveitis	Uveitis is inflammation of the iris, ciliary body, or choroid. "Posterior uveitis refers to any form of retinitis, choroiditis, or inflammation of the optic disk." [Merck Manual, p. 608, 623] "Uveitis" is a nonspecific term referring to intraocular inflammation. The cause is unknown in about 25% of cases. Infectious causes include: 1.) Viruses: HIV, herpes simplex, herpes zoster, cytomegalovirus; 2.) Bacteria: tuberculosis, leprosy, syphilis, leptospirosis, brucellosis, Lyme disease, Whipple disease; 3.) Parasitic: toxoplasmosis, acanthamebiasis, toxocariasis, cysticercosis, onchocerciasis, 4.) Fungal: histoplasmosis, coccidioidomycosis, sporotrichosis, blastomycosis, cryptococcosis, aspergillosis, candidiasis; 5.) Immune-mediated: Kawasaki disease, Reiter syndrome; Anterior uveitis: iritis, iridocyclitis; Intermediate uveitis: posterior to the lens (pars planitis or peripheral uveitis); Posterior uveitis: choroiditis, chorioretinitis; [5MCC-2015] Anterior uveitis includes iritis and iridocyclitis. Posterior uveitis includes choroiditis and retinitis or both (chorioretinitis). [PPID, p. 1423] Infectious causes of uveitis include Rocky Mountain spotted fever, atypical mycobacteria, Epstein-Barr virus, measles, aspergillosis, and Acanthamoeba. [UpToDate]
*weight loss	Weight loss secondary to chronic disease; Abnormal weight loss; Cachexia and wasting are severe forms of weight loss.