



USMLE[®] Content Outline

A Joint Program of the Federation of State Medical Boards of the United States and NBME[®]



USMLE Content Outline

The USMLE Content outline provides a common organization of content across all USMLE examinations. Each Step exam will emphasize certain parts of the outline, and no single examination will include questions on all topics in the outline. The examples listed within the outline are just examples. Questions may include diseases, symptoms, etc., that are not included in the outline. The USMLE program continually reviews its examinations to ensure their content is relevant to the practice of medicine. As practice guidelines evolve or are introduced, the content on USMLE is reviewed and modified as needed. At times, there is a change in emphasis on new content development that arises from our ongoing peer-review processes. For example, there has been an emphasis on new content developed assessing competencies related to geriatric medicine, nutrition, and prescription drug use. USMLE has also focused recent efforts on the often unrecognized health care needs of:

- recently returning military personnel and veterans and the families of deployed military personnel
- populations requiring health and gender-affirming care (eg, nonbinary and transgender patients)
- patients with disabilities

Although many of the medical issues related to the health care of these special populations are not unique, certain medical illnesses or conditions are either more prevalent, have a different presentation, or are managed differently. Knowledge of foundational science and clinical science in these content areas will be assessed on the USMLE Step 1, Step 2 CK, and Step 3 examinations.

[USMLE Physician Tasks/Competencies](#) provides an outline of the tasks and competencies assessed throughout the sequence of USMLE examinations. Please refer to both outlines when preparing for the examinations.

Examinees should refer to the test specifications for each examination for more information about which parts of the outline will be emphasized in the examination for which they are preparing. See the USMLE website (www.usmle.org) for more detail.

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Human Development

Normal age-related findings and care of the well patient

- Infancy and childhood (0–12 years)
 - Normal physical changes: linear growth, variations in linear growth, including constitutional delay; weight; head circumference; micturition, defecation, primary incontinence/bedwetting; normal physical examination; screening; sleep; teething syndrome
 - Developmental stages: motor; speech; cognitive; psychosocial; anticipatory guidance
 - Lifestyle and routine preventive health care: nutrition; exercise (eg, benefits of exercise); preventive/travel medicine; risk factors and prevention (eg, guns, swimming, motor vehicles, car seats); routine vaccinations; adaptive behavioral responses to stress and illness (eg, coping mechanisms); patient adherence
- Adolescence (13–17 years)
 - Normal physical changes: linear growth, variations in linear growth including constitutional delay; weight; puberty; normal physical examination; gynecomastia; autonomy/self-identity; sleep
 - Developmental stages: cognitive (eg, abstract thought); psychosocial (eg, autonomy, role confusion, sexual identity); anticipatory guidance
 - Lifestyle and routine preventive health care: nutrition; exercise (eg, benefits of exercise); preventive/travel medicine; risk factors and prevention (eg, risk-taking behavior, helmets, motor vehicles, seat belts, distractions; safe sex, consent and screening for reproductive coercion); routine vaccinations; adaptive behavioral responses to stress and illness (eg, coping mechanisms); patient adherence
- Adulthood (18–64 years)
 - Normal physical changes: weight; normal physical examination; screening; sleep
 - Developmental stages: cognitive; intimacy vs isolation; anticipatory guidance
 - Lifestyle and routine preventive health care: nutrition; exercise (eg, benefits of exercise); preventive/travel medicine; risk factors and prevention; routine vaccinations; adaptive behavioral responses to stress and illness (eg, coping mechanisms); patient adherence
- Older Adulthood (65 years and older)
 - Normal physical changes, including normal physical exam for age: weight, height (spinal compression), skin, bruising; normal physical examination; response to temperature; micturition, defecation; sleep
 - Developmental stages: motor; cognitive (eg, psychomotor slowing); psychosocial; integrity vs despair; retrospection; anticipatory guidance
 - Lifestyle and routine preventive health care: nutrition; exercise (eg, benefits of exercise); preventive/travel medicine; risk factors and prevention (eg, falls, general medical condition; polypharmacy, driving, caregiver stress); routine vaccinations

Immune System

Disorders associated with immunodeficiency

- deficiency primarily of humoral immunity
 - common variable immunodeficiency; hyper IgM syndrome; hypogammaglobulinemia/agammaglobulinemia, X-linked (Bruton); selective immunodeficiency (eg, IgA, IgM, IgE)
- deficiency/dysfunction primarily of cell-mediated immunity
 - adenosine deaminase deficiency; thymic aplasia (DiGeorge syndrome); severe combined immunodeficiency disease (SCID); Wiskott-Aldrich syndrome; granulomatosis; allergic reactions/skin
- complement deficiency
 - alternative pathway component deficiency (C2, C3b, C3bB, C36B6); classical pathway component deficiency (C1q, C1r, C1-C5); terminal component deficiency (C5b-C9; terminal complement complex); C1 esterase inhibitor deficiency, hereditary angioedema; mannose-binding lectin (MBL) deficiency; membrane attack complex deficiency
- deficiency of phagocytic cells and natural killer cells
 - Chediak-Higashi disease; chronic granulomatous disease and other disorders of phagocytosis; leukocyte adhesion deficiency

HIV/AIDS

- HIV1 and HIV2; AIDS; AIDS complications (eg, neuropathy, dementia, renal insufficiency); immunology of AIDS; immune reconstitution syndrome (IRS); secondary infections; noninfectious complications (eg, Kaposi sarcoma)

Immunologically mediated disorders

- hypersensitivity reactions
 - type 1, 2, 3, including anaphylaxis; type 4; drug reactions; serum sickness
- transplantation
 - rejection; graft-versus-host disease

Adverse effects of drugs on the immune system

- Jarisch-Herxheimer reaction; drugs affecting the immune system (eg, prednisone, azathioprine, cyclosporine, methotrexate, monoclonal antibody drugs [eg, abciximab, adalimumab; bevacizumab, infliximab, omalizumab, rituximab]); vaccine adverse effects

Blood & Lymphoreticular System

Infectious and immunologic, including microbiologic and host response to insult

- infectious disorders
 - bacterial
 - viral: hemorrhagic fever (Ebola virus, Marburg virus); chikungunya; dengue fever; Zika virus disease
 - parasitic: malaria (*Plasmodium* species); babesiosis (*Babesia* species)
- primary infections of lymphoid tissue
 - lymphadenitis (viral, bacterial, fungal, parasitic); lymphangitis; buboes, bubonic plague (*Yersinia pestis*); cat-scratch disease (*Bartonella henselae*)
- immunologic and inflammatory disorders
 - cryoglobulinemia, essential mixed cryoglobulinemia; autoimmune hemolytic anemia; paroxysmal nocturnal hemoglobinuria; thrombotic thrombocytopenic purpura; hemolytic uremic syndrome

Neoplasms

- leukemia, acute (ALL, AML); leukemia, chronic (CLL, CML); lymphomas, Hodgkin disease, non-Hodgkin lymphoma, Burkitt lymphoma, T-cell lymphoma; multiple myeloma, dysproteinemias, monoclonal gammopathy of unknown significance (MGUS); myelofibrosis; myelodysplastic syndrome, myelodysplasias; other immunoproliferative neoplasms (eg, Waldenstrom macroglobulinemia)

Anemia, cytopenias, and polycythemia anemias

- decreased production
 - anemia of chronic disease
- hemolysis
 - glucose 6-phosphate dehydrogenase deficiency; pyruvate kinase deficiency
- disorders of hemoglobin, heme, or membrane
 - disorders of red cell membranes; hereditary spherocytosis, elliptocytosis; methemoglobinemia, congenital; sickle cell disease; sideroblastic anemia; thalassemias
- other causes of anemia
 - blood loss, acute and chronic as a cause of anemia
- cytopenias
 - aplastic anemia; leukopenia; neutropenia, cyclic neutropenia, agranulocytosis; pancytopenia; thrombocytopenia, quantitative; immune thrombocytopenic purpura (ITP)
- cythemias
 - leukocytosis; polycythemia vera; secondary polycythemia

Coagulation disorders (hypocoagulable and hypercoagulable conditions)

- hypocoagulable
 - disseminated intravascular coagulation; hemophilia, congenital; factors VIII [hemophilia A] and IX [hemophilia B]; hypofibrinogenemia; von Willebrand disease; platelet dysfunction, qualitative
- hypercoagulable
 - heparin-induced thrombocytopenia; other coagulopathies (eg, homocysteinemia, hypoplasminogenemia, antithrombin III, protein C/protein S deficiency, Factor V Leiden, anticardiolipin antibodies, lupus anticoagulant, prothrombin G20210A mutation)
- reactions to blood components

- ABO incompatibility/anaphylaxis; Rh incompatibility/anaphylaxis; hemolysis, delayed; transfusion reaction; transfusion contaminated with bacteria; transfusion-related acute lung injury (TRALI); anaphylactoid reaction (IgA deficiency)

Traumatic, mechanical, and vascular disorders

- mechanical injury to erythrocytes (eg, cardiac valve hemolysis)
- disorders of the spleen
 - splenic rupture/laceration; splenic infarct; splenic abscess; effects/complications of splenectomy (eg, sepsis due to encapsulated bacteria); hypersplenism

Adverse effects of drugs on the hematologic and lymphoreticular systems

- antiplatelet drugs; antithrombin drugs (eg, dabigatran); chemotherapeutic agents; inhibitors of coagulation factors; methemoglobinemia, acquired; propylthiouracil; tumor lysis syndrome; warfarin

Behavioral Health

Psychotic disorders

- brief psychotic disorder; delusional disorder; psychotic disorder due to another medical condition; schizophrenia; schizoaffective disorder; substance-induced psychotic disorder

Anxiety disorders

- acute stress disorder; anxiety disorders (generalized anxiety disorder, anxiety due to another medical condition, social phobia); hyperventilation syndrome; obsessive-compulsive disorder; panic disorder with and without agoraphobia; phobic disorders; post-traumatic stress disorder; selective mutism; separation anxiety disorder; substance-induced anxiety disorder, trichotillomania

Mood disorders

- major depressive disorder with and without psychotic features, with and without seasonal pattern; major depressive disorder, postpartum, with and without psychotic features, including screening; cyclothymic disorder; persistent depressive disorder (dysthymia); bipolar disorder, manic/depressed/mixed; premenstrual dysphoric disorder; bipolar and related disorder or depressive disorder due to another medical condition; substance/medication-induced bipolar and related disorder or depressive disorder (illegal or prescribed); suicidal ideation/attempt

Somatic symptoms and related disorders

- body dysmorphic disorder; conversion disorder, including psychogenic seizures; dissociative disorders; illness anxiety disorder (hypochondriasis); malingering; pain disorder; somatic symptom disorder

Factitious disorders

- factitious disorder imposed on self

Eating disorders and impulse-control disorders

- anorexia nervosa; binge-eating disorder; bulimia nervosa; eating disorder; disruptive, impulse-control, and conduct disorders (eg, gambling, kleptomania, pyromania)

Disorders originating in infancy/childhood

- reactive attachment disorder; attention-deficit/hyperactivity disorder; speech sound disorder or language disorder; learning disorder/dyslexia; intellectual developmental disorder and developmental delay, undefined, including school problems, fetal alcohol syndrome; oppositional defiant disorder, conduct disorder; autism spectrum disorder, Rett syndrome; psychoses with origin specific to childhood; elimination disorders (incontinence, encopresis); tic disorders/Tourette disorder

Personality disorders

- antisocial personality disorder; avoidant personality disorder; borderline personality disorder; dependent personality disorder; histrionic personality disorder; narcissistic personality disorder; obsessive-compulsive personality disorder; paranoid personality disorder; schizoid personality disorder

Psychosocial disorders/behaviors

- adjustment disorder; grief response/bereavement, normal and persistent complex; parent-child relational problems other than physical or emotional abuse; other psychosocial stress; psychodynamic and behavioral factors, related past experience (eg, transference, personality traits)

Sexual disorders and gender dysphoria

- gender dysphoria; psychosexual dysfunction

Substance use disorders

- alcohol use disorder/intoxication/dependence/withdrawal; tobacco/nicotine use disorder/dependence/withdrawal; varenicline use; cannabis use disorder/intoxication/dependence; hallucinogen use disorder/intoxication/dependence/withdrawal; inhalant use disorder/intoxication/dependence/withdrawal; opioid, heroin, including prescription drug, use disorder/intoxication/dependence/withdrawal; sedative, hypnotic, including benzodiazepine and barbiturate use disorder/intoxication/dependence/withdrawal; stimulant, cocaine, methamphetamine use disorder/intoxication/dependence/withdrawal; other drugs of use disorders (eg, ecstasy, PCP, bath salts)/intoxication/dependence/withdrawal; polysubstance use disorder/intoxication/dependence/withdrawal

Nervous System & Special Senses

Infectious, immunologic, and inflammatory disorders, including microbiologic and host response to insult

- infectious disorders
 - meningitis: bacterial (*Actinomyces israelii*; *Haemophilus influenzae*; *Listeria monocytogenes*; *Mycobacterium tuberculosis*; *Neisseria meningitidis*; *Staphylococcus aureus*, *epidermidis*; *Streptococcus agalactiae*; *Streptococcus pneumoniae*); viral (adenovirus, arboviruses, echovirus and coxsackievirus A & B, polioviruses, herpes simplex virus, varicella zoster, human immunodeficiency virus, lymphocytic choriomeningitis virus, measles virus, mumps virus, St. Louis encephalitis virus, California encephalitis virus, Western equine encephalitis virus); fungal (*Blastomycosis dermatitidis*, *Cryptococcus neoformans/gattii*); spirochetal (*Borrelia burgdorferi*; *Leptospira*; *Treponema pallidum*, including neurosyphilis); protozoal/helminths (*Acanthamoeba*, *Naegleria fowleri*, *Strongyloides stercoralis*, *Angiostrongylus cantonensis*, *Baylisascaris procyonis*); encephalitis (herpesvirus [HSV- I], varicella-zoster virus, Epstein-Barr virus, cytomegalovirus, mumps virus, enterovirus, West Nile virus, St. Louis encephalitis virus, rabies virus, Eastern and Western equine encephalitis virus, poliovirus, *Taenia*, *Toxoplasma gondii*); prion disease (eg, Creutzfeldt-Jakob disease); botulism (*Clostridium botulinum*), tetanus (*Clostridium tetani*); CNS disorders associated with AIDS (eg, progressive multifocal leukoencephalopathy)
- immunologic and inflammatory disorders
 - myasthenia gravis, including thymoma; multiple sclerosis; transverse myelitis

Neoplasms (cerebral, spinal, and peripheral)

- benign (meningioma, neurofibromatosis)
- malignant (glioblastoma multiforme, astrocytoma, medulloblastoma, primary CNS lymphoma)
- metastatic (eg, breast, lung, pancreatic, testicular, melanoma)

Cerebrovascular disease

- arteriovenous malformations, ectatic cerebral vessels; transient ischemic attack; stroke, thrombotic: cerebral artery occlusion/cerebral infarction; stroke, embolic: cerebral embolism; stroke: intracerebral hemorrhage, including subarachnoid hemorrhage, traumatic intracranial hemorrhage; cerebral artery aneurysm; carotid artery stenosis/atherosclerosis/occlusion/dissection; vertebral artery deficiency/dissection; subclavian steal syndrome; vascular dementia; hypertensive encephalopathy; posterior reversible encephalopathy syndrome; venous sinus thrombosis

Disorders relating to the spine, spinal cord, and spinal nerve roots

- cauda equina syndrome; spinal artery thrombosis/embolus/infarct; spinal cord compression; spinal cord transection, paraplegia and quadriplegia, acute and chronic effects (eg, autonomic dysreflexia); spinal stenosis (cervical, lumbar); syringomyelia

Cranial and peripheral nerve disorders

- cranial nerve injury/disorders
 - cranial nerve injury; Bell palsy; anisocoria, miosis, mydriasis; internuclear ophthalmoplegia; nystagmus and other irregular eye movements; vestibular neuritis, labyrinthitis; ptosis of the eyelid; Horner syndrome

- peripheral nerve/plexus injury/disorders
 - peripheral nerve injury, including brachial plexus; carpal/cubital/tarsal/peroneal tunnel syndrome; mononeuritis, Guillain-Barré syndrome; Miller Fisher syndrome; neuropathy (eg, Charcot-Marie-Tooth disease); herpes zoster

Neurologic pain syndromes

- complex regional pain syndrome (reflex sympathetic dystrophy, causalgia); fibromyalgia; postherpetic neuralgia; phantom limb pain/syndrome; thalamic pain syndrome; trigeminal neuralgia

Degenerative disorders/amnestic syndromes

- Alzheimer disease; frontotemporal dementia, including progressive supranuclear palsy, Lewy body disease; mild neurocognitive disorder, mild cognitive impairment

Global cerebral dysfunction

- altered states of consciousness; delirium; coma/brain death

Neuromuscular disorders

- amyotrophic lateral sclerosis/spinal muscular atrophy; muscular dystrophy (eg, Duchenne, myotonic); muscle channelopathies (eg, hypokalemic period paralysis)

Movement disorders

- acute dystonia; adult tic disease; essential tremor; Huntington disease; Parkinson disease, including Parkinson dementia

Metabolic disorders

- adrenoleukodystrophy; metabolic encephalopathy

Paroxysmal disorders

- headache, including migraine, mixed, tension, ice-pick, cluster, medication withdrawal, caffeine withdrawal; seizure disorders, including generalized tonic-clonic, partial, absence, febrile

Sleep disorders

- cataplexy and narcolepsy; circadian rhythm sleep-wake disorder; insomnia, primary; sleep terror disorder and sleepwalking; REM sleep behavior disorder; restless legs syndrome

Traumatic and mechanical disorders and disorders of increased intracranial pressure

- anoxic brain damage, cerebral hypoxia; epidural, subdural hematoma (cerebral and spinal); intraparenchymal hemorrhage, traumatic subarachnoid hemorrhage; cerebral edema; pseudotumor cerebri (idiopathic intracranial hypertension); torticollis/cervical dystonia; hydrocephalus, including normal-pressure; traumatic brain injury (concussion)/postconcussion syndrome (dementia pugilistica); traumatic brain syndrome

Congenital disorders

- Friedreich ataxia; neural tube defects (eg, spina bifida, holoprosencephaly, anencephaly); microcephaly; Sturge-Weber syndrome; tuberous sclerosis, von Hippel-Lindau disease; hydrocephalus, obstructive (Arnold-Chiari)

Adverse effects of drugs on the nervous system

- acute dystonic reaction; drug-induced meningitis (eg, NSAIDs, sulfa drugs); drug-induced neuropathy (eg, vincristine, isoniazid, metronidazole); extrapyramidal adverse effects (eg, akathisia, dystonia, drug-induced parkinsonism); neuroleptic malignant syndrome; poisoning by psychotropic agents, including antidepressants; serotonin syndrome; tardive dyskinesia

Disorders of the eye and eyelid

- infectious and inflammatory disorders of the eye, including microbiologic and host response to insult
 - blepharitis/eyelid inflammation; chalazion; chorioretinitis; conjunctivitis (adenovirus)/keratoconjunctivitis; dacryocystitis; endophthalmitis; hordeolum; iridocyclitis; optic neuritis; periorbital cellulitis; uveitis
- neoplasms of the eye
 - melanoma; retinoblastoma
- disorders of the eye and eyelid, structural
 - cataract; glaucoma; lacrimal system disorders; pterygium; refractive disorders (presbyopia, myopia, hyperopia, astigmatism)
- disorders of the pupil, iris, muscles (extraocular)
 - amblyopia; strabismus
- disorders of the retina
 - hypertensive retinopathy; macular degeneration; papilledema; retinal detachment; retinitis pigmentosa; vascular disorders affecting the retina, including central retinal artery embolus, retinal hemorrhage, amaurosis fugax, embolus, carotid artery stenosis, central retinal vein occlusion; visual impairment/blindness, night blindness
- traumatic and mechanical disorders
 - black eye; burn of the eye and adnexa; corneal abrasion, ulcer; dislocated lens; foreign body in eye; hyphema; injury to optic nerve and pathways; laceration of the eye and eyelid; ocular open wounds; orbital fracture; subconjunctival hemorrhage
- adverse effects of drugs on the eyes
 - ethambutol; hydroxychloroquine; prednisone

Disorders of the ear

- infectious and inflammatory disorders of the ear, including microbiologic and host response to insult
 - chondritis; mastoiditis; otitis, externa, media, interna, serous, suppurative, malignant otitis externa
- neoplasms
 - acoustic neuroma, neurofibromatosis type 2; cholesteatoma
- hearing loss/deafness

- hearing loss, including noise-induced; otosclerosis; tinnitus
- disorders of balance and spatial orientation
 - Ménière disease; motion sickness; vertigo, including benign positional vertigo
- traumatic and mechanical disorders
 - barotrauma; foreign body in ear; impacted cerumen; laceration, avulsion; perforation of tympanic membrane; eustachian tube disorders
- adverse effects of drugs on the ear
 - antineoplastic agents, including cisplatin; aminoglycosides; furosemide; salicylates

Skin & Subcutaneous Tissue

Infectious, immunologic, and inflammatory disorders, including microbiologic and host response to insult

- infectious disorders and infestations
 - bacterial
 - cellulitis, erysipelas, impetigo, staphylococcal scalded skin syndrome; abscess, cutaneous, including septic abscess; anthrax (*Bacillus anthracis*); carbuncle; folliculitis; pilonidal cyst, infected; MSSA and MRSA skin infections; mycobacterial infections (eg, leprosy, draining sinus); scarlet fever (group A *Streptococcus*)
 - viral
 - herpes simplex type 1 & type 2, herpes zoster, Ramsay-Hunt syndrome; molluscum contagiosum; hand-foot-and-mouth disease; herpangina; parvovirus; chickenpox, erythema infectiosum (fifth disease), rubella, measles, roseola (exanthema subitum); verrucae vulgaris
 - fungal (deep and superficial)
 - candidiasis, skin; dermatophytosis, tinea corporis; dermatomycoses; diaper rash; onychomycosis
 - parasitic
 - cutaneous larva migrans; cutaneous leishmaniasis
 - infestations, nonvenomous bites, stings
 - scabies; lice; insect bites, including bed bugs
- immunologic and inflammatory disorders
 - papulosquamous and eczematous dermatoses
 - psoriasis; lichen planus and lichenoid dermatoses; allergic/irritant contact dermatitis (eg, nickel); dermatoses caused by plants (poison ivy, poison oak)
 - vesiculobullous disorders
 - epidermolysis bullosa; dermatitis herpetiformis; pemphigus; pemphigoid; pyoderma gangrenosum
 - urticaria, erythema, exanthema, and purpura
 - erythema nodosum; atopic dermatitis; pityriasis rosea; urticaria; Stevens-Johnson syndrome, erythema multiforme, toxic epidermal necrolysis
 - autoimmune disorders
 - vitiligo

Neoplasms

- benign neoplasms, cysts and other skin lesions
 - actinic keratoses; cysts, including epidermal; hemangiomas; lipoma; pigmented nevi; seborrheic keratosis; xanthomas
- malignant neoplasms
 - basal cell carcinoma; squamous cell carcinoma; melanoma, including genital; cutaneous T-cell lymphoma, mycosis fungoides

Integumentary disorders (hair and hair follicles, nails, sweat glands, sebaceous glands, oral mucous membranes)

- disorders of the hair and hair follicles
 - alopecia; seborrhea capitis/seborrheic dermatitis; tinea barbae and capitis
- disorders of the nails (including ingrowing nail)
- disorders of sweat and sebaceous glands
 - acne vulgaris; hidradenitis suppurativa; hyperhidrosis; ichthyosis; rosacea

Oral disease

- aphthous ulcers (stomatitis, canker sores); leukoplakia

Disorders of pigmentation

- albinism; lentigo

Traumatic and mechanical disorders

- animal bites (dogs, cats, etc); burns or wounds affecting the skin or subcutaneous tissue (eg, sunburn, other including blast injuries and burns); cauliflower ear; effects of ultraviolet light; keloids; tattoo; thermal injury; perniosis; frostbite; ulcers, decubitus

Congenital disorders

- xeroderma pigmentosum; benign lesions in neonates, infants, children (eg, congenital nevi)

Adverse effects of drugs on skin and subcutaneous tissue

- drug reactions, eruptions, including local reaction to vaccine

Musculoskeletal System

Infectious, inflammatory, and immunologic disorders, including microbiologic and host response to insult

- infectious disorders
 - gangrene, dry and wet, clostridial myonecrosis (*Clostridium perfringens*); discitis; myositis, infective; necrotizing fasciitis; osteomyelitis; septic arthritis; spondylitis, tuberculous
- immunologic disorders
 - ankylosing spondylitis; dermatomyositis/polymyositis; juvenile idiopathic arthritis; rheumatoid arthritis, Felty syndrome; psoriatic arthropathy
- inflammatory disorders
 - adhesive capsulitis of shoulder (frozen shoulder syndrome); ankylosis/spondylopathy (inflammatory); bursitis; fasciitis; osteochondritis, osteochondritis dissecans; tendinitis, supraspinatus syndrome, enthesopathy of spine, elbow, ankle; temporomandibular joint disorders; fibrositis, myofascial pain syndrome; synovitis; tenosynovitis; myositis

Neoplasms

- benign neoplasms (eg, ganglion cyst)
- malignant neoplasms of bone (eg, osteosarcoma, sarcoma, leiomyosarcoma, rhabdosarcoma); metastases to bone, secondary malignant neoplasm of bone

Degenerative and metabolic disorders

- degenerative/metabolic disorders of bone, tendon, and cartilage
 - chondromalacia; disc degeneration, herniated disc; Legg-Calvé-Perthes disease; Osgood-Schlatter disease; osteodystrophy; osteomalacia; osteonecrosis (avascular), bone infarct; osteoporosis; osteopenia; osteitis deformans (Paget disease of bone); pathologic fracture; radiculopathies; spondylolisthesis/spondylosis (degenerative)
- degenerative/metabolic disorders of joints
 - gout, gouty arthritis, pseudogout; joint effusion; osteoarthritis
- degenerative/metabolic disorders of muscles, ligaments, fascia
 - Dupuytren contracture; muscle calcification and ossification; muscle wasting and diffuse atrophy; rhabdomyolysis

Traumatic and mechanical disorders

- amputation and care of amputees; backache, including low back pain; blast injuries; compartment syndrome; contractures, hospital-acquired; contusions; dislocations; fractures; sprains, strains; kyphoscoliosis, scoliosis; rotator cuff syndrome; slipped capital femoral epiphysis; dislocation of hip

Congenital disorders

- achondroplasia/dwarfism; disorders of limb development (HOX gene mutation, phocomelia); developmental dysplasia of the hip; dislocation of hip in infantile spinal muscular atrophy; genu valgum or varum; foot deformities (flat foot, valgus/varus deformities); osteogenesis imperfecta; McArdle disease; mitochondrial myopathies

Adverse effects of drugs on the musculoskeletal system

- drug-induced myopathy (eg, steroids, statins, cocaine, AZT)
- malignant hyperthermia

Cardiovascular System

Infectious, immunologic, and inflammatory disorders, including microbiologic and host response to insult

- infectious disorders
 - bacterial endocarditis, myocarditis
- immunologic and inflammatory disorders
 - atherosclerosis (eg, atherosclerosis of the aorta)

Neoplasms

- myxoma, metastases

Dysrhythmias

- premature beats (PACs, PVCs); atrial flutter/fibrillation; multifocal atrial tachycardia; paroxysmal tachycardias; ventricular tachycardia/fibrillation; wide complex tachycardia; torsades de pointes; bradycardias; atrioventricular block (first-, second-, third-degree); conduction disorder (LBBB, RBBB); cardiac arrest; sick sinus syndrome; prolonged QT syndrome; Wolff-Parkinson-White syndrome; carotid sinus hypersensitivity; pacemaker dysfunction, including failure to sense, capture

Heart failure

- chordae tendineae rupture; congestive heart failure; cor pulmonale; diastolic dysfunction; systolic dysfunction; mitral valve dysfunction; heart failure secondary to myocardial infarction; high-output heart failure, including thyrotoxicosis-induced, anemia-induced; tachycardia-induced; cardiogenic pulmonary edema

Ischemic heart disease

- acute coronary syndrome, acute myocardial infarction; angina pectoris, stable and unstable/coronary artery disease/coronary insufficiency; coronary artery spasm

Diseases of the myocardium

- cardiomyopathy, dilated, including alcoholic, viral, takotsubo; cardiomyopathy, obstructive hypertrophic; cardiomyopathy, familial dilated; cardiomyopathy, restrictive; hypertensive heart disease, left ventricular hypertrophy, right ventricular hypertrophy; complications of myocardial infarction; nontraumatic tamponade post-myocardial infarction; papillary muscle rupture/dysfunction; ventricular free wall rupture; myocarditis

Diseases of the pericardium

- chronic constrictive pericarditis; pericardial effusion; pericardial tamponade; acute pericarditis; pericarditis, following myocardial infarction, surgery, trauma

Valvular heart disease

- valve disorders, mitral/aortic/tricuspid, pulmonic (eg, regurgitation, stenosis, prolapse, insufficiency, vegetation); functional murmurs; rheumatic heart disease; complications of artificial valves

Hypotension

- orthostatic hypotension

Hypertension

- elevated blood pressure reading without diagnosis of hypertension; essential hypertension; hypertensive emergency; secondary hypertension

Dyslipidemia

- hypercholesterolemia; hyperlipidemia; hypertriglyceridemia; lipoproteins/lipoprotein lipase deficiency

Vascular disorders

- disorders of the great vessels
 - aneurysm, aortic (abdominal/thoracic), dissection, ruptured; aneurysm, iliac, other peripheral vascular, ruptured; aortoiliac disease
- peripheral arterial vascular disease
 - arterial embolus/thrombosis; arteriovenous fistula; atheroembolic disease; claudication; cholesterol emboli; hypertensive vascular disease; peripheral arterial disease; thromboangiitis obliterans
- diseases of the veins
 - deep venous thrombosis, venous thromboembolism; phlebitis/thrombophlebitis; varicose veins; venous insufficiency; stasis ulcers, stasis dermatitis

Traumatic and mechanical disorders

- ventricular puncture; myocardial contusion; myocardial rupture; traumatic aortic dissection; traumatic tamponade

Congenital disorders, including disease in adults

- anomalous left coronary artery; atrial septal defect; coarctation of the aorta; endocardial cushion defect; patent foramen ovale; patent ductus arteriosus; tetralogy of Fallot; transposition of the great vessels; ventricular septal defect

Adverse effects of drugs on the cardiovascular system

- adriamycin; cocaine, amphetamine, PCP; ACE inhibitors, calcium channel blockers, alpha blockers, minoxidil

Respiratory System

Infectious, immunologic, and inflammatory disorders, including microbiologic and host response to insult

- infectious, immunologic, and inflammatory disorders of the upper airways
 - acute upper respiratory infection; viral infections (adenovirus, coronaviruses, coxsackievirus, influenza virus, parainfluenza virus, rhinoviruses); sinusitis; nasopharyngitis; epiglottitis; *Bordetella pertussis* pneumonia; croup; acute laryngitis; acute laryngotracheitis; tracheitis; pharyngitis; streptococcal throat infections; tonsillitis; peritonsillar abscess; rhinitis, allergic, chronic; ulcers of nasal cavity/sinuses
- infectious, immunologic, and inflammatory disorders of the lower airways
 - hospital-acquired pneumonia; ventilator-associated pneumonia, community-acquired pneumonia, acute bronchiolitis; bronchiolitis obliterans with organizing pneumonia (BOOP); anthrax, pulmonary (*Bacillus anthracis*); aspiration pneumonia, pneumonitis; bronchitis, acute; bronchopneumonia; pneumonia (*Burkholderia pseudomallei*, *Chlamydia pneumoniae*, *Coxiella burnetii*, *Francisella tularensis*, *Haemophilus influenzae*, *Klebsiella pneumoniae*, *Legionella*, *Moraxella catarrhalis*, *Mycoplasma pneumoniae*, *Pseudomonas aeruginosa*, *Streptococcus*, MSSA, MRSA, other gram-negative bacteria); viral infection (eg, influenza A, B, adenovirus, H1N1, respiratory syncytial virus, parainfluenza virus); fungal infection (aspergillosis, including allergic bronchopulmonary aspergillosis and aspergilloma, histoplasmosis, coccidioidomycosis, *Pneumocystis jirovecii*); pulmonary tuberculosis; lung abscess; viral infection (eg, influenza A, B, adenovirus, respiratory syncytial virus, parainfluenza virus, avian influenza virus); fungal infection (aspergillosis, including allergic bronchopulmonary aspergillosis and aspergilloma, histoplasmosis, coccidioidomycosis, *Pneumocystis jirovecii*)

Neoplasms

- benign neoplasms: upper airways (eg, vocal cord polyps, nasal polyps, juvenile papillomatosis); lungs and pleura (eg, solitary pulmonary nodule, bronchial carcinoid tumors)
- malignant neoplasms
 - upper airways: lip, oral cavity, and pharynx; head and neck cancer; larynx; trachea
 - lower airways and pleura: malignant neoplasms of bronchus and/or lung (squamous cell, adenocarcinoma, large cell, small cell); malignant neoplasms of pleura (mesothelioma); secondary malignant neoplasms of lung; secondary malignant neoplasms of pleura
- metastatic neoplasms including pleural

Obstructive airway disease

- asthma, reactive airway disease; bronchiectasis; chronic airway obstruction; chronic obstructive pulmonary disease (COPD), chronic bronchitis, emphysema

Pneumoconiosis/fibrosing/restrictive pulmonary disorders/interstitial lung disease

- pneumoconiosis; asbestosis; silicosis; silo-filler's lung, byssinosis, bagassosis, berylliosis; hypersensitivity pneumonitis; hypereosinophilic syndromes, Loeffler syndrome; interstitial pneumonia, usual (UIP), desquamative (DIP), nonspecific

Respiratory failure/respiratory arrest and pulmonary vascular disorders

- acute respiratory distress syndrome (ARDS); pulmonary hypertension; pulmonary vascular disorders, arteriovenous fistula; pulmonary edema, pulmonary cause and unspecified; pulmonary embolism; air and fat embolism; respiratory failure due to enteral feeding

Metabolic, regulatory, and structural disorders

- disorders of gas exchange; hypoventilation; hypoxia; ventilation-perfusion imbalance

Disorders of the pleura, mediastinum, and chest wall

- chylothorax; costochondritis; empyema; hemothorax; mediastinitis; pleural effusion; pleuritis; pneumomediastinum; pneumothorax

Traumatic and mechanical disorders

- upper airways
 - epistaxis; barotrauma, sinus; laryngeal/pharyngeal obstruction; tracheoesophageal fistula; tracheal stenosis; tracheomalacia; trauma (eg, tracheal injury); foreign body (nose, pharynx, larynx, trachea); traumatic/mechanical disorders of the nasal cavity/sinuses (eg, septal perforation)
- lower airways and pleura
 - atelectasis; diaphragm/chest wall injury; drowning and near drowning; foreign body, upper and lower respiratory tract; penetrating chest wounds; pulmonary contusion; sleep apnea, obstructive and central; hypoventilation syndrome, obesity-hypoventilation syndrome

Congenital disorders

- bronchogenic cysts; congenital cysts; congenital diaphragmatic hernia; pulmonary sequestration; immotile cilia syndrome

Adverse effects of drugs on the respiratory system

- bleomycin, amiodarone; adverse effects of 100% oxygen; acute effects of tobacco/nicotine, inhalants, cocaine

Gastrointestinal System

Infectious, immunologic, and inflammatory disorders, including microbiologic and host response to insult

- infectious disorders
 - bacterial
 - pseudomembranous colitis (*Clostridium difficile*); enteritis/enteric infections (includes gastroenteritis) (eg, *Staphylococcus aureus*, *Escherichia coli*, *Listeria monocytogenes*, *Yersinia enterocolitica*, *Campylobacter* species, *Vibrio cholerae*, *Salmonella* species, *Shigella* species, traveler's/infectious diarrhea); hepatic abscess, subhepatic abscess, subphrenic abscess; peritonitis, primary and secondary
 - viral
 - infectious esophagitis (eg, CMV, herpes); hepatitis A, B, C, D, E; coxsackievirus enteritis/colitis; Echovirus enteritis/colitis; rotavirus enteritis; mumps; gingivostomatitis, herpetic
 - fungal
 - thrush
 - parasitic
 - *Cryptosporidium*, *Cyclospora*, *Entamoeba histolytica*, *Giardia*, *Isospora belli*, *Strongyloides stercoralis*
- immunologic and inflammatory disorders
 - autoimmune hepatitis; celiac disease; eosinophilic esophagitis; granulomatous enteritis; inflammatory bowel disease, including Crohn disease, regional enteritis, microscopic colitis (collagenous and lymphocytic colitis), ulcerative colitis, toxic megacolon

Neoplasms

- benign neoplasms, including polyps, cysts
 - stomach; small intestine; colon, rectum, and anus, including polyps
- malignant neoplasms and pre-malignant conditions
 - oral cancer (eg, lips, mouth, tongue, salivary glands); esophageal, squamous and adenocarcinoma; Barrett esophagus; gastrinoma, Zollinger-Ellison syndrome; gastrointestinal carcinoid tumors; gastrointestinal stromal tumors; small intestine; stomach, adenocarcinoma, lymphoma, MALT; colon, rectum, anus; hereditary colon cancer syndromes, familial adenomatous polyposis (eg, Peutz-Jeghers syndrome, Gardner syndrome, Turcot syndrome); MUTYH-associated polyposis; gallbladder, cholangiocarcinoma, adenocarcinoma of the ampulla of Vater; liver, including hepatoma; peritoneal cancer, including metastatic studding with cancer; pancreas
- metastatic neoplasms

Signs, symptoms, and ill-defined disorders

- upper gastrointestinal bleeding; lower gastrointestinal bleeding; constipation; diarrhea; hematochezia; bright red rectal bleeding; melena; nausea, vomiting, rumination

Disorders of the oral cavity, salivary glands, and esophagus

- oral cavity and salivary glands
 - abscessed tooth; dental caries; malocclusion; disorders of the salivary glands (eg, stones, sialadenitis, parotitis)
- esophagus

- achalasia and cardiospasm; dysphagia; diverticulum (eg, Zenker); esophageal periapical abscess without sinus; esophagitis/esophageal reflux (GERD); esophagitis, pill; Mallory-Weiss syndrome; paraesophageal (hiatal) hernia; stricture and stenosis of esophagus

Disorders of the stomach, small intestine, colon, rectum, anus

- stomach
 - dyspepsia/hyperacidity; gastric ulcer; gastritis; peptic ulcer; peptic ulcer perforation; gastroparesis
- small intestine, colon
 - appendicitis; angiodysplasia; diverticula, diverticulitis, diverticulosis; duodenitis, duodenal ulcer, peptic ulcer; gastroenteritis and colitis (noninfectious); granulomatous enterocolitis; Hirschsprung disease; impaction of intestine; intestinal obstruction/stricture; intussusception; irritable colon/irritable bowel syndrome; mesenteric ischemia/ischemic bowel/ischemic colitis; necrotizing enterocolitis; paralytic ileus; volvulus; malnutrition and malabsorption, including lactose intolerance, short bowel syndrome
- rectum and anus
 - abscess of anal and rectal regions; anal fissure; anal fistula; ulcer; fecal incontinence; hemorrhage (rectum, anus); proctitis; hemorrhoids; rectal prolapse

Disorders of the liver and biliary system, noninfectious

- liver
 - cirrhosis; Dubin-Johnson, Rotor syndromes; end-stage liver disease, including indications for transplantation; Gilbert syndrome, Crigler-Najjar syndrome; hepatic coma/hepatic encephalopathy; hepatitis, noninfectious; hepatitis, fatty liver, alcoholic; hepatorenal syndrome; hepatopulmonary syndrome; jaundice; non- alcoholic fatty liver disease; portal hypertension/esophageal varices
- biliary system
 - bile duct obstruction/cholestasis; cholangitis, including ascending; choledocholithiasis; cholelithiasis/cholecystitis; cholestasis due to parenteral nutrition; gallstone ileus; Mirizzi syndrome; primary biliary cirrhosis; primary sclerosing cholangitis

Disorders of the pancreas

- pancreatitis, acute; pancreatitis, chronic; pancreatitis, hereditary; pancreatic cyst/pseudocyst; pancreatic duct obstruction; pancreatic insufficiency

Disorders of the peritoneal cavity

- ascites

Traumatic and mechanical disorders

- abdominal wall defects; adhesions, postsurgical; digestive system complications of surgery; post-gastric surgery syndromes (eg, blind loop syndrome, adhesions); duodenal tear; foreign body in digestive system; inguinal, femoral, and abdominal wall hernias; open wound, abdominal; perforation of hollow viscus and blunt trauma; perforation/rupture of esophagus (Boerhaave syndrome); umbilical hernia

Congenital disorders

- annular pancreas, biliary atresia, cleft lip and palate, esophageal atresia, malrotation without volvulus, Meckel diverticulum, pyloric stenosis, tracheoesophageal fistula

Adverse effects of drugs on the gastrointestinal system

- drug-induced changes in motility (chronic laxative use, opioids); drug-induced gastritis, duodenitis, peptic ulcer disease (NSAIDs); drug-induced hepatitis (eg, acetaminophen, isoniazid); drug-induced pancreatitis (eg, thiazide diuretics)

Renal & Urinary System

Infectious, immunologic, and inflammatory disorders, including microbiologic and host response to insult

- infectious disorders
 - upper urinary tract
 - granulomatous pyelonephritis; perinephric abscess; pyelonephritis; pyonephrosis; renal abscess; renal tuberculosis
 - lower urinary tract and urinary tract infections of unspecified location
 - cystitis; chlamydial and nonchlamydial
- immunologic and inflammatory disorders
 - upper urinary tract
 - glomerular disorders: Alport syndrome; glomerular disease due to hepatitis B, C; glomerulonephritis, including poststreptococcal; IgA nephropathy; lupus nephritis; minimal change disease; nephrotic syndrome; thin basement membrane disease
 - tubular interstitial disease: acute tubular necrosis (ATN); acute interstitial nephritis; papillary necrosis; HIV nephropathy
 - lower urinary tract
 - interstitial cystitis

Neoplasms

- benign neoplasms and cysts
 - polycystic kidney disease
- malignant neoplasms
 - renal (eg, Wilms tumor/nephroblastoma, renal cell carcinoma, renal tumors associated with congenital/hereditary conditions); urinary bladder and collecting system

Signs, symptoms, and ill-defined disorders

- dysuria; hematuria; oliguria, anuria; proteinuria

Metabolic and regulatory disorders

- acute kidney injury; renal insufficiency; azotemia, uremic syndrome; chronic kidney disease, including end-stage renal disease; cystinuria; Fanconi syndrome; hypertensive renal disease (renal complications of hypertension); renal calculi, ureteral calculi, nephrolithiasis; renal tubular acidosis

Vascular disorders

- renal artery stenosis (atherosclerosis, fibromuscular dysplasia, nephrosclerosis); renal vein thrombosis; renal infarction

Traumatic and mechanical disorders

- bladder rupture; neurogenic bladder; obstructive uropathy; posterior urethral valves; renal laceration; renal vascular injury; ureteral laceration/avulsion/disruption; urethral diverticulum; obstruction/stricture/prolapse, urethral/ureteral, vaginal walls, uterine, uterovaginal; urinary incontinence, including secondary enuresis; vesicoureteral reflux

Congenital disorders

- double ureters/ureteral duplication/double collecting system; horseshoe kidney; hydronephrosis/reflux; renal agenesis, renal hypoplasia, renal dysplasia; single kidney

Adverse effects of drugs on the renal and urinary system

- ACE inhibitors; aminoglycosides; amphotericin B; cisplatin; furosemide; gadolinium (nephrogenic systemic fibrosis); heroin; iodinated contrast dye; lithium; NSAIDs; penicillins; sulfa drugs; tenofovir; drug-induced urinary retention

Pregnancy, Childbirth, & the Puerperium

Prenatal care

- preconception counseling and care
 - folate deficiency prevention; immunizations; nutritional assessment, including vitamins; Rh screening
- prenatal risk assessment/prevention
 - adolescent pregnancy; antepartum fetal evaluation, including biophysical profile; genetic screening; α -fetoprotein; diabetes mellitus; neural tube defects; Rh isoimmunization
- supervision of normal pregnancy
 - assessment of gestational age; iron deficiency prevention; nutrition, including weight management; surveillance, including ultrasonography and assessment of fetal growth; vitamin deficiency prevention; infections, maternal, fetal, newborn (focus on prevention and screening): cytomegalovirus, coxsackievirus, hepatitis B virus, herpes simplex viruses, HIV, influenza virus, parvovirus B19 virus, rubella virus, varicella-zoster virus, *Chlamydia trachomatis*, *Treponema pallidum*, *Streptococcus agalactiae*, *Toxoplasma gondii*, amnionitis; asymptomatic urinary tract infection

Obstetric complications

- abortion, induced, septic, missed, spontaneous, threatened; acute fatty liver of pregnancy; anemia of pregnancy, sickle cell disease, thalassemia in pregnancy; antepartum hemorrhage, including third-trimester bleeding; cardiomyopathy of pregnancy; cervical insufficiency, cervical shortening; cholestasis of pregnancy, intrahepatic; congenital abnormalities, maternal (eg, bicornuate uterus); ectopic pregnancy; fetal abnormality affecting management of mother (eg, hydrocephalus, spina bifida); fetal growth restriction; gestational diabetes; maternal mortality; multiple gestation; placental abnormalities (abruptio placentae, placenta previa, premature separation of placenta); polyhydramnios, oligohydramnios; preeclampsia, eclampsia, HELLP syndrome, gestational hypertension; prolonged pregnancy; Rh isoimmunization affecting management of mother; vomiting in pregnancy (morning sickness, hyperemesis gravidarum); trauma in pregnancy; infections complicating pregnancy

Labor and delivery

- labor and delivery, uncomplicated; labor and delivery, complicated, including shoulder dystocia; cesarean delivery, including complications; cord compression, cord prolapse; fetal malpresentations (eg, breech/external cephalic); intrapartum fetal evaluation, including fetal heart tones; intrapartum prophylaxis (eg, HIV, *Chlamydia*, gonococcal prophylaxis); premature rupture of membranes; preterm (before 37 weeks' gestation) and postdates labor and delivery; threatened preterm labor

Puerperium, including complications

- lactation problems; breast-feeding problems; lochia; postpartum cardiomyopathy; postpartum blues; postpartum hemorrhage; postpartum sepsis; retained placenta, products of conception (eg, placenta accreta); uterine atony

Newborn (birth to 4 weeks of age)

- normal newborn
 - examination of liveborn at admission to hospital; screening, newborn
- disorders of the newborn
 - screening, newborn; ABO incompatibility in newborn; hemolytic disease due to Rh incompatibility; birth asphyxia syndrome (liveborn neonate); birth trauma (eg, cord compression, brachial palsy, lacerations); drug withdrawal syndrome in newborn; feeding problems in newborn; fetal growth and development abnormalities, including fetal growth restriction; gastrointestinal obstruction; hypocalcemia of newborn; infections, congenital or peripartum (cytomegalovirus, herpes simplex viruses, HIV, hepatitis B, rubella virus, parvovirus B19 virus, varicella zoster virus, *Chlamydia trachomatis*, *Streptococcus agalactiae*, *Treponema pallidum*, *Toxoplasma gondii*); intrapartum fetal distress/death including stillborn; jaundice, fetal/neonatal/perinatal; laryngomalacia; macrosomia (large for gestational age); meconium aspiration syndrome; neonatal acne; neonatal *Candida* infection (thrush); neonatal hypoglycemia; neonatal conjunctivitis and dacryocystitis; ophthalmic gonorrhoea; phenylketonuria; premature infant; post-term infant; pseudomembranous colitis of infancy; respiratory distress syndrome (hyaline membrane disease); respiratory problems after birth (eg, bronchopulmonary dysplasia, tracheomalacia; tracheoesophageal fistula in neonates); retinitis of prematurity; seizures in newborn; sudden infant death syndrome (SIDS), apparent life-threatening event (ALTE); tetanus neonatorum

Adverse effects of drugs on pregnancy, childbirth, and the puerperium

- alcohol, tobacco, and other drugs (ATOD); prenatal radiation exposure; teratology (eg, ACE inhibitors, SSRIs, warfarin, infections, toxins)

Systemic disorders affecting pregnancy, labor and delivery, and puerperium

- appendicitis; asthma; carpal tunnel syndrome in pregnancy; cirrhosis; deep venous thrombosis (DVT); diabetes mellitus; heart failure, valvular heart disease; hypertension; myasthenia gravis; obesity; pancreatitis; psychiatric disorders; renal calculus/calculi; renal failure/renal disease, including SLE; seizure disorders; thyroid disorders, hypothyroidism, hyperthyroidism

Female and Transgender Reproductive System & Breast

Breast

- infectious, immunologic, and inflammatory disorders, including microbiologic and host response to insult
 - breast abscess; inflammatory disease of breast, fat necrosis; mastitis; nipple discharge
- neoplasms
 - benign and undefined neoplasms
 - breast cyst, solitary; fibrocystic changes; fibroadenoma; hypertrophy of breast; intraductal papilloma
 - malignant neoplasms (including screening)
 - breast cancer; intraductal carcinoma; Paget disease of breast; phyllodes tumors

Female reproductive system

- infectious, immunologic, and inflammatory disorders, including microbiologic and host response to insult
 - bacterial vaginosis; Bartholin gland abscess; cellulitis, pelvic; candidiasis of the vulva or vagina; lichen sclerosus; sexually transmitted infections and exposure; cervicitis and endocervicitis; chancroid (*Haemophilus ducreyi*); genital herpes; gonorrhea (*Neisseria gonorrhoeae*); human papillomavirus infection, genital/venereal/anal warts, condylomata acuminata; lymphogranuloma venereum (*Chlamydia trachomatis*), non-lymphogranuloma venereum; pelvic inflammatory disease; Fitz-Hugh–Curtis syndrome; salpingitis and oophoritis; syphilis (*Treponema pallidum*); trichomoniasis (*Trichomonas vaginalis*); urethritis; vaginitis; vulvovaginitis
- Neoplasms of the vulva, vagina, cervix, uterus, or ovaries
 - benign neoplasms and cysts: abnormal cervical cytology; benign neoplasm of ovary; endocervical and endometrial polyps; leiomyomata uteri; ovarian cyst
 - malignant and precancerous neoplasms: cervical cancer; HPV causing cancer; cervical dysplasia, HPV causing dysplasia; endometrial hyperplasia; endometrial/uterine cancer; gestational trophoblastic disease (hydatidiform mole); ovarian cancer; vulvar dysplasia and cancer
- Fertility and infertility
 - assisted reproductive techniques (ART); contraception (eg, oral contraceptives, IUD, vaginal cap, cervical sponge, diaphragm, implant, morning-after pill, male and female condoms); female infertility; gonadal dysgenesis 45,X (Turner syndrome); sterilization; tubal factors; infertility
- Menopause
 - ovarian failure, premature menopause; perimenopause; premenopausal menorrhagia; postmenopausal atrophic vaginitis (vaginal atrophy); postmenopausal bleeding; vasomotor symptoms
- Menstrual and endocrine disorders
 - abnormal uterine bleeding, including perimenopausal; absence of menstruation (primary amenorrhea, secondary amenorrhea including undiagnosed pregnancy); anovulation; dysmenorrhea; endometriosis; hirsutism, virilization; mittelschmerz; pelvic pain; polycystic ovary syndrome; postcoital bleeding; premenstrual syndrome
- Sexual dysfunction
 - dyspareunia; orgasmic dysfunction; sexual desire/arousal syndrome; vaginismus
- Traumatic and mechanical disorders
 - Asherman syndrome; chronic inversion of uterus; chronic pelvic pain syndrome; cystocele; imperforate hymen; injuries, wounds, and burns affecting the female reproductive system and injuries, wounds, burns, and blast injuries; ovarian torsion; pelvic relaxation; rectocele; urethrocele
- Congenital disorders
 - müllerian agenesis; uterus didelphys, bicornuate uterus; short cervix

- Adverse effects of drugs on the female reproductive system and breast
 - antihistamines, H2-receptor blockers; benzodiazepines; beta-adrenergic blockers; hormone replacement; opioids; spironolactone; selective serotonin reuptake inhibitors; tricyclic antidepressants

Male and Transgender Reproductive System

Infectious, immunologic, and inflammatory disorders, including microbiologic and host response to insult

- infectious disorders
 - balanitis; epididymitis; orchitis; prostatitis; sexually transmitted infections and exposure; chancroid (*Haemophilus ducreyi*); genital herpes; gonorrhea (*Neisseria gonorrhoeae*); human papillomavirus infection, genital/venereal/anal warts, condylomata acuminata; lymphogranuloma venereum (*Chlamydia trachomatis*); syphilis (*Treponema pallidum*); trichomoniasis (*Trichomonas vaginalis*); urethritis, chlamydial and nonchlamydial, nongonococcal
- immunologic and inflammatory disorders
 - autoimmune hypogonadism

Neoplasms

- malignant neoplasms, penile, prostate, testicular, breast

Metabolic and regulatory disorders, including sexual dysfunction

- erectile dysfunction, impotence; infertility, male factor; male sexual dysfunction; premature ejaculation

Traumatic and mechanical disorders

- benign prostatic hyperplasia/hypertrophy; circumcision, including complications; epididymal cyst; hydrocele (including neonatal hydrocele); injuries, wounds, and burns to male genitalia, including blast injuries; penile laceration, penile fracture, Peyronie disease; phimosis; scrotal laceration; spermatocele; testicular rupture/avulsion/laceration; torsion of testis; urethral laceration/disruption; varicocele

Congenital disorders

- hypospadias; Klinefelter syndrome; undescended testicle

Adverse effects of drugs on the male reproductive system

- alcohol; androgens, testosterone; antipsychotics, antidepressants including selective serotonin reuptake inhibitors; beta-adrenergic blockers; diuretic-including thiazides; drug-induced priapism (eg, trazodone); finasteride, dutasteride; sildenafil, tadalafil, vardenafil; marijuana; nitric oxide reductase inhibitors

Endocrine System

Diabetes mellitus and other disorders of the endocrine pancreas

- diabetes mellitus
 - diabetes mellitus, type 1; diabetes mellitus, type 1.5; diabetes mellitus, type 2; diabetes mellitus, acute complications: hyperosmolar coma, hypoglycemic shock, ketoacidosis, including cerebral edema, associated electrolyte abnormalities; diabetes mellitus, chronic complications: gastrointestinal/gastroparesis, neurologic/neuropathy, ophthalmologic/retinopathy, peripheral vascular, renal/nephropathy, metabolic syndrome
- hypoglycemia and islet cell disorders
 - hypoglycemia (secondary to insulinoma, surreptitious insulin use, sepsis, liver failure); hyperglycemia (secondary to glucagonoma); hyperinsulinism; islet cell tumors/insulinoma/somatostatinoma; pancreatic neuroendocrine tumors

Thyroid disorders

- cyst, nodule; euthyroid sick syndrome; goiter (euthyroid-normal thyroid function with goiter); hypothyroidism; hyperthyroidism, including thyrotoxicosis and thyroid storm; thyroiditis, including Hashimoto; Graves disease; neoplasms (benign cysts and nodules, thyroid cancer including papillary, follicular, medullary, and anaplastic); thyroid deficiency from pituitary disorder; infertility due to thyroid disease; secondary hypothyroidism and hyperthyroidism

Parathyroid disorders

- hyperparathyroidism; hypoparathyroidism; metabolic bone disease

Adrenal disorders

- corticoadrenal insufficiency (Addison disease); adrenal insufficiency, secondary; hypocortisolism; Cushing syndrome; hyperaldosteronism; neoplasms, benign and malignant (adrenal neuroblastoma, pheochromocytoma, adrenal carcinoma, adrenal adenoma, aldosteronoma, adrenal incidentaloma); delayed and precocious puberty; hypertensive endocrine disease

Pituitary disorders

- acromegaly/gigantism; diabetes insipidus; galactorrhea not associated with childbirth; panhypopituitarism from any cause; pituitary apoplexy (eg, Sheehan syndrome); growth hormone deficiency; short stature; SIADH (inappropriate secretion of ADH [vasopressin]); neoplasm, benign and malignant (pituitary adenomas, craniopharyngioma, metastatic disease); prolactinoma and hyperprolactinemia, including infertility due to these disorders; hypogonadism, primary and secondary

Hypothalamic endocrine disorders

Multiple endocrine neoplasia (MEN1, MEN2)

Congenital disorders

- disorders of sexual differentiation; congenital adrenal hyperplasia; androgen insensitivity/resistance syndrome; congenital hypothyroidism

Adverse effects of drugs on the endocrine system

- drug, medicinal, and biologic substance effects; exogenous steroid suppression of adrenal glands, anabolic steroids

Multisystem Processes & Disorders

Infectious, immunologic, and inflammatory disorders, including microbiologic and host response to insult

- infectious disorders
 - bacterial
 - brucellosis (*Brucella* spp); leptospirosis (*Leptospira interrogans*); Lyme disease (*Borrelia burgdorferi*); melioidosis (*Burkholderia pseudomallei*); miliary (disseminated) tuberculosis (*Mycobacterium tuberculosis*); tularemia (*Francisella tularensis*); toxic shock syndrome; Q fever (*Coxiella burnetii*); anaplasmosis and ehrlichiosis (*Anaplasma* and *Ehrlichia* species); rickettsiosis (Rocky Mountain spotted fever [*Rickettsia rickettsii*])
 - viral
 - infectious mononucleosis (Epstein-Barr virus); cytomegalovirus infection; yellow fever; human herpesvirus 8 (HHV-8)
 - fungal
 - blastomycosis (*Blastomyces dermatitidis*); candidiasis (*Candida albicans*); coccidioidomycosis (*Coccidioides immitis/posadasii*); histoplasmosis (*Histoplasma capsulatum*)
 - parasitic
 - schistosomiasis (*Schistosoma*); leishmaniasis (*Leishmania* spp), visceral (kala-azar); trypanosomiasis/Chagas disease, acute and chronic (*Trypanosoma*)
- immunologic and inflammatory disorders
 - acute rheumatic fever; autoimmune arteritis/vasculitis; Behçet syndrome; Churg-Strauss syndrome; eosinophilic granuloma, histiocytosis, Langerhans cell histiocytosis; Goodpasture syndrome; Henoch-Schönlein purpura; Kawasaki disease; mixed connective tissue disease; polyangiitis; polyarteritis nodosa; polyglandular autoimmune syndrome, type 1; polymyalgia rheumatica, temporal arteritis; Raynaud disease/Raynaud syndrome; reactive arthritis (formerly Reiter disease), including Reiter arthritis; scleroderma (systemic sclerosis); Sjögren syndrome; systemic lupus erythematosus; Takayasu arteritis; granulomatosis with polyangiitis (formerly Wegener granulomatosis); familial Mediterranean fever; sarcoidosis, Lofgren syndrome

Neoplasms and related disorders

- paraneoplastic syndromes
 - endocrine (eg, SIADH, Cushing syndrome, hypercalcemia of malignancy [parathyroid-related protein and paraneoplastic syndrome with hypercalcemia]); hematologic (polycythemia, nonbacterial thrombotic endocarditis); neurologic (myasthenic syndrome, paraneoplastic cerebellar degeneration, limbic encephalitis, pure sensory neuropathy, anti-NMDA receptor encephalitis); mucocutaneous (eg, acanthosis nigricans); musculoskeletal (eg, pulmonary osteoarthropathy, polymyositis); other (membranous glomerulonephritis)
- inherited cancer syndromes
 - DNA repair abnormalities (eg, Fanconi anemia); hereditary nonpolyposis colorectal cancer (gastrointestinal and female reproductive)

Signs, symptoms, and ill-defined disorders

- arthralgias; abdominal pain; chest pain; cough; dizziness, light-headedness, syncope, including breath-holding spells with syncope; dyspnea, shortness of breath; edema, anasarca; fatigue; fever of unknown origin; frailty; hemoptysis; pain management (in a nonaddiction, nonpalliative-care setting, including appropriate opioid prescribing practices); joint pain; lymphedema; palpitations; pruritus; unexpected weight gain/weight loss

Nutrition

- protein-calorie malnutrition (kwashiorkor, marasmus)
- vitamin deficiencies and/or toxicities
 - vitamin A; vitamin B; vitamin B₁, thiamine (eg, Wernicke- Korsakoff syndrome, beriberi); vitamin B₃, niacin; vitamin B₆, pyridoxine; vitamin B₉, folic acid; vitamin B₁₂, cobalamins (pernicious anemia); vitamin C (scurvy); vitamin D (rickets); vitamin E; vitamin K
- mineral deficiencies and/or toxicities
- obesity
- enteral/parenteral nutrition (TPN)

Toxins and environmental extremes

- physical and associated disorders
 - temperature (eg, hypothermia, hyperthermia, heat stroke)
 - radiation (eg, radon, uranium mining, imaging studies)
 - thermal injury, burns, electrocution, lightning
 - decreased atmospheric pressure, high-altitude sickness increased water pressure (nitrogen narcosis)
- chemical including Gulf War illness
 - gases, vapors, smoke inhalation
 - agricultural hazards (eg, pesticides, green tobacco poisoning, anhydrous ammonia, Agent Orange)
 - volatile organic solvents metals (eg, lead)
 - other chemical agents (eg, ethylene glycol, carbon tetrachloride, methanol; BPA)
 - principles of poisoning and therapy (eg, acetylsalicylic acid [ASA], acetaminophen)

Venomous bites and stings

- hymenoptera bites and stings; scorpion bites; snake bites; spider bites; jellyfish stings

Fluid, electrolyte, and acid-base balance disorders

- fluid volume and electrolyte/ion disorders: fluid volume disorders; dehydration; hypovolemia; volume overload; electrolyte disorders; hyponatremia, hypernatremia; hypokalemia, hyperkalemia; hypocalcemia, hypercalcemia; hypophosphatemia, hyperphosphatemia; hypomagnesemia
- acid-base disorders: metabolic acidosis; metabolic alkalosis; respiratory acidosis; respiratory alkalosis; mixed acid-base disturbances

Abuse

- child, nonaccidental trauma/inflicted head trauma/factitious disorder by proxy
- intimate partner abuse, sexual, emotional, and physical including injuries related to abuse (eg, rib fractures)
- elder abuse, sexual, emotional, and physical including injuries related to abuse (eg, rib fractures)
- sexual assault

Multiple trauma

- prioritization, blast injury involving more than one organ system

Shock

- shock, cardiogenic, hypovolemic, neurogenic, septic, sepsis, bacteremia, systemic inflammatory response syndrome (SIRS), refractory, multiorgan dysfunction syndrome: meningococemia

Genetic, metabolic, and developmental disorders

- multifactorial
 - VATER syndrome, association syndromes
- large genomic changes
 - Beckwith-Wiedemann syndrome; Down syndrome; Prader-Willi syndrome
- enzymatic/metabolic
 - alpha-1 antitrypsin deficiency; porphyria; inborn errors of metabolism (eg, maple syrup urine disease, diseases involving urea cycle); storage diseases (eg, Fabry disease, Tay-Sachs disease, glycogen storage disease, mucopolysaccharidoses)
- structural protein disorders
 - amyloidosis; Ehlers-Danlos syndrome; immotile cilia syndrome (Kartagener syndrome; primary ciliary dyskinesia); Marfan syndrome
- intracellular/extracellular transport receptors
 - cystic fibrosis; hemochromatosis; Wilson disease
- triplet repeat/RNA disorders
 - fragile X syndrome

Adverse effects of drugs on multisystem disorders

- drug-induced electrolyte abnormalities and acid base-disorders (eg, albuterol; prednisone; diuretics; alcohol; drugs inducing polydipsia, SIADH, or diabetes insipidus)

Biostatistics, Epidemiology/Population Health, & Interpretation of the Medical Literature

Epidemiology/population health

- Measures of disease frequency
 - incidence/prevalence
- Measures of health status
 - rates, crude and adjusted; reproductive rates (eg, maternal mortality, neonatal/infant/under-5 mortality); mortality, morbidity; standardization; life expectancy, health-adjusted life expectancy; population attributable risk (PAR), population attributable risk percent (PAR%); risk factors
- Survival analysis interpretation (eg, Kaplan-Meier curve)
- Composite health status indicators, measures of population impact
 - years of potential life lost; quality-adjusted life years; disability-adjusted life years; standardized mortality ratio
- Population pyramids and impact of demographic changes
- Disease surveillance and outbreak investigation
 - disease reporting; response to public health advisory, health promotion; recognition of clusters
- Communicable disease transmission
 - attack rate; herd immunity; reportable diseases
- Points of intervention
 - primary, secondary; community level (eg, cigarette taxes, soda taxes, smoke-free cities, buildings: restaurants, public buildings); school policies; access, healthy food, transportation, clean air, safe environments

Study design, types and selection of studies (includes dependent/independent variables)

- Descriptive studies (case report [one person]/case series [more than one])
- Analytical studies: observational
 - community surveys; cross-sectional (individuals)
 - ecological (populations); case control; retrospective and prospective cohort
- Analytical studies: interventional
 - clinical trial (randomized controlled trial; double-blind; placebo-controlled; noninferiority/equivalence trials); community intervention
- Systematic reviews and meta-analysis
 - potential uses; estimation of effect sizes; heterogeneity; publication bias; forest plots, funnel diagrams; risk of bias, bias risk scale
- Obtaining and describing samples, matching, inclusion/exclusion criteria, selecting appropriate controls for studies, lack of controls, concealed allocation, randomization, stratification
- Methods to handle noncompliance
 - loss to follow-up; intention-to-treat analysis
- Qualitative analysis

Measures of association

- Relative risk
- Odds ratio, hazard ratio
- Other measures of association

- number needed to treat/harm; absolute risk (AR), absolute risk percent (AR%); population attributable risk (PAR), population attributable risk percent (PAR%)

Distributions of data

- measures of central tendency; measures of variability; regression to mean; normal distribution; nominal measurement

Correlation and regression, uses and interpretation

- correlation coefficients; multiple regression

Principles of testing and screening

- Properties of a screening test
 - validity, accuracy, reliability; criteria for a screening test; confirmatory testing; appropriateness; lead-time bias, length bias; screening vs diagnostic tests
- Sensitivity and specificity; predictive value, positive and negative
- ROC curves
- Probability
 - theory (independence, product, addition rules); decision trees; likelihood ratios (application of Bayes theorem); posttest, pretest

Study interpretation, drawing conclusions from data

- Causation
 - hypothesis-generating vs hypothesis-driven testing; causal criteria, temporality, temporal sequence, dose-response relationship; reverse causality
- Chance
 - null hypothesis, Type I error and alpha level (multiple comparisons, random error/chance)
 - sample size and Type II error, beta, power
 - selection and interpretation of basic tests of statistical significance: chi-square; confidence intervals; p-values; t-test
 - a priori vs post hoc analysis: subgroup analysis; error rate; affect types
- Interpretation of graphs/tables and text
- Bias, confounding, and threats to validity (includes methods to address)
 - selection, sampling bias
 - information bias: recall; ascertainment, ecologic fallacy, lack of blinding; loss to follow up
 - confounding variables, Hawthorne effect (includes methods to address)
 - other threats to validity (eg, placebo effect)
- Internal vs external validity
 - generalizability (external validity); efficacy vs effectiveness
- Statistical vs clinical significance; clinical and surrogate outcome/end point

Clinical decision making, interpretation and use of evidence-based data and recommendations

- application of study results to patient care and practice, including patient preferences and individualization of risk profiles; risk/benefit analysis; synthesis of concepts with real data

Research ethics

- Informed consent for research
- Privacy of patient data (HIPAA)
- Roles of institutional review boards (IRBs)
- Interim analysis
 - intervention analysis; stopping analysis; safety monitoring
- Regulatory issues
 - drug development, phases of approval; appropriateness of placebo; appropriateness of randomized clinical trial; components of studies; ethics; scheduling; off-label use
- Other issues related to research ethics

Social Sciences

Communication and interpersonal skills, including health literacy and numeracy, cultural competence

- Patient interviewing, consultation, and interactions with the family (patient-centered communication skills)
 - fostering the relationship (eg, expressing interest)
 - information gathering (eg, exploring patient's reaction to illness)
 - information provision (eg, providing information about working diagnosis)
 - making decisions (eg, eliciting patient's perspectives)
 - supporting emotions (eg, effective discussion with difficult patients)
 - enabling patient behaviors (eg, education and counseling)
- Use of an interpreter or surrogate

Medical ethics and jurisprudence, include issues related to death and dying and palliative care

- Consent/informed consent to treatment, permission to treat (full disclosure, risks and benefits, placebos, alternative therapies, conflict of interest, and vulnerable populations)
- Determination of medical decision-making capacity/informed refusal
- Involuntary admission
- Legal issues related to abuse (child, elder, and intimate partner)
 - child protective services, foster care, immunizations
 - legal requirements for reporting abuse or neglect/obligation to warn
- Birth-related issues
- Death and dying and palliative care
 - life support
 - advance directive, health care proxy, advance care planning
 - brain death/diagnosing brain death/diagnosing death/pronouncing death
 - organ donation
 - hospice
 - pain management, including ethical issues related to death and dying
 - information sharing, counseling families
 - psychosocial and spiritual counseling, fear and loneliness
- Physician–patient relationship (boundaries, confidentiality including HIPAA, privacy, truth-telling, other principles of medical ethics [eg, autonomy, justice, beneficence, nonmaleficence])
- Impaired physician, including duty to report impaired physician
- Negligence/malpractice, including duty to report negligence and malpractice
- Physician misconduct, including duty to report physician misconduct
- Referrals
- Cultural issues not otherwise coded

Systems-based practice (including health systems, public health, community, schools) and patient safety (including basic concepts and terminology)

- Complexity/systems thinking
 - Characteristics of a complex system and factors leading to complexity
 - how complexity leads to error
 - Health care/organizational behavior and culture
 - environmental factors, workplace design and process; staffing; overcommitment, space, people, time, scheduling; standardization, reducing variance, simplification, metrics; safety culture; integration of care across settings; overutilization of resources (imaging studies, antibiotics, opioids); economic factors

- Quality improvement
 - Improvement science principles
 - Variation and standardization: variation in process, practice; checklists, guidelines, and clinical pathways
 - Reliability
 - Specific models of quality improvement
 - model for improvement: plan-do-study-act (PDSA), plan-do-check-act (PDCA)
 - Quality measurement
 - Structure, process, outcome, and balancing measures
 - Measurement tools: run and control charts
 - Development and application of system and individual quality measures
 - core measures; physician quality report system (PQRS); event reporting system
 - Strategies to improve quality
 - Role of leadership
 - Principles of change management in quality improvement: specific strategies
 - Attributes of high-quality health care
 - High-value/cost-conscious care: overutilization of resources, including diagnostic testing, medications
 - Equitable care: access
 - Patient-centered care
 - Timely care
- Patient safety
 - Patient safety principles
 - Epidemiology of medical error
 - Error categorization/definition: active vs latent errors; Swiss cheese model of error; preventable vs non-preventable; near miss events/safety hazards
 - Causes of error
 - Patient factors: understanding of medication use; health literacy; economic status; cultural factors (eg, religion); failure to make appointments; socioeconomic status
 - Physician factors: deficiency of knowledge; judgment errors; diagnostic errors; fatigue, sleep deprivation; bias – cognitive, availability, heuristic, anchoring, framing
 - Human factors (eg, cognitive, physical, environmental)
 - High reliability of organization (HRO) principles
 - change management and improvement science; conceptual models of improvement
 - Reporting and monitoring for errors
 - event reporting systems
 - Communication with patients after adverse events (disclosure/transparency)
 - Specific types of error
 - Transitions of care errors (eg, handoff communication including shift-to-shift, transfer, and discharge)
 - handoffs and related communication; discontinuities; gaps; discharge; transfers
 - Medication errors
 - Ordering, transcribing, dispensing, administration (wrong quantity, wrong route, wrong drug)
 - Medication reconciliation
 - Mathematical error
 - Procedural errors
 - Universal protocol (time out); wrong patient; wrong site; wrong procedure
 - Retained foreign bodies
 - Injury to structures
 - paracentesis; bowel perforation; thoracentesis; pneumothorax; central venous/arterial line injuries; arterial puncture and bleeding and venous thrombosis; lumbar puncture bleeding; paralysis
 - Other errors
 - anesthesia-related errors; mathematical errors

- Health care-associated infections
 - nosocomial infection – eg, surgical site, ventilator associated, catheter-related; handwashing procedures or inadequate number of handwashing stations; central line-associated blood stream infections; surgical site infections; catheter-associated urinary tract infections; ventilator-associated pneumonia
- Documentation errors
 - electronic medical record (including voice-recognition software errors); record keeping; incorrect documentation (eg, wrong patient, wrong date, copying and pasting, pre-labeling)
- Patient identification errors
 - Mislabeling: transfusion errors related to mislabeling
 - Verification/two identifiers: lack of dual validation, including verbal verification of lab results
- Diagnostic errors
 - errors in diagnostic studies; misinterpretation
- Monitoring errors
 - Cardiac monitoring/telemetry
 - Drug monitoring (warfarin, antibiotics)
- Device-related errors
 - Malfunction
 - Programming error
 - Incorrect use
- Strategies to reduce error
 - Human factors engineering
 - Situational awareness
 - Hierarchy of effective interventions: forcing function; visual cues
 - Error analysis tools
 - error/near miss analysis; failure modes and effect analysis; morbidity and mortality review; root cause analysis
 - Safety behavior and culture at the individual level
 - hierarchy of health care, flattening hierarchy, speak up to power; afraid to report, fear; psychological safety; closed-loop communication
 - Teamwork
 - principles of highly effective teams; case management; physician teams, physician-physician communication; interprofessional/intraprofessional teams; strategies for communication among teams, including system-provider communication, physician-physician communication (eg, consultations), interprofessional communication, provider-patient communication

Health care policy and economics

- Health care policy
 - Health care disparities
 - race/ethnicity; numeracy/literacy; socioeconomic status; gender and sexual diversity/identity; immigration status; English language proficiency; incarcerated populations; disability
 - Access to care
 - critical access systems or hospitals
 - Social justice
- Health care economics/Health care financing
 - Types of insurance
 - Medicare, Medicaid, private insurance, self-pay
 - Navigating the insurance system
 - deductibles/co-pays; in-/out-of-network; preferred providers
 - Reimbursement issues affecting safety and quality
 - emergency services – EMTALA; pay-for-performance