UWorld Notes: Step 2 CK

- malingering: intentional production of false physical symptoms for secondary gain
- factitious disorder: intentional production affects physical or psychological signs or symptoms to assume the sick role; no secondary gain
- Hypochondriais: fear of disease and preoccupation with the body, manifests through multiple somatic complaints; at least six months
- conversion disorder: unexplained serious neurological symptoms preceded by an obvious emotional trigger; symptoms are not artificially produced, unexplained by any medical condition, can cause social and functional impairment

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- prolonged hypotension from any cause can lead to acute tubular necrosis. Hallmark findings on urinalysis are muddy brown granulomatosis consisting of renal tubular epithelial cells. Also seen are serum BUN:creatinine ratio < 20:1, urine osmolality 300 to 350 mOsm per liter (never <300), urine sodium > 20 mEq per liter, FE Na greater than 2%
- broad casts are seen in chronic renal failure, due to dilated tubules enlarged nephrons that have undergone compensatory hypertrophy in response to the reduced renal mass
- waxy casts are shiny and translucent, also seen in chronic renal disease
- RBC casts are indicative of glomerular disease or vasculitis; glomerulonephritis
- WBC casts are evidence that urinary WBCs originate in the kidney; seen in interstitial nephritis and pyelonephritis
- fatty casts: nephrotic syndrome
- hyaline casts are composed of protein and pass unchanged along the urinary tract; seen in asymptomatics and prerenal azotemia

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- antisocial personality disorder is diagnosed at age 18 years or older; often display evidence of conduct disorder as minors
- conduct disorder diagnosis requires at least three symptoms from the following categories: aggression towards people or animals: destruction of property, deceitfulness or theft, or a serious violation of rules
- borderline personality disorder called shortly pattern of instability relationships, impulsive and or reckless; have identity disturbance, recurrent suicidal or self-mutilating behavior, feelings of emptiness
- histrionic personality disorder: excessively labile emotions and attention seeking behavior

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common etiologies of neonatal conjunctivitis			
Type	Onset age	Findings	Treatment
Chemical	<24 hours	Mild conjunctival irritation/injection and tearing after silver nitrate ophthalmic prophylaxis	Eye lubricant
Gonococcal	2 - 5 days	Eyelid swelling; profuse purulent discharge; corneal ulceration	IV or IM ceftriaxone or cefotaxime
Chlamydial	5 - 14 days	eyelid swelling; chemosis; bloody or mucopurulent discharge	oral erythromycin

- gonococcal conjunctivitis is the most destructive; resulting in corneal perforation and permanent blindness
- ceftriaxone should be avoided in infants with hyperbilirubinemia has it results in displacement of bilirubin from albumin-binding sites, increasing the risk of kernicterus
- oral erythromycin is the treatment of choice for both chlamydial conjunctivitis and pneumonia; increased risk of infantile hypertrophic pyloric stenosis
- topical erythromycin: neonatal prophylaxis against gonococcal conjunctivitis
- topical silver nitrate: prophylaxis against penicillinase-producing strains of N. gonorrhea (not available in the US)
- nasolacrimal duct obstruction presents with unilateral tearing & minimal conjunctival injection; Rx massage nasolacrimal ducts

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- hypotension, tachycardia, flat neck veins, confusion, and cold extremities despite IV fluids resuscitation: hypovolemic/hemorrhagic shock
- cardiogenic shock: decreased cardiac output causes elevated venous filling pressures and JVD
- loss of vascular tone occurs in septic & neurogenic shock

- meniscal and ligamentous tears can both be a/w a popping sensation following a precipitating injury
- meniscal injuries cause gradual joint swelling over 12 to 24 hours
- ligamentous injuries (ACL) cause rapid joint swelling due to hemarthrosis (ligaments have greater vascular supply than menisci, which rely on diffusion for nourishment)
- MRI provides definitive diagnosis

- Ulcerative colitis occurs more frequently in females, Ashkenazi Jews, with a peak incidence at ages 15 to 25
- UC is confined to the mucosal layer, while Crohn's disease is transmural
- UC causes bloody diarrhea, tenesmus, cramping
- severe disease is marked by weight loss, fever, anemia
- diagnosis is confirmed by friable mucosa on colonoscopy and biopsy demonstrating mucosal inflammation
- extraintestinal compliations include sclerosing cholangitis, uveitis, erythema nodosum, and spondyloarthropathy
- severe complications include toxic megacolon and colorectal carcinoma
- routine surveillance with yearly colonoscopies is recommended beginning 8 to 10 years after

diagnosis for prevention and/or early detection of colon cancer

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- adjustment disorder: emotional or behavioral symptoms developing within 3 months of exposure to an identifiable stressor that rarely lasts more than 6 months after the stressor ends
- patient experiences marked distress in excess of what would be expected from exposure to the stressor
- treatment of choice is cognitive or psychodynamic psychotherapy to develop coping mechanisms, response to and attitude about stressful situations
- SSRIs can be adjunctive therapy for depressive symptoms

- atypical squamous cells, cannot rule out high-grade squamous epithelial lesion (ASC-H) is a/w premalignant lesions
- atypical squamous cells of undetermined significance (ASC-US) is the most common cervical cytological abnormality, but the risk of invasive cervical cancer is low
- ASC-US or LSIL for women age 21 – 24: repeat pap smear in 1 year
  - colposcopy only if ASC on 3 consecutive paps or any ASC-H, atupical glandular cells, or HSIL
- ASC-US in women age ≥ 25: HPV testing
  - HPV positive = colposcopy
  - HPV negative = repeat pap & HPV in 3 yrs

Cervical cancer screening	
Immunocompromised (HIV, SLE, organ transplant on immunosuppressants)	▪ Onset of sexual intercourse ▪ every six months x2 than annually
Age < 21	No screening
21 to 29	cytology every 3 years
30 to 65	▪ cytology every 3 years ▪ OR cytology + HPV testing every 5 years
≥ 65	No screening if negative prior screens & not high-risk
Hysterectomy without cervix	no screening if no history of high-grade lesions, cervical cancer, or exposure to DES

- weight loss in obese patients is the most effective lifestyle intervention for reducing blood pressure
- DASH diet for is the next most effective approach in preventing and treating hypertension especially in nonobese individuals, then exercise, dietary sodium, alcohol intake
- cigarette smoking causes a transient rise in BP

- maternal risk factors for fetal macrosomia: advanced maternal age, obesity, diabetes, multiparity
- African & Hispanic males are at increased risk for fetal macrosomia, a risk factor for shoulder dystocia
- excessive traction on the neck during delivery can result in Erb-Duchenne palsy
  - involves 5th, 6th, 7th CN
  - most infants recover arm function spontaneously within 3 months
  - Rx: gentle massage & PT to prevent contractures

- cephalohematoma: subperiosteal bleed, does not cross suture lines; resolves spontaneously

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- Kawasaki disease (mucocutaneous lymph node syndrome) is a clinical diagnosis
  - common in age < 5
  - fever ≥ 5 days
  - irritability
  - B/L non-exudative conjunctivitis
  - cervical lymphadenopathy > 1.5 cm
  - mucositis (injected/fissured lips or strawberry toungue)
  - polymorphous rash
  - coronary artery aneurysm
  - swelling/erythema of palms/soles
- Rx: ASA & IV immunoglobulin within 10 days of fever to prevent cardiac complications, but usually self-limited (caution: Reye syndrome risk with ASA use, causing life-threatening hepatic encephalopathy)
- complications: coronary artery aneurysms, leading to MI & ischemia
- perform a baseline echocardiography in all suspected cases; repeat to monitor changes

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- complication of untreated streptococcal pharyngitis: Scarlet fever
- presents with tonsillar exudates, sandpaper-like rash that spares palms & soles
- perform throat culture
- Rx: amoxicillin

- Rheumatoid arthritis
  - morning stiffness >30 min, improves with activity
  - tenosynovitis of palms ("trigger finger")
  - cervical joint involvement can lead to subluxation ⇒ spinal cord compression
  - positive anti-cyclic citrullinated peptide (anti-CCP)
  - CRP & ESR elevation correlate with disease
  - XR: soft-tissue swelling, joint space narrowing, bony erosions
- greatest risk for osteoporosis
- Rx: physical activity, optimize Ca++ & Vit D intake, minimize corticosteroids, consider bisphosphonates

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- avascular necrosis is common with systemic corticosteroid therapy, heavy alcohol, SLE, or sickle cell disease
- Paget disease of bone = osteitis deformans is due to osteoclast overactivity, leading to replacement of lamellar bone with abnormal woven bone
- osteosarcoma risk factors: Paget disease, radiation & chemotherapy exposure

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- Osteitis fibrosa cystica (Von Recklinghausen disease) presents with bony pain
- excessive osteoclastic resorption, leads to replacement with fibrous tissue (brown tumors)
- a/w parathyroid carcinoma

- Bronchiolitis: commonly caused by RSV
- older children causes self-limited URI
- age < 2 involves lower respiratory tract
- wheezing/crackles & respiratory distress with waxing/waning peaking at 5-7 days
- Rx: supportive care
- prophylaxis: Palivizumab for high risk cases
- complications: apnea & respiratory failure; develops recurrent wheezing
- increased risk of acute otitis media; rarely bacterial pneumonia or sepsis

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- alpha-1-antitrypsin counteracts neutrophil elastase
- AAT deficiency: uninhibited elastase causes bullous, panlobular emphysematous changes of the lower lobes
- centrilobular changes occur with smoking-induced emphysema
- AAT deficiency can cause liver disease: cirrhosis, neonatal hepatitis, or liver failure

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Caustic ingestion	
Features	Chemical burn or liquefaction necrosis results in: ▪ hoarseness, stridor, orofacial inflammation (laryngeal damage) ▪ dysphagia, odynophagia (esophageal damage) ▪ epigastric pain, bleeding (gastric damage)
Management	▪ secure ABCs ▪ remove contaminated clothing, irrigate exposed skin ▪ CXR if respiratory symptoms ▪ **upper endoscophy within 24 hr** ▪ barium contrast (2-3 weeks)
Complications	▪ perforation ➢ esophageal strictures ➢ pyloric stenosis ▪ ulcers ▪ cancer

- avoid interventions that provoke vomiting (milk, activated charcoal, vinegar, NG lavage)

- Pinworm infection can present with erythematous vulvovaginitis in prepubertal females; absence of vaginal discharge
- recurrent episodes of nocturnal itching should be examined with the "Scotch tape" test
- empiric Rx: mebendazole

- B/L, nontender, upper abdominal masses; progressive renal insufficiency, early-onset HTN

ADPKD	
symptoms	most are asymptomatic **hematuria** flank pain (due to renal calculi, cyst rupture, hemorrhage, or upper UTI)
clinical signs	**early onset HTN** b/l upper abd. masses proteinuria chronic kidney disease
extrarenal features	cerebral aneurysm **hepatic/pancreatic cysts** cardiac valve disorders (MVP, AR) diverticulosis ventral/inguinal hernias
diagnosis	**abdominal USS**
management	monitor BP & renal Fx, **potassium** control cardiovascular risk factors **ACE-inhibitors** for HTN ESRD: dialysis, renal transplant

- central obesity, facial plethora, proximal muscle weakness, abdominal striae, ecchymosis: Cushing's syndrome
- headaches, palpitations, diaphoresis a/w paroxysmal BP elevations: pheochromocytoma
- measure urinary vanillylmandelic acid & metanephrines

- primary manifestations of Chagas disease: recent immigrant from Latin America with chronic megacolon/megaesophagus & cardiac disease (CHF: pedal edema, JVD, S3, cardiomegaly)

- erythema chronicum migrans is hallmark of early localized Lyme disease (Borrelia burgdorferi)
- also a/w headache, malaise, fatigue, fever
- early diagnosis is based on the trademark rash & recent travel to Lyme-endemic areas
- Rx: oral doxycycline (age > 8)
- Rx: oral amoxicillin (age < 8 & pregnancy) or cefuroxime

- chemotherapy-induced peripheral neuropathy from vincristine (also cisplatin, paclitaxel) begins after several weeks, presents as symmetric paresthesia in fingers/toes, spreads proximally in stocking-glove pattern
- early loss of ankle jerk reflexes, pain & temp sensation, occasional motor neuropathy

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- sudden onset C/L lower extremity motor & sensory deficits with UMN signs: anterior cerebral artery occlusion

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Spinal cord compression	
Causes	spinal injury malignancy infection (epidural abscess)
Signs & Symptoms	gradual severe local back pain pain worse when recumbent & at night <u>early</u>: symmetric weakness, hypoactive/ absent DTRs <u>late</u>: B/L Babinski, decreased rectal tone, paraparesis with increased DTRs, sensory loss
Manage	emergency MRI IV glucocorticoids

- sensory ataxia, brief stabbing pains, Argyll-Robertson pupils ("accommodate but do not react"): Tabes dorsalis, a manifestation of late neurosyphilis

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- recurrent pneumonias in the same anatomic region suggest bronchial obstruction; bronchogenic carcinoma is most concerning with a smoking history

- chest CT is indicated initially
  - central masses or negative CT: bronchoscopy
  - peripheral lesions: CT-guided biopsy
- recurrent pneumonias in different regions:
  - sinopulmonary disease (CF, immotile cilia)
  - immunodeficiency (HIV, leukemia)
  - vasculitis, bronchiolitis obliterans
- recurrent aspiration, same lung region
  - seizures
  - ethanol/drug use
  - GERD, dysphagia, achalasia

- hypotension, tachycardia, poor skin turgor, lethargy, confusion: hypovolemic hypernatremia
- IV normal saline (0.9%) is preferred for symptomatic **hypovolemic hypernatremia** until euvolemic, then 5% dextrose
- serum Na+ should be corrected by 0.5 mEq/dL/hr, as cerebral edema can result if too rapid
- high serum & low urine osmolality due to inadequate ADH response is most likely due to lithium-induced nephrogenic DI
- Lithium induces ADH resistance, resulting in acute-onset nocturia, polyuria, & polydipsia
- Rx: discontinue lithium; or salt restriction & diuretics (amiloride)
- hemodialysis is indicated for serum lithium level > 4 mEq/L or > 2.5 mEq/L + signs of significant toxicity or renal disease

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- secondary effects provoked by nitroglycerin like increased contractility & reflex tachycardia are due to changes in baroreceptor activity in response to decrease BP from venodilation

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- polyarthralgia, tenosynovitis, and painless vesiculopustular skin lesions suggest disseminated gonococcal infection
- lesions can number from 2 - 10 and appear similar to furuncles or pimples
- the person chills may be present
- history of recent unprotected sex with a new partner
- all patients should undergo HIV screening

- petechial rash, fever, headache, nausea\vomiting, stiff, and photophobia: meningococcemia
- fever, arthralgia, sore throat, lymphadenopathy, mucocutaneous lesions, diarrhea, weight loss: acute HIV infection
- migratory arthritis of large joints, erythema marginatum (raised ring-shaped lesions over trunk and extremities), subcutaneous nodules, carditis, Sydenham chorea: acute rheumatic fever
  - an episodes of pharyngitis precedes the onset of ARF by 2 - 4 weeks

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- best method of reducing maternal-fetal transmission of HIV infection: triple HAART therapy for the mother throughout pregnancy
- HAART: dual NRTI + NNRTI or protease inhibitor
- test viral load monthly until undetectable, then every 3 months
- CD4 cell count every 3 months
- avoid amniocentesis until viral load undetectable
- mothers with undetectable viral loads at delivery have < 1% risk for transmission
- intrapartum mother not on HAART: Zidovudine
- intrapartum viral load > 1000 copies/mL: Zidovudine + C-section
- infants: Zidovudine for ≥ 6 wks & serial HIV PCR testing

- blunt abdominal trauma iscommonly caused by MVAs; most common organs injured are the liver and spleen
- free peritoneal fluid should raise suspicion for liver or splenic laceration
- hemodynamically unstable patients with evidence of free intraperitoneal fluid on ultrasound need emergency laparotomy
- splenic lacerations that are hemodynamically stable with no evidence of other intra-abdominal injuries may be managed nonoperatively

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PDA-dependent congenital heart disease

- Ductus arteriosus coarctation of the aorta
- transposition of the great arteries
- hypoplastic left lung syndrome
- total anomalous pulmonary venous connection
- tricuspid atresia

- Normal ductus arteriosus constricts around day 3 of life
- prostaglandin E1 is a vasodilator used to prevent ductus arteriosus closure
- inspired O2 stimulates PDA constriction
- indomethacin is a potent prostaglandin inhibitor, stimulating PDA closure

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- ventricular free wall rupture is a mechanical complication occurring within 5 days to 2 weeks after an acute MI (usually anterior); presents with acute onset chest pain & profound shock, with rapid progression to pulseless electrical activity (PEA) and death
- abrupt LV rupture leads to hemopericardium and eventual cardiac tamponade
- LV free wall rupture should be suspected in patients with PEA after the recent first line no signs of heart failure

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- acute peri-infarct pericarditis can occur within 1 to 3 days after an MI; pericardial friction rub with or without chest pain
  - self-limited, resolves with supportive care
- posted-MI pericarditis occurring weeks to months after an MI: Dressler syndrome
  - improves with NSAIDs

- interventricular septum rupture occurs 3 to 5 days after MI; causes a VSD, not pericardial tamponade
- sudden onset hypotension, CHF, holosystolic murmur heard best at lower left sternal border

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- papillary muscle rupture occurs 3 to 5 days after infarction, causing hypotension secondary to severe acute mitral regurgitation and pulmonary edema will

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- acute massive PE can cause hypotension &syncope, leading to pulseless electrical activity in some cases of

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- ventricular aneurysm occurs as a late complication (weeks to months) of acute STEMI
- scarred or fibrotic myocardial wall resulting from healed transmural MI
- can present as heart failure, refractory angina, ventricular arrhythmias, or systemic arterial embolism due to mural thrombus formation

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- hypotension or shock, JVD, clear lungs, Kussmaul sign: right ventricular infarction
- EKG: inferior MI &/or ST elevation in leads V4R –V6R

Mechanical complications of acute MI				
	Time	Coronary artery involved	Clinical findings	echo
Right ventricular failure	Acute	RCA	Hypotension social lungs Kussmaul sign	Prokinetic RV
Papillary muscle rupture	Acute, 3 to 5 days	RCA	acute, severe pulmonary edema new holosystolic murmur	Severe MR with flail leaflet
Interventricular septum rupture/defect	Acute, 3 to 5 days	LAD apical RCA basal	Shock & chest pain, holosystolic murmur, biventricular failure	left to right shunt
Ventricular free wall rupture	first 5 days to 2 weeks	LAD	Shock and chest pain, JVD, distant heart sounds	Pericardial effusion with tamponade

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- Sarcoidosis diagnosis is based on compatible Hx, CXR: hilar adenopathy with/without reticulonodular infiltrates, & biopsy of noncaseating granulomas; elevated serum ACE also supports the diagnosis
- no definitive diagnostic test
- presents with cough, dyspnea, erythema nodosum, anterior uveitis, acute polyarthritis
- asymptomatics are followed without treatment due to high rate of spontaneous remission
- symptomatic disease Rx: systemic glucocorticoid

- Rx for SLE, malaria prophylaxis, acute malaria, rheumatoid arthritis: hydroxychloroquine
- Rx for inflammatory bowel disease, ankylosing spondylitis, rheumatoid arthritis: infliximab (TNF-alpha blocker)
- Rx for histoplasmosis: itraconazole
  - sarcoidosis & histoplasmosis present with similar symptoms & CXR; biopsy reveals yeast forms in histoplasmosis
- Rx for SLE with renal involvement: cyclophosphamide

- sudden onset abdominal pain a/w vaginal bleed, fetal HR abnormalities, & loss of fetal station during active labor: uterine rupture
  - risk factors: pre-existing uterine scar, abdominal trauma
  - prior low transverse c-section: < 1% risk
  - prior vertical c-section: as high as 9%
- HTN & cocaine use: risk for placental abruption
- sinusoidal fetal HR pattern: vasa previa
- fever, tender uterus, foul-smelling lochia, progression to sepsis: endometritis

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- strabismus after age 4 months is abnormal and requires treatment to prevent amblyopia (vision loss from disuse of deviated eye)
- intermittent strabismus can be expected in infants < 4 months due to immaturity of extraocular muscles; reassurance & observation
- esotropia beyond infancy must be treated to prevent amblyopia
- first 5 years of life are critical to development of visual acuity, a time of visual cortex maturity
- the deviated eye can be strengthened by patching the normal eye (occlusion therapy) or blurring the normal eye with cycloplegic drops (penalization)
- new onset strabismus can be a sign of retinoblastoma if accompanied by white reflects
- acute onset strabismus can result from intracranial hemorrhage, brain abscess, or encephalitis; performed brain MRI

- encephalopathy, ocular dysfunction, gait ataxia: Wernicke encephalopathy
- giving IV fluids containing glucose prior to thiamine can precipitate or worsen WE
- thiamine should be given along with or before glucose

- flumazenil: competitive antagonists of GABA/benzodiazepine receptor; Rx benzodiazepine overdose (slurred speech, ataxia, **hypotension**, depressed mental status)
- labetalol: Rx hypertensive encephalopathy (BP ≥ 180/120 mmHg, headache, N/V, confusion)

- acute onset back pain after physical exertion, paravertebral tenderness, absence of radiation, negative straight leg raise test, normal neurological exam: lumbosacral strain
  - Rx: NSAIDs, early mobilization
- acute intense pain, local spinal tenderness: vertebral compression fracture
  - risk factors: postmenopausal or senile osteoporosis, steroid treatment

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Cryptococcal meningoencephalitis

Features	headache, fever, malaise, altered mental status develops over 2 weeks (subacute) more acute & severe in HIV (CD4 <100/ µL
Diagnosis	CSF features… ▪ high opening pressure ▪ low glucose, high protein ▪ WBC < 50/µL (mononuclear predominant) ▪ transparent capsule on India ink ▪ cryptococcal antigen positive ▪ culture on Sabouraud agar
Treatment	Initial: amphotericin B with flucytosine maintenance: fluconazole

- **serial lumbar puncture** may be required to reduce increased ICP
- initiation of retroviral therapy for HIV in the setting of acute infection is not recommended due to risk of immune reconstitution syndrome
- antiretroviral therapy should be deferred at least 2 weeks after completing induction antifungal therapy for cryptococcal meningitis
- itraconazole does not cross the BBB
- sulfadiazine–pyrimethamine: Rx cerebral toxoplasmosis (headache, focal neurologic deficits, &/or seizures); multiple ring-enhancing brain lesions with edema

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- Baker cysts: excessive fluid production by an inflamed synovium accumulates in popliteal busa, results in a tender mass; common with rheumatoid arthritis, osteoarthritis, cartilage tears
- DDx: subcutaneous abscess, lymphedema
- Baker cysts may burst and release contents into the calf, presenting similar to DVT

- prostaglandin-only oral contraceptives are preferred for hormonal contraception for lactating mothers
  - does not affect volume or composition of milk produced, or risk of venous thrombosis a/w combination pills
- lactation alone causes anovulation, thus some degree of contraception due to high prolactin levels which inhibit GnRH release, but not considered a reliable form of birth control

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- Eikenella corrodens: G-negative anaerobe part of normal oral flora
  - infective endocarditis due to E. corrodens is seen in poor dentition, periodontal infection, or manipulative dental procedures
- E. corrodens belongs to the HACEK group
- congential heart lesions (bicuspid aortic valve, PDA, ToF, VSD) predisposes to risk of IE
- ulcerative colon lesions due to colonic neoplasia or inflammatory bowel disease predisposes to IE due to Strep gallolyticus (S. bovis type I)
- S. aureus is the MCC of IE among IVDA
- Enterococci (E. faecalis) commonly cause endocarditis a/s nosocomial UTIs

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- acute pancreatitis can cause ARDS
- mechanical vent.: FiO2 improves oxygenation, PEEP prevents alveolar collapse
- arterial pO2 measures oxygenation, influenced by FiO2 & PEEP
- arterial pCO2 measures ventilation, affected by respiratory rate & tidal volume
- initial ventilator management is **decrease FiO2** to non-toxic values (< 60%); goal = paO2 ≥ 60
- PEEP can be increased to maintain oxygenation
  - decreasing PEEP lowers oxygenation by decreasing availability of alveoli

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Hemodynamic measurements in shock

	Normal	Hypovolemic shock	Cardiogenic shock	Septic shock
RA pressure (preload)	4 mmHg	↓	↑	normal, or ↓
Pulmonary capillary wedge pressure (preload)	9 mmHg	↓	↑	normal, or ↓
Cardiac index (pump function)	2-4 L/min/m^2	↓	↓↓	↑
Systemic vascular resistance (afterload)		↑↑	↑	↓↓
Mixed venous O2 saturation		↓	↓	↑↑

- intravascular volume loss → decreases LV preload → decreased C.O. & systemic BP → increased HR & peripheral vasoconstriction (systemic vascular resistance)
  - pulmonary capillary wedge pressure (PCWP) is a measure of LA pressure & LV end-diastolic pressure, are decreased
- cardiogenic shock leads to decreased C.O. & BP → increased HR & SVR maintains organ perfusion → increased PCWP due to heart failure
- vasodilatory/distributive shock due to sepsis, anaphylaxis, SIRS, or CNS injury → significant decease in SVR & BP, with compensatory HR & C.O. increase
  - O2 saturation increases due to high flow rate & decreased organ perfusion
  - as sepsis progresses → vasoconstriction with rise in SVR & decline of C.O.

- dizziness described as spinning sensation accompanied by nausea: vertigo
- vertigo classification: central or peripheral
  - peripheral vertigo has a shorter interval
  - ear fullness suggests peripheral vertigo
  - CN VIII lesions lead to central vertigo

- vertigo with a sensation of ear fullness suggests **Meniere's disease**, from abnormal accumulation of endolymph in the **inner ear**
  - may cause hearing loss & tinnitus

- gaze abnormalities, limb ataxia, sensory loss, vertigo, Horner's syndrome: **Wallenberg syndrome** (lateral medullary infarct)

- > 2 weeks of persistent, high-volume, non-bloody watery diarrhea after recent travel; no fever, tenesmus or vomiting: **Cryptosporidium** parvum
- travel-associated diarrhea > 2 weeks: parasistic (cryptosporidium cystoisospora, microsporidia, Giardia)
- diarrhea < 1 week: viral or bacterial
  - rotavirus/norovirus: vomiting
  - ETEC/EPEC: contaminated food/water
  - Campylobacter: abd pain, blood diarrhea, "pseudoappendicitis"
  - Samonella: frequent fever
  - Shigella: fever blood diarrhea, abd pain
- Entamoeba histolytica causes amibiasis, resulting in abdominal pain & bloody diarrhea

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- extertional dyspnea, syncope, angina: aortic stenosis
  - systolic ejection murmur radiating to apex & carotid arteries
  - peripheral pulse: pulsus parvus et tardus (rises gradually & delayed peak)
- exaggerated decrease (> 10 mmHg) in systemic arterial BP with inspiration: pulsus paradoxus; suggests cardiac tamponade
- pulmonary edema, a-fib, late diastolic murmur with opening snap: mitral stenosis

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- sudden severe chest pain radiating to back, severe HTN, decrescendo diastolic murmur of aortic regurgitation: acute aortic dissection
  - also weak or absent peripheral pulses, & systolic BP > 20 mmHg between arms
  - heard better at right sternal border
- CXR & EKG to exclude other Dx
- serum creatinine, contrast allergy?
- transesophageal echo (TEE) is preferred over chest CT with contrast in patients with kidney disease or contrast-induced nephropathy
- patients should not receive antiplatelets (ASA, clopidogrel) or anticoagulation without first excluding aortic dissection

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Lithium therapy	
Indications	mania due to bipolar
Contraindication	▪ chronic kidney disease ▪ cardiovascular disease ▪ hyponatremia or diuretic use
Baseline studies	▪ BUN/creatinine, U/A ▪ Ca++ ▪ Thyroid function ▪ EKG if coronary risk factors
Adverse effects	<u>Acute</u> ▪ tremor, ataxia, weakness ▪ polyuria, polydipsia ▪ vomiting, diarrhea, weight gain ▪ cognitive impairment <u>Chronic</u> ▪ nephrogenic DI ▪ thyroid dysfunction ▪ hyperparathyroidism with hypercalcemia

- Lithium has a narrow therapeutic window, thus monitor every 6 – 12 months or 5 – 7 days after dose changes or possible drug interactions (diuretics, NSAIDs, SSRIs, ACE-I, phenytoin, carbamazepine)
- during pregnancy may cause Ebstein's anomaly, polyhydramnios, DI, floppy infant syndrome
- no effect on liver function, lipids, or glucose

- long-acting injectable antipsychotics (depot) are useful for chroni noncompliance, but have previously responded to oral antipsychotics
  - 1st & 2nd generations available as depot
  - given as IM every 2 – 4 wks
- treatment-resistant schizophrenia: clozapine
  - requires routine monitoring: CBC
  - risk of agranulocytosis

- **constrictive pericariditis** is a complication of mediastinal irradiation (from Hodgkin lymphoma) & cause of right heart failure (hepatomegaly, progressive peripheral edema, JVD, ascites)
- can present 10 – 20 yrs after irradiation or anthracycline therapy
- results from scarring & inelastic pericardium
- CXR: pericardial calcifications
- echo confirms Dx: pericardial thickening, abnormal septal motion, bi-atrial enlargement
- Rx: diuretics for temporary relief; pericardiectomy for refractory symptoms

Constrictive pericarditis	
Etiology	idiopathic or viral cardiac surgery radiation therapy **tuberculosis**
Features	fatigue, dyspnea on exertion peripheral edema, ascites JVD, Kussmaul sign hepatojugular reflux pericardial knock (mid-diastolic sound) pulsus paradoxus
Diagnosis	EKG: nonspecific, a-fib, or low voltage QRS complexes **pericardial calcification** & thickening prominent x & y descents

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- spontaneous esophageal rupture after severe retching/vomiting: Boerhaave syndrome
- CXR: left-sided pleural effusion with/without pneumothorax, subcutaneous emphysema, & **widened mediastinum**
- pleural fluid: exudative, low pH, **high amylase** (>2500 IU)
- confirm Dx: CT or contrast esophagography with Gastrografin

	Mallory-Weiss	Boerhaave
Etiology	mucosal tear forceful retching submucosal arterial or	transmural tear forceful retching esophageal air/fluid leakage

	venule plexus bleeding	
Features	vomiting, retching epigastric pain hematemesis	vomiting, retching chest/upper abd pain odynophagia, fever, dyspnea, or septic shock subcutaneous emphysema
Imaging	confirm Dx with EGD	CT or contrast esophagography with Gastrografin CXR: pneumomediastinum & pleural effusion pleural fluid: exudative, low pH, high amylase
Treatment	self-limited endoscopic therapy as needed	conservative: cervical perforations surgery: thoracic perforations

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- acute pancreatitis can cause unilateral, left-sided pleural effusion with high amylase concentration, but not widened mediastinum
- cocaine use predisposes to aortic dissection with wide mediastinum & unilateral pleural effusion, but not high amylase content
- aspiration pneumonia is common in the right lower lobe & unilateral pleural effusion due to parapneumonic effusion or empyema
  - pleural fluid shows elevated WBCs, protein, & LDH, but not amylase

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- complications following rhinoplasty: dissatisfaction, nasal obstruction, epistaxis
- nasal septum has poor blood supply & regenerating capacity, thus trauma or surgery may result in **septal perforation**
- presents as a **whistling** during respiration due to a **septal hematoma** following **rhinoplasty**

- **allergic rhinitis:** rhinnorhea, nasal pruritis, cough; nasal mucosa is edematous & pale, polyps may be present
- **nasal furunculosis** results from staphylococcal folliculitis due to nose-picking or hair plucking
  - pain, tenderness, erythema in nasal vestibule
  - potentially life-threatinging if spread to cavernous sinus

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- blunt abdominal trauma can cause splenic injury, presenting as delayed onset hypotension, LUQ pain radiating to left shoulder due to diaphragmatic irritation (Kehr sign)
- Dx: abdominal CT with contrast if hemodynamically stable
- hemodynamic instability despite IV fluids requires laparotomy

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- hypotension, tachycardia, distended neck veins, electrical alternans: cardiac tamponade

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- stress fractures are common in the anterior middle third of the tibia in jumping sports & posteromedial distal third of the tibia in runners
- XR is typically normal initially
- Dx with MRI or bone scan

- cephalohematoma: subperiosteal hemorrhage limited to one cranial bone, presents several hours after birth; resorbs spontaneously
- Caput succedaneum: diffuse, ecchymotic swelling of the scalp that crosses suture lines

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- infant with failure to thrive, B/L cataracts, jaundice, hypoglycemia: glactosemia
- glactose-1-phosphate uridyl transferase deficiency
- also vomiting, hepatomegaly, convulsions
- increased risk for E.coli neonatal sepsis
- early Dx & Rx: eliminating galactose from diet
- complications: cirrhosis, mental retardation

- galactokinase deficiency: cataracts only

- solitary, painful, lytic long bone lesion with overlying tender swelling & hypercalcemia in a child: Langerhans histiocytosis
- locally destructive, but resolves spontaneously
- benign, Rx conservative

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