1. **Cause of Pneumococcus infection in HbSS:** autosplenectomy or functional asplenia
2. **Vessels in esophageal varices:** left gastric and azygous veins
3. **Congenital adhesion molecule (integrins) defect: failure of the umbilical cord to separate at birth;** no adhesion of neutrophils to the endothelial cells, no inflammatory cells in the umbilical stump
4. **Mechanism of spread of *Cryptococcus neoformans*:** hematogenous route; most common cause of meningitis in AIDS and other immunocompromised states
5. **Diagnosis of rotavirus infection:** Rotazyme test of stool; ELISA test with antibodies against the virus
6. **Normal times for gynecomastia:** newborn, puberty, old age; NOTE: it may be unilateral (picture of a young boy with unilateral breast enlargement)
7. **Treatment of astrocytoma:** radiation
8. **Absence seizures:** abrupt onset of impaired consciousness (stare into space); **3-Hz spike** and wave activity on EEG, ethosuximide treatment of choice
9. **Achalasia:** absent myenteric ganglion (Hirschsprung: both submucosal [Meissner's] and myenteric plexus [Auerbach's] are missing)
10. **Aortic aneurysm:** hoarseness from stretching of the left recurrent laryngeal nerve
11. **Sjogren's syndrome:** dry mouth and eyes due to destruction of the minor salivary glands and lacrimal glands
12. **Mitochondrial DNA disorder:** mother gives the disease to all of her children; affected males do not give the disease to their children, since the mitochondria are lost in the tail of the sperm after fertilization.
13. **FSH and LH are increased with removal of the ovaries or testes**
14. **Diabetes insipidus:** hypernatremia, very dilute urine, thirsty, polyuria (absence of concentration), CDI corrected with vasopressin, NDI not corrected with vasopressin
15. **Adult polycystic kidney disease (APKD):** relation to CNS berry aneurysms and subarachnoid hemorrhage
16. **MCC of rabies in USA:** skunk bites (not bats, dogs, or raccoons)
17. **Treatment of pseudomembranous colitis:** metronidazole (cheaper than oral vancomycin)
18. **Treatment of CMV retinitis in AIDS if ganciclovir does not work:** foscarnet (renal toxicity)
19. **Primary treatment of CMV retinitis:** ganciclovir; retinitis most common cause of blindness in AIDS
20. **ERA and PRA positive breast cancer:** use tamoxifen, an anti-estrogen, protects against CAD and osteoporosis, can produce endometrial cancer
21. **Next step if there is a positive RPR in a patient with SLE:** do an FTA-ABS to rule out a true from a false positive RPR, the latter due to anti-cardiolipin antibodies.
22. **Progressive systemic sclerosis:** replacement of smooth muscle with normal collagen and increased subcutaneous deposition of collagen; Raynaud's first sign; sclerodactyly; tight face; dysphagia for solids (no peristalsis, relaxed LES); restrictive lung disease; renal disease; anti-Scl-70 antibodies; CREST syndrome a variant
23. **SLE:** Libman Sachs endocarditis; immunocomplex glomerulonephritis (anti-dsDNA); fibrinous pericarditis; pleural and pericardial effusions; false positive syphilis serology; autoimmune hemolytic anemia, neutropenia, and thrombocytopenia; butterfly rash; joint pains with morning stiffness; anti-Sm and anti-dsDNA; ANA positive in most cases
24. **Effect of metyrapone:** blocks adrenal cortex 11-hydroxylase, hence decreasing cortisol, increasing ACTH, and increasing 11-deoxycortisol proximal to the block; excellent check of ACTH reserve and adrenal function
25. **B_{12} metabolism and deficiency:** thoroughly review B_{12} and folate metabolism in the hematology and nutrition notes, know role of B_{12} in propionate metabolism and formation of SAM from methionine (ATP + methionine), methylmalonic acid increases in B_{12} deficiency (not folate), homocysteine increases in both B_{12} and folate deficiency (most common cause)
26. **Hypercalcemia and multiple myeloma:** secretion of osteoclast activating factor from myeloma cells
27. **Obstructive jaundice:** fat soluble vitamin deficiencies from reduction in bile salts leading to malabsorption; bile contains cholesterol and bile salts/acids
28. **Effects of methotrexate:** megaloblastic anemia from block in dihydrofolate reductase, myelosuppression
29. **Drug-induced SLE:** procainamide is the most common drug; no renal disease; anti-histone and anti-ssDNA rather than anti-dsDNA and anti-Sm antibodies
30. **Heberden's nodes:** osteophytes in DIP joints in osteoarthritis
31. **Amebiasis:** flask shaped ulcers in the cecum
32. **AMI complications:** rupture most common on the 3rd to 7th day; Dressler's syndrome: autoimmune pericarditis 6-8 weeks later

33. **Goodpasture's syndrome:** anti-pulmonary and glomerular capillary basement membrane antibodies; begins with hemoptysis and ends with renal failure (crescentic glomerulonephritis); linear immunofluorescence
34. **Amyloidosis:** review table in lymph node notes
35. **HBV questions:** review hepatobiliary notes
36. **Sepsis in AIDS patients:** disseminated MAI most common and most common cause of death
37. **Most common cause of post-transfusion hepatitis:** HCV (CMV is the most common infection post-transfusion; located in donor lymphocytes)
38. **Most common cause of septic arthritis:** *N. gonorrhoeae*; knee, wrists, feet
39. **Rusty colored sputum:** *Streptococcus pneumoniae* pneumonia (other causes: chronic congestive heart failure, mitral stenosis, Goodpasture's).
40. **Problems in cystic fibrosis patients associated with *P. aeruginosa*:** pneumonia, bronchiectasis, sepsis
41. **Tetralogy of Fallot:** most common cyanotic CHD; degree of infravalvular pulmonary stenosis is the key to whether the patient has cyanosis or is acyanotic
42. **Baby with icterus and edema:** which virus: probably congenital CMV infection
43. **EM of hepatocyte:** glycogen present in fed state (black granules) and disappears after 6 hours (fasting state)
44. **Abdominal abscess:** most commonly due to *Bacteroides fragilis* (*B. fragilis* below the diaphragm; *B. melanogenicus* above the diaphragm)
45. **Tuberous sclerosis:** AD; mental retardation; astrocyte hamartomas in CNS (candlestick drippings on ventricles); adenoma sebaceum; angiomyolipoma (hamartoma) of kidneys; rhabdomyoma of heart
46. ***Staphylococcus aureus*:** protein A attaches to Fc receptor of macrophages, hence blocking opsonization of bacteria
47. **Acute intermittent porphyria (AIP):** AD; two basic defects: an increased activity of ALA synthase when heme is decreased (drug metabolism in liver) and decreased activity of uroporphyrinogen synthase; net effect: increase in δ-aminolevulinic acid (ALA), porphobilinogen (PBG; when oxidized by light, it becomes porphobilin, which gives port wine color to urine; "window sill" test); intermittent exacerbations of neurologic dysfunction including psychosis, neuropathies, severe colicky abdominal pain that is frequently mistaken for a surgical emergency ("bellyful of scars."); periodic infusions of heme reduce the number of attacks.
48. **Porphyria cutanea tarda (PCT):** acquired disease; decreased activity of uroporphyrinogen decarboxylase; net result: increased excretion of uroporphyrin I (urine is wine-red color on voiding), slight increase in the formation of coproporphyrins, normal porphobilinogen levels; photosensitive skin lesions in sun-exposed areas, hyperpigmentation, fragile skin, increased amounts of vellus type hair (hypertrichosis)
49. ***Group A streptococcus:*** pharyngitis predisposes mainly to rheumatic fever (less commonly glomerulonephritis), skin infections predispose mainly to glomerulonephritis (less commonly rheumatic fever)
50. **EM findings consistently present in all primary causes of nephrotic syndrome:** fusion of podocytes
51. **Glomerular crescents:** sign of increased severity of glomerulonephritis; most common GN to progress into chronic renal failure
52. **Goodpasture's:** hemoptysis (first) + glomerulonephritis (crescentic GN)
53. **Monosodium urate crystals in synovial fluid:** needle shaped and yellow when parallel to the slow axis of the compensator
54. **2 year old with 94% HbF:** indicates hereditary persistence of Hgb F (variant of β-thalassemia) owing to absent β and δ chain synthesis with a concomitant increase in Hgb F (α and γ chain synthesis); HbA and HbA2 are absent; high HbF prevents clinical symptoms of thalassemia; there is a uniform distribution of HbF in all RBCs, which separates it from other causes of increased HbF, where only select RBCs contain the HbF; it is compatible with life
55. **Mechanism of acute pyelonephritis (upper urinary tract infection) in females:** vesicoureteral reflux
56. **Pneumothorax in a skin diver:** sudden onset of pleuritic chest pain, collapsed lung with elevation of the diaphragm and shift of trachea to the side of the collapse
57. **Reactivation TB:** in apex of lung where the oxygen is greatest; strict aerobe
58. **Shift of mediastinum:** tension pneumothorax where the air enters the pleural cavity but cannot exit, hence the mediastinal structures shift to the opposite side and the diaphragm is depressed on the affected side
59. **Elderly male smoker with painless jaundice, weight loss:** carcinoma of the head of pancreas
60. **Resting tremor:** Parkinson's disease; intention tremor: multiple sclerosis
61. **Lou Gehrig's disease:** same as amyotrophic lateral sclerosis; destruction of upper and lower motor neurons; defective superoxide dismutase; neuron damage by superoxide free radicals; intrinsic muscles of the hand a common starting point
62. **Superficial dermatophytes:** located in the stratum corneum
63. **Hyperplasia of JG apparatus with increased blood pressure:** renal artery stenosis
64. **Exostosis:** gross of an exostosis from a child (most common benign bone tumor; capped by benign cartilaginous tissue)
65. **Cause of gallstones:** picture of GB with stones; too much CH or too little bile salts/acids
66. **PGI_2 functions:** vasodilator, decrease platelet aggregation
67. **Signs and symptoms of anemias:** B_{12}/folate, exercise intolerance, dyspnea, high output failure; see tables in hematology notes
68. **Picture of black spot on leg:** ecthyma (pyoderma) gangrenosum, due to Pseudomonas aeruginosa; forms black ulcers; relationship with ulcerative colitis

68. **Fever in malaria:** coincides with rupture of RBCs
70. **Primaquine:** often precipitates hemolysis in G6PD deficiency
71. **Condom:** best protection against syphilis
72. **Signs and symptoms of meningitis/organisms by age:** nuchal rigidity, fever; causes in different age brackets (*group B streptococcus* in NB (<1 mth; *E. coli* #2, *L. monocytogenes* #3), *N. meningitidis* (1 mth to 18 years; *S. pneumoniae* #2), > 18 years old: *S. pneumoniae* (*N. meningitidis* #2).
73. **Osteomyelitis in HbSS:** *Staphylococcus aureus* most common; *Salmonella*, if producing osteomyelitis, is most commonly seen in patients with sickle cell disease.
74. **Most common CHD in Downs:** endocardial cushion defect (ASD + VSD); most common cause of death in early age; Alzheimer's most common cause of death after 35
75. **Adult polycystic kidney disease:** AD disease; berry aneurysm relationship and subarachnoid hemorrhage; cysts not present at birth; hypertension
76. **Ankylosing spondylitis:** HLA B27 positive relationship; young man with low back pain (sacroiliitis) progressing to bamboo spine; aortitis and uveitis as well; other relationships--Reiter's syndrome, psoriasis, enterocolitis (Campylobacter, Yersinia, Shigella), ulcerative colitis
77. **Most common cause of esophageal cancer:** smoking (alcohol has a synergistic action)
78. **Philadelphia chromosome:** chromosome 22 with the bcr:abl fusion gene in chronic myelogenous leukemia
79. **Cause of familial hypercholesterolemia:** AD disease with absent LDL receptor
80. **Defect in β-chain in sickle cell trait/disease:** valine for glutamic acid on 6th position of β-chain
81. **Osteogenic sarcoma:** gross of tumor in knee area; located in the metaphysis
82. **Inflammatory bowel disease:**

Characteristic	Ulcerative Colitis	Crohn's Disease
Extent of disease	**Mucosal and submucosal**	**Transmural**
Location	**Primarily targets the rectum** (confined to the rectum in 50%) but can involve the left colon in continuous fashion (no skip lesions) or the entire colon. Anal involvement <20%. Does not involve other areas of the GI tract.	**Terminal ileum alone (30%), ileum and colon (50%), colon alone (20%). Anal involvement 75%** (fissures, fistulas, abscesses). Rectum less commonly involved than in UC. Involves other areas of the GI tract (mouth to anus).
Gross features	**Inflammatory polyps** (pseudopolyps; areas of residual mucosa) 20%. Friable, red mucosa that bleeds easily when touched. Ulceration and hemorrhage. Colon shortened and mucosa flat in quiescent chronic disease. **No skip areas.**	**Fat creeping around the serosa.** Thick bowel wall and narrow lumen in areas of involvement. **Skip areas** (important feature). **Strictures, fistulas** (very diagnostic) in areas other than the anus. **Deep linear ulcers, cobblestone pattern, aphthoid ulcers** (small mucosal ulcers; origin of linear ulcers; early sign).
Microscopic features	Active disease: mucosal inflammation with **crypt abscesses** (neutrophils). Crypt atrophy and branching. Dysplasia/cancer may be present. Chronic disease: neutrophils replaced by lymphocytes/plasma cells. **Dysplasia/cancer may be present.** Crypt atrophy. Lymphoid hyperplasia in rectum.	**Very diagnostic features: noncaseating granulomas (60%), transmural inflammation with subserosal lymphocytic infiltration. Other findings:** aphthoid ulcers overlying lymphoid follicles; thickened bowel wall.
Complications	**More common than CD: toxic megacolon** (hypotonic and distended >6 cm with gas; perforation risk), **sclerosing pericholangitis, HLA B27+ankylosing spondylitis/uveitis, pyoderma (ecthyma) gangrenosum** (*P. aeruginosa*), **colon adenocarcinoma** (~10%; greatest risk: pancolitis, early onset of UC and increased duration of disease >10 years).	**More common than UC: fistula formation, obstruction, disease in other areas of GI tract, calcium oxalate renal stones.** Less risk for other findings listed for UC.
Clinical	**Left sided abdominal cramping** (not obstruction), **diarrhea with blood and mucus, rectal bleeding and urgency, tenesmus** (ineffectual and painful straining at stool).	**Right lower quadrant colicky pain with diarrhea and bleeding** (colon involvement).
Radiograph	**Lead pipe appearance** in chronic, quiescent disease.	**"String" sign in the terminal ileum** from luminal narrowing by inflammation.

83. **Cause of thrombosis after angioplasty:** localized dissection (not thrombosis)
84. **Mitral valve prolapse:** earliest valvular lesion in Marfans; may be a cause of sudden death; increased myxomatous connective tissue in the valve due to an increase in mucopolysaccharides; click and murmur move closer to S1 with anxiety (shorter diastole) and closer to S2 when lying down (more venous return to the heart); see cardiovascular notes and section on physical diagnosis
85. **Congestive cardiomyopathy:** previous myocarditis (coxsackie most common cause), drugs (doxorubicin, tricyclics), postpartum, alcohol
86. **Gross of the tricuspid valve in the right heart:** infective endocarditis in an intravenous drug abuser
87. **Aschoff body:** pathognomonic lesion of rheumatic fever
88. ***H. pylori*:** urease producer, gram negative coccobacillus
89. **Treatment for recurrent ulcers**: vagotomy

90. **Cave explorer in Arizona with respiratory infection:** coccidioidomycosis (not histoplasmosis; too dry a climate and mainly in Ohio and Midwest)
91. **Know the renin-angiotensin-aldosterone system:** see fluid and hemodynamic notes
92. **Gross picture of a hydatidiform mole**
93. **Postductal coarctation:** unequal pulses between upper and lower extremity; rib notching; systolic murmur between the shoulder blades; Turner's syndrome has a preductal not postductal coarctation
94. **Treatment of DKA:** volume replacement first
95. **Galactorrhea in 3 month old girl:** probable influence of maternal hormones
96. **Child with scrotal enlargement and transilluminates:** hydrocele due to persistence of the tunica vaginalis
97. **Indirect inguinal hernia:** most common type; lateral to the lateral border of the triangle of Hesselbach (lateral border superficial epigastric artery, inferior border inguinal ligament, medial border the lateral aspect of the rectus abdominis muscles)
98. **Intravenous drug abuser in prison--?type of hepatitis:** HBV
99. **Alcohol metabolism:** review in cell injury notes, liver notes, or Champe-Harvey biochemistry
100. **AIDS patient with acute cholecystitis:** Cryptosporidium and CMV are the most common causes (CMV was not listed on the last exam)
101. **Traveler to Mexico who 1 week later develops a watery diarrhea with mucus and blood and colicky bowel movements:** amebiasis
102. **County jail with outbreak of hepatitis:** HAV most likely; if IVDA: then HBV most likely
103. **Familial polyposis:** mother has, what percent chance for kids with the disease: 50%, since it is an AD disease; those that have gene will get cancer; screen with flexible sigmoidoscopy in those affected beginning age 10-12 every 1-2 years; genetic testing to confirm and to test first degree family members
104. **Most common cause of pneumonia in cystic fibrosis:** *P. aeruginosa*
105. **TE fistula:** polyhydramnios in mother; proximal esophagus ends blindly and distal esophagus arises from the trachea (air in the stomach)
106. **Lung findings in RDS:** atelectasis (massive intrapulmonary shunting due to lack of surfactant); hyaline membranes composed of protein
107. **Photomicrograph of sarcoid with non-caseating granulomas in a black man**
108. **Smoker:** identify the x-ray with emphysema--increased AP diameter, depressed diaphragms
109. **PCP in AIDS patient:** treat with TMP/SMX; most common initial AIDS-defining lesion
110. ***Staphylococcus aureus* food poisoning:** 1-6 hours after eating contaminated food with preformed toxin; self-limited
111. **Meckels diverticulum:** vitelline duct remnant; true diverticulum; most common cause of iron deficiency in a newborn and young child (GI bleed)
112. **O157:H7 serotype of *E. coli*:** hemolytic uremic syndrome; raw hamburger
113. **Malaria:** treat with primaquine and develop acute intravascular hemolysis in G6PD deficiency
114. **Deficiency associated with terminal ileal resection:** B_{12} deficiency; duodenum (iron), jejunum (folate, most of the water reabsorption, most of the sodium reabsorption), ileum (B_{12} reabsorption, bile salt/acid reabsorption)
115. **Vitamin K deficiency:** causes bleeding; newborns lack bacterial colonization for K synthesis, hence the need to inject K at birth
116. **Renal agenesis:** oligohydramnios
117. **People in a room with a space heater have a headache:** CO poisoning, treat with 100% oxygen
118. **X-ray with multiple lytic lesions in the hip in a patient with anemia and hypercalcemia:** multiple myeloma
119. **Girl playing soccer is on tetracycline--distribution of the rash:** contact photodermatitis involving face, neck, forearms, and probably the legs (shorts); asked the same question in the past in a baseball player (legs would not be involved)
120. **CNS reaction in a stroke:** gliosis due to proliferation of astrocytes; not collagen deposition
121. **Dissecting aortic aneurysm:** unequal pulses in the upper extremity--left radial absent
122. **Picture of a diabetics lower leg with pigmented lesions:** probably necrobiosis lipoidica diabeticorum
123. **Compare Wegener's granulomatosis (necrotizing granulomatous vasculitis; c-ANCA antibodies) with Goodpasture's syndrome (anti-basement membrane antibodies):** both involve the lungs and kidneys; WG involves upper airway, GP does not.
124. **Gross of a mass in the kidney in an adult:** most likely a renal adenocarcinoma
125. **Gross of torsion of the testicle:** testicle has a bluish black color
126. **Gross of a colloid cyst in the third ventricle:** round object in third ventricle; cause of hydrocephalus
127. **Breast budding (thelarche):** first step in menarche
128. **Picture of an elderly patients hands with senile purpura:** normal age-dependent finding and not a sign of patient abuse
129. **Polyhydramnios:** TE fistula, anencephaly, duodenal atresia
130. **Cross-section of brainstem in a child--yellowish discoloration:** probably kernicterus from hemolytic disease of the newborn
131. **Esophagitis in AIDS:** Herpes I most common
132. **Hepatitis most commonly chronic:** HCV
133. **URI in a child followed by epistaxis and petechia:** ITP (IgG antibody against platelets; type II hypersensitivity)
134. **Roofer for 25 years and a smoker for 10 years:** greatest risk is for primary lung cancer, not a mesothelioma

135. **Bridge painter in New York City with respiratory infection:** most likely **histoplasmosis (starling dung) or** cryptococcus (pigeons); may ask what to treat the patient with: amphotericin
136. **Rat poison ingestion:** contains warfarin and will cause bleeding; treat with vitamin K
137. **Patient who is going to receive a packed RBC transfusion:** must do an antibody screen
138. **ABO incompatibility:** O mother with A or B baby; may occur in first pregnancy; no increase in severity with future pregnancies; spherocytes in cord blood; positive direct Coombs on cord blood RBCs, mild hemolytic anemia, most common cause of jaundice in first 24 hours, protects against Rh sensitization
139. **Child with rash and skin infiltrate with CD1 positive cells:** histiocytosis X (probably Letterer Siwe disease)
140. **Elderly male with low back pain:** do a rectal exam to rule out prostate cancer before any other test; if they state that the serum alkaline phosphatase is elevated, it is osteoblastic metastasis
141. **Most significant risk factor for child having open neural tube defect:** mother's diet lacks folate prior to pregnancy
142. **Treatment regimen to prevent osteoporosis in a woman who had a previous total hysterectomy and bilateral salpingo-oophorectomy:** exercise + calcium 1000 mg + vitamin D 400 U + estrogen with or without **progesterone**
143. **Treatment regimen to prevent osteoporosis in a 35 year old woman who is still menstruating:** exercise + calcium 1000 mg + vitamin D 400 U (does not need estrogen since she is still menstruating)
144. **Treatment regimen to prevent osteoporosis in a postmenopausal woman who had a previous radical mastectomy that was ERA-PRA positive:** exercise + calcium 1000 mg + vitamin D 400 U **(estrogen contraindicated,** however, can give tamoxifen which is a weak estrogen)
145. **Oocysts that are acid-fast positive in a patient with AIDS:** Cryptosporidium
146. **Elderly man, who lives at home with his wife, develops pneumonia:** *Streptococcus pneumoniae* (most common community acquired typical pneumonia)
147. **Most common benign tumor in the brain of an adult:** meningioma (glioblastoma multiforme is the most common primary malignant tumor)
148. **Most common site to evaluate in a child with hypertension:** kidneys (Wilm's tumor, renal dysplasia), adrenal medulla (neuroblastoma)
149. **AIDS patient diarrhea--?what organisms can be identified with the string test (Enterotest):** Giardia, strongyloides, Cryptosporidium
150. **Elderly man with sudden onset of abdominal pain and bloody diarrhea:** thrombosis/embolism of the superior mesenteric artery with small bowel infarction (common association with heart disease and atrial fibrillation)
151. **Young girl with grape-like masses protruding from the vagina:** embryonal rhabdomyosarcoma **(most common** sarcoma; not related to DES)
152. **Crunching sound is noted in the neck and anterior chest in a patient involved in a head-on collision:** ruptured esophagus (Hamman's sign in the chest due to subcutaneous emphysema from air dissecting into the tissue; other scenarios could be an alcoholic who is retching or a bulimic who is vomiting)
153. **Woman complains of generalized muscle weakness, ptosis of the right eye with no pupillary abnormalities:** myasthenia gravis (autoantibody against acetylcholine receptors; type II hypersensitivity)
154. **Schistocytes in the peripheral blood:** prosthetic heart valve, aortic stenosis (most common), DIC, thrombotic thrombocytopenic purpura, marathon runner
155. **Most frequent cancer in the bone in an adult:** metastatic cancer (breast is the overall most common cause)
156. **Most common location in bone for osteomyelitis:** metaphysis (most vascular part of bone; *S. aureus* most common cause; hematogenous spread)
157. **Most appropriate treatment for an elderly woman with a headache localized to the side of her head accompanied by diffuse muscle aches and pains, and an elevated serum CK and ESR:** corticosteroids (temporal arteritis with polymyalgia)
158. **Athlete presents with jaundice, no previous health problems, no history of liver disease, and no previous transfusions; serum transaminases are slightly elevated and serum alkaline phosphatase is markedly elevated:** patient is taking anabolic steroids (cholestatic jaundice)
159. **Most common primary brain tumor location in children:** cerebellum (cerebellar astrocytoma #1, medulloblastoma #2--First AID for Boards is wrong on this one [has medulloblastoma as #1])
160. **Sturge Weber:** port wine nevus on the face in a trigeminal nerve distribution; ipsilateral AV malformation in the brain
161. **Cancers associated with parasitic disease:** squamous cancer of the bladder: *Schistosoma hematobium* (egg has a nipple at the end), cholangiocarcinoma: *Clonorchis sinensis*
162. **Hepatitis associated with urticaria, fever, arthralgias, and the nephrotic syndrome:** Hepatitis B (serum sickness type of disease with type III immunocomplex mechanism; vasculitis associated with **polyarteritis nodosa)**
163. **Targetoid lesions on the skin:** erythema multiforme (most often associated with Herpes simplex; Mycoplasma is another relationship; others include sulfonamides, NSAIDs, phenytoin; Steven's Johnson syndrome involves the mouth)
164. **Flat, hyperpigmented lesions on the forehead and cheeks of a woman:** most commonly due to oral contraceptives (pregnancy is the next most common; this is called chloasma or melasma)
165. **Axillary freckling in a patient with hypertension:** neurofibromatosis
166. **Most common cause of alopecia:** genetic predetermination (most commonly in males; telogen effluvium is when all the hairs enter the resting phase at once [postpartum, BCPs, high fever, crash diet])

167. **Irregular patches of hair loss in child:** trichotillomania (pulling out of one's own hair, note the relationship to the dominant hand)
168. **Young woman with intermittent bouts of diarrhea and constipation associated with cramping right and left lower quadrant pain:** irritable bowel syndrome; flexible sigmoidoscopy is negative; intrinsic bowel motility problem
169. **Immunizations given at birth to a baby whose mother is positive for HBsAg:** Hep B (active immunization) and HBIG (passive immunization)
170. **Farmer and his wife are brought to the ER by their son because they are too weak to walk or drive and their vision is blurry and exam reveals ptosis, facial weakness, nonreactive dilated pupils, dry mucous membranes, and normal DTRs—? diagnosis:** *C. botulinum* food poisoning (the toxin inhibits the release of acetylcholine at the neuromuscular junction; Rx with botulism antitoxin; danger of respiratory paralysis)
171. **Diabetic with wet gangrene of the foot followed by stiffening of the jaw, neck stiffness, and increased irritability and increased hyperreflexia—? diagnosis:** tetanus (Rx: tetanus immune globulin, penicillin, sedation; give full immunization with toxoid when the patient recovers since the infection does not produce high enough titers of protective antibodies)
172. **Patient has hyperpigmented spots on the skin which when scratched become intensely pruritic and red; the cells most likely responsible for this reaction are:** mast cells (the patient has urticaria pigmentosa, which is a mast cell disease where pressure causes the release of histamine setting up an urticarial reaction)
173. **Young man develops extreme fatigue, muscle cramps after exercising, and a pink colored urine after exercising; lactic acid levels do not increase after exercise—? diagnosis:** McArdle's disease with absent muscle phosphorylase (phosphorylase is required to break glycogen down into glucose, hence the muscle has no energy. Lactic acid does not accumulate if glucose is not metabolized).
174. **Patient with dysphagia and a fetid odor to his breath:** Zenker's diverticulum (most common diverticulum in the esophagus; collects food)
175. **Young man with low back pain and limited chest movement:** ankylosing spondylitis (vertebral fusion produces kyphosis, which restricts chest movement)
176. **Drug of abuse that produces reddening of the conjunctiva:** marijuana
177. **Mechanism of action of UV light in the treatment of newborns with physiologic jaundice:** oxidizing UCB into harmless water soluble dipyrroles
178. **Differentiate all the thyroid disorders:**

Disorder	Total Serum T_4	RTU	FT_4-I	TSH	I 131
Grave's Disease	Increased	Increased	Increased	Suppressed	Increased
Factitious Thyrotoxicosis	Increased	Increased	Increased	Suppressed	Decreased
Thyroiditis (acute, subacute)	Increased	Increased	Increased	Suppressed	Decreased
Primary Hypothyroidism (Hashimoto)	Decreased	Decreased	Decreased	Increased	Decreased
Secondary Hypothyroidism (hypopituitarism/hypothalamic)	Decreased	Decreased	Decreased	Decreased	Decreased
Increased TBG (increased estrogen)	Increased	Decreased	Normal	Normal	Normal
Decreased TBG (increased androgens)	Decreased	Increased	Normal	Normal	Normal

RTU = resin T_3 uptake, FT_4-I = free T_4 index, TSH = thyroid stimulating hormone, I 131 = radioactive iodine I 131 uptake, TBG = thyroid binding globulin

179. **Separate Addison's disease from secondary hypocortisolism:** main differences are in ACTH levels, and electrolytes; Addison: increased ACTH; severe hyponatremia, hyperkalemia, metabolic acidosis; no response to ACTH stimulation; hypoglycemia; secondary hypocortisolism: decreased ACTH, mild hyponatremia, hypoglycemia, adrenal response to ACTH stimulation
180. **Picture of patient with Cushing's syndrome:** central obesity, purple stria; use low dose dexamethasone test and 24 hour urine for catecholamines
181. **Carcinoid syndrome:** metastasis to the liver from a primary in the small intestine; measure 5-HIAA
182. **Male with clusters of vesicles on penis:** HSV II; acyclovir decreases recurrences
183. **Treatment of condyloma venereum:** topical podophyllin
184. **Treatment of syphilis:** penicillin
185. **Treatment of gonorrhea:** ceftriaxone (for GC) + doxycycline (for Chlamydia)
186. **Treatment of bacterial vaginosis:** metronidazole (not the partner); clue cells, Gardnerella vaginalis
187. **Treatment of trichomoniasis:** metronidazole (treat partner); Trichomonas is an anaerobe
188. **Treatment of pseudomembranous colitis:** metronidazole
189. **Cause of Graves disease:** stimulating thyroid stimulating antibody against the TSH receptor (type II hypersensitivity)

190. **Microcytic anemia with increased HbA_2 and HbF:** β-thalassemia

	Iron deficiency	ACD	α, β-Thal minor	Sideroblastic
MCV	Low	Low	Low	Low
Serum iron	Low	Low	Normal	High
TIBC	High	Low	Normal	Low
% Saturation	Low	Low	Normal	High
Serum ferritin	Low	High	Normal	High
RDW	High	Normal	Normal	Normal
RBC count	Low	Low	High	Low
RBCFEP	High	High	Normal	High (Pb poison)
Hb electrophor.	Normal	Normal β-thal: ↑Hb A_2 and F	α-thal: normal	Normal
Marrow iron	Absent	Increased	Normal	Increased
Miscellaneous	Ferritin best test	Most commonly normocytic	Hb electrophoresis gold standard test	Coarse basophilic stippling in Pb poisoning

FEP = free erythrocyte protoporphyrin

191. **Most common anemia:** iron deficiency (women <50 menorrhagia, man < 50 duodenal ulcer, man/woman >50 colorectal cancer)
192. **Vitamin deficiency with prolonged PT:** vitamin K
193. **Most common fracture in postmenopausal osteoporosis:** vertebral fracture; osteoclastic activity > osteoblastic activity
194. **India ink prep with narrow based bud:** Cryptococcus
195. **Respiratory problem with pigeons:** cryptococcus
196. **Aspergillus:** fungus ball in abandoned TB cavity; hemoptysis, fruiting body
197. **Frontal lobe abscess in a patient with DKA:** mucormycosis
198. **Pseudomonas related infections:** CF pneumonia (green colored sputum), most common cause of death in burns, malignant otitis externa, ecthyma gangrenosum, step on nail with smelly tennis sneakers, hot tub folliculitis, respirator infections (loves water)
199. **Legionella:** water coolers, flu-like syndrome, hyponatremia and hyperkalemia from interstitial nephritis, Dieterle silver stain, erythromycin
200. **Pasteurella multocida:** cat bite; potential for septic arthritis/tendinitis
201. **Disseminated gonococcemia:** decreased C5-C8 (final common pathway complement components)
202. **Know how to interpret MST II restriction endonuclease studies to separate sickle trait from disease:** see hematology notes table in hematology
203. **Treatment for prolactinoma:** bromocriptine; most common pituitary tumor; secondary amenorrhea and galactorrhea
204. **Most common cause of myocarditis, pericarditis, aseptic meningitis:** coxsackievirus; **picture of lymphocytes in myocardial tissue** on an endomyocardial biopsy
205. **High AFP:** open neural tube defects, hepatocellular carcinoma, yolk sac tumors of ovary or testis
206. **Drugs that increase surfactant:** glucocorticoids, thyroxine
207. **ECG changes:** short QT hypercalcemia, prolonged QT hypocalcemia, U wave hypokalemia, peaked T wave hyperkalemia
208. **Most common cause of jaundice in the first 24 hours after birth:** ABO incompatibility; O mother with an A or B baby; O mother **normally** has anti-A,B IgG antibodies
209. **WBC abnormality in the peripheral blood in B_{12}/folate deficiency:** hypersegmented neutrophil (picture on exam)
210. **Tear drops in peripheral blood:** myelofibrosis in the marrow
211. **Coarse basophilic stippling in peripheral blood:** Pb poisoning
212. **PICA for clay and ice:** iron deficiency
213. **Iron studies in iron overload:** increased iron, % saturation, ferritin, but decreased TIBC (transferrin decreased)
214. **MCC of folate deficiency:** alcohol abuse (not beer)
215. **Polycythemia differential:** hematology notes; relative polycythemia (volume depletion): RBC mass normal (RBC count increased) but plasma volume decreased, normal SaO_2, normal erythropoietin; polycythemia rubra vera: increased RBC mass, increased plasma volume (only one), normal SaO_2, low erythropoietin (suppressed by increased oxygen content); tumors secreting erythropoietin: increased RBC mass, normal plasma volume, normal SaO_2, increased erythropoietin; hypoxic stimulus: increased RBC mass, normal plasma volume, low SaO_2, increased erythropoietin
216. **Leukemias by age:** <15 ALL, 15-39 AML, 40-60 AML and CML, > 60 CLL
217. **Hairy cell leukemia:** B cell leukemia, positive TRAP stain
218. **CML:** t9;22 translocation of c-myc oncogene, low LAP score, Philadelphia chromosome
219. **ALL:** CALLA positive pre-B cell leukemia most common
220. **TdT:** marker of very immature B cells and T cells
221. **Congenital spherocytosis:** AD, spectrin deficiency, increased osmotic fragility
222. **Howell Jolly body:** indicates absent or dysfunctional spleen
223. **Heinz bodies:** peroxide damaged Hb in RBCs in G6PD deficiency

224. **Coombs test:** direct detects IgG/C3 on RBC, indirect is an antibody screen of serum (e.g., anti-D); used in autoimmune hemolytic anemias
225. **Ferritin:** best screen for iron deficiency and ACD
226. **Blood Pb:** best screen/confirmation for Pb poisoning
227. **Pb:** deposits in the epiphyses of bone and can be seen in radiographs of the abdomen
228. **CLL:** most common leukemia; most common cause of generalized lymphadenopathy in people over 60; malignant B cells; hypogammaglobulinemia; massive splenomegaly
229. **Lactase (disaccharidase, brush border enzyme) deficiency:** osmotic diarrhea, hydrogen breath test
230. **Secretory diarrhea:** stimulation of cAMP; *E. coli* traveler's diarrhea, cholera
231. **Streptococcus bovis endocarditis/sepsis:** colon cancer
232. **Alcohol enzyme abnormalities:** AST > ALT, increase in GGT (marker of induction of cytochrome system in the liver [SER hyperplasia on EM])
233. **Hypoglycemia in newborn of diabetic mother:** babies insulin is too high since it was necessary to lower the glucose levels in the baby as a response to the mother's hyperglycemia
234. **Differences between type I and II DM:**

Factors	Type I	Type II
Prevalence	5-10%	90-95%
Age	<20 years (80%), mean of 11 years old	>30 years of age
Body Habitus	Usually thin	**80% are obese. Risk factors:** body weight, age, increased waist-hip ratio of fat.
Family History	Family history uncommon (10%). ~50% concordance rate with identical twins.	**Family history is common (multifactorial inheritance).** ~90% concordance rate with identical twins. Increased in native Americans and African Americans.
Pathogenesis	**Insulin lack.** Presence of **HLA-DQ variants, HLA-DR3** and **-DR4** (90-95%), which renders **patients susceptible to β-islet cell destruction by viruses, autoimmune mechanisms,** or environmental factors. **Viral associations include:** coxsackie B virus, mumps, EBV, rubella, rubeola. Autoimmune destruction associated with cytotoxic T cells producing "insulitis". **Environmental factors:** streptozotocin (drug used in treating malignant islet cell tumors), alloxan, **pentamidine, children exposed to cow's milk** (antibodies against bovine albumin crossreact against the islet cells). Pancreas is **devoid of β cells. Islet cell antibodies in 80%.**	**No HLA relationship. Derangement in insulin secretion relative to glucose load.** Relative insulin deficiency with decreased action of insulin in liver and muscle. **Key problem is peripheral tissue insulin resistance** secondary to a **receptor deficiency** (direct relationship with obesity; more fat = less receptors) and **postreceptor defects** so glucose uptake is impaired. Postreceptor abnormalities include tyrosine kinase abnormalities, problems with translocation of GLUT-4 receptors to facilitate glucose absorption. **β cells are fibrosed and often contain amyloid.**
Initial Symptoms	Rapid onset of polydipsia, polyuria, weight loss.	Insidious onset, symptomatic or asymptomatic.
Ketoacidosis	May occur owing to insulin lack	**No ketoacidosis** but susceptible to **hyperosmolar nonketotic coma** (enough insulin to prevent ketosis but not hyperglycemia). Increased anion gap from lactic not ketoacidosis.
Treatment	Insulin	**Diet most important.** Oral glucose lowering agents. Insulin necessary in some cases.

235. **Congenital heart disease and what oxygen saturations would be in each type:** see cardiovascular notes
236. **Nabothian cysts:** blocked endocervical glands with mucous retention
237. **Photograph of retina with papilledema from increased intracranial pressure**
238. **Know PFTs in restrictive versus obstructive lung disease:** see pulmonary notes and Passo notes
239. **Chronic renal failure–why is calcium reabsorption decreased in the bowel:** vitamin D deficiency from loss of 1α-hydroxylase enzyme and no second hydroxylation
240. **Deviation of uvula to the opposite side in a patient with exudative tonsillitis:** peritonsillar abscess
241. **Minimal change disease:** most common cause of nephrotic syndrome in children; loss of negative charge in the GBM
242. **Membranous GN:** most common cause of nephrotic syndrome in adults; subepithelial deposits; epimembranous spikes with silver stains; HBV relationship
243. **Focal segmental glomerulosclerosis:** most common renal disease (nephrotic) in AIDS, renal transplant patients, IV drug abusers
244. **Diabetic nephropathy (picture):** "Christmas balls" in the mesangium and hyaline arteriolosclerosis in the afferent/efferent arterioles; ACE inhibitors prevent
245. **Wire looping in glomerulus:** SLE glomerulonephritis
246. **Type I membranoproliferative GN:** nephrotic; HCV relationship; tram tracking; subendothelial deposits; **type II membranoproliferative:** C3 nephritic factor (autoantibody against C3; very low C3 levels); dense deposits in GBM

247. **Differences between ulcerative colitis and Crohn's disease:**

Characteristic	Ulcerative Colitis	Crohn's Disease
Extent of disease	**Mucosal and submucosal**	**Transmural**
Location	**Primarily targets the rectum** (confined to the rectum in 50%) but can involve the left colon in continuous fashion (no skip lesions) or the entire colon. Anal involvement <20%. Does not involve other areas of the GI tract.	**Terminal ileum alone (30%), ileum and colon (50%), colon alone (20%). Anal involvement 75%** (fissures, fistulas, abscesses). Rectum less commonly involved than in UC. Involves other areas of the GI tract (mouth to anus).
Gross features	**Inflammatory polyps** (pseudopolyps; areas of residual mucosa) 20%. Friable, red mucosa that bleeds easily when touched. Ulceration and hemorrhage. Colon shortened and mucosa flat in quiescent chronic disease. **No skip areas.**	**Fat creeping around the serosa.** Thick bowel wall and narrow lumen in areas of involvement. **Skip areas** (important feature). **Strictures, fistulas** (very diagnostic) in areas other than the anus. **Deep linear ulcers, cobblestone pattern, aphthoid ulcers** (small mucosal ulcers; origin of linear ulcers; early sign).
Microscopic features	Active disease: mucosal inflammation with crypt **abscesses** (neutrophils). Crypt atrophy and branching. Dysplasia/cancer may be present. Chronic disease: neutrophils replaced by lymphocytes/plasma cells. **Dysplasia/cancer may be present.** Crypt atrophy. Lymphoid hyperplasia in rectum.	**Very diagnostic features: noncaseating granulomas (60%), transmural inflammation with subserosal lymphocytic infiltration. Other findings:** aphthoid ulcers overlying lymphoid follicles; thickened bowel wall.
Complications	**More common than CD: toxic megacolon** (hypotonic and distended >6 cm with gas; perforation risk), **sclerosing pericholangitis, HLA B27 + ankylosing spondylitis/ uveitis, pyoderma gangrenosum, colon adenocarcinoma** (~10%; greatest risk: pancolitis, early onset of UC and increased duration of disease >10 years).	**More common than UC: fistula formation, obstruction, disease in other areas of GI tract, calcium oxalate renal stones.** Less risk for other findings listed for UC.
Clinical	**Left sided abdominal cramping** (not obstruction), **diarrhea with blood and mucus, rectal bleeding** and **urgency, tenesmus** (ineffectual and painful straining at stool).	**Right lower quadrant colicky pain with diarrhea and bleeding** (colon involvement).
Radiograph	**Lead pipe appearance** in chronic, quiescent disease.	**"String" sign** in the **terminal ileum** from luminal narrowing by inflammation.

248. **Differences between gastric and duodenal ulcers:**

Characteristics	Gastric Ulcer	Duodenal Ulcer
Percentage of PUD	25%	75%
Epidemiology	Male/Female ratio 1/1	Male/Female ratio 2/1. Family history in some cases (AD pattern).
Pathogenesis	Defective mucosal barrier owing to (1) *H. pylori* (>75% of cases); association with type B chronic atrophic gastritis, (2) mucosal ischemia (reduced prostaglandin), (3) bile reflux, (4) smoking, (5) COPD, (6) alcohol, (7) renal failure. Blood group A relationship. No MEN I or II relationship.	*H. pylori* association >90%. Increased acid production (increased BAO and MAO), increased parietal cell mass, increased response to stimuli, increased nocturnal secretion, rapid gastric emptying). Decreased bicarbonate in mucus barrier (possible *H. pylori* effect). Other risk factors include blood group O, MEN I (associated with Zollinger-Ellison syndrome component), smoking, alcohol, renal failure, cirrhosis.
Location	Single ulcer on the **lesser curvature of the antrum.**	**Single ulcer on the anterior portion of the first part of the duodenum (most common)** followed by single ulcer on posterior portion (danger of perforation into the pancreas).
Malignant potential	Do not transform into cancer, but cancer may be associated with a benign ulcer in 1-3%. **Cannot tell malignancy by the size of an ulcer, hence the importance of biopsy.**	**No malignant potential** for transformation.
Complications	Bleed and/or perforate (both less common than duodenal ulcers).	Bleed, perforate, gastric outlet obstruction, pancreatitis.
Clinical	Burning epigastric pain soon after eating. Pain increases with food (afraid to eat and lose weight), relieved by antacids. Diet is usually milk and fish.	Burning epigastric pain 1-3 hours after eating, frequently relieved by antacids or food (do not lose weight). Pain wakes patient at night.

249. **Know bilirubin metabolism and causes of jaundice (Gilbert's, physiologic jaundice of newborn, Crigler-Najjar, Dubin Johnson, obstructive jaundice, hepatitis):** see hepatobiliary notes
250. **Know all the types of hepatitis:** see HB notes
251. **Photograph of mass in the vulva:** Bartholin gland abscess/cyst; relationship with GC
252. **Tzanck prep:** detect viral etiology of vesicular disease; e.g. Herpes: multinucleated cell with intranuclear inclusions; same for varicella
253. **Picture of pseudohypha and yeast for Candida**

254. **Picture of trichomonas:** pear shaped with flagella
255. **Picture of Giardia:** "owl eyes" with flagella
256. **Picture of celiac disease:** no villi present; anti-gliadin antibodies
257. **Picture of Whipple's disease:** foamy macrophages in the lamina propria; infectious disease
258. **Lyme disease:** erythema chronicum migrans; Ixodes tick; Borrelia burgdorferi; Bell's palsy; arthritis; doxycycline early; ceftriaxone late
259. **Role of dietary fiber in decreasing colon cancer:** decreased transit time of stool; lithocholic acid has less chance of producing a mutation
260. **Werdnig Hoffmann's disease:** childhood version of ALS
261. **Bisphosphonates:** treatment of osteoporosis; decreases osteoclastic activity; treatment of choice for Paget's disease of bone
262. **Calcitonin:** marker for medullary carcinoma of thyroid; inhibits osteoclast activity
263. **Orbital cellulitis vs cavernous sinus thrombosis:** both have proptosis of the eye and poor eye movements; cavernous sinus thrombosis has papilledema
264. **Most common benign tumor of brain in adults:** meningioma (GBM most common malignant tumor): decreasing frequency: GBM, meningioma, acoustic neuroma (neurofibromatosis relationship)
265. **Toxoplasmosis:** most common space occupying lesion in AIDS
266. **Disseminated MAI:** most common cause of death in AIDS, not wasting syndrome
267. **Asymptomatic African American with hematuria:** do sickle cell screen to rule out sickle cell trait
268. **Osteomyelitis in HbSS:** *Staphylococcus aureus* still more common than Salmonella
269. **Photomicrograph of acoustic neuroma (schwannoma, neurilemmoma; tinnitus, nerve deafness, sensory changes in the face from trigeminal involvement):** zebra tumor with alternating dark and light bands; neurofibromatosis relationship
270. **Picture of ECG with first degree block:** prolonged PR interval
271. **Picture of platelet in the peripheral blood:** small red structure that may cause pallor of an RBC when it is sitting on its surface
272. **Picture of an Auer rod in a myeloblast:** only in acute myelogenous leukemia (not chronic, not lymphocytic, not monocytic)
273. **Weight lifter with weakness in the hand, numbness, and absent pulse:** thoracic outlet syndrome (scalenus anticus muscle spasm compresses the subclavian artery and brachial plexus)
274. **Picture of abdominal aortic aneurysm:** atherosclerosis is the most common cause, not hypertension; rupture most common complication (left flank pain, hypotension, pulsatile mass), ultrasound gold standard
275. **Picture of a child with blue sclera:** osteogenesis imperfecta (brittle bone disease) due to a defect in synthesis of type I collagen
276. **X-ray showing osteopenia, normal alkaline phosphatase (rules out osteomalacia), normal serum protein electrophoresis (rules out multiple myeloma), normal serum calcium (rules out osteomalacia and multiple myeloma):** compatible with osteoporosis (all lab values are normal)
277. **Wilm's tumor:** relationship with chromosome 11; also, aniridia, hypertension
278. **Arrhythmias most common complication of an AMI:** usually ventricular
279. **Burkitt's lymphoma:** most common lymphoma in children, located in abdominal cavity (not the jaw as in the African variant), B cell malignancy, high grade, EBV relationship, t8;14 translocation of c-myc oncogene
280. **Chest x-ray with right middle lobe pneumonia (obscures right margin of the heart):** probably related to obstruction by a bronchogenic carcinoma; could also be aspiration with the patient lying down on the right side
281. **Adrenal gland hyperplasia with:** adrenogenital syndrome (low cortisol increases ACTH), pituitary Cushing's (increase in ACTH), ectopic Cushing's (small cell carcinoma; increased ACTH); atrophy of the gland in adrenal Cushing's (increased cortisol suppresses ACTH)
282. **Pancoast tumor:** squamous cancer at lung apex involving brachial plexus and superior cervical ganglion (Horner's syndrome)
283. **Tricuspid insufficiency in infective endocarditis:** pansystolic murmur that increases with inspiration (all right sided murmurs do from increase filling of the right heart as intrathoracic negative pressure increases), giant c-v jugular venous pulse wave, pulsatile liver
284. **Rheumatic fever:** crossreactivity (mimicry) of antigens in M proteins similar to those to the patients heart; polyarthritis most common sign; others--carditis, subcutaneous nodules, erythema marginatum, chorea (all make up Jone's criteria); blood culture negative (not a septicemia)
285. **Anterior chest pain, widening of the aortic root on echocardiogram, death in 3 days by tamponade:** proximal dissecting aortic aneurysm; aortic insufficiency murmur and unequal pulses can also occur
286. **Chest x-ray of CHF--? what would lungs look like:** hemosiderin laden macrophages
287. **Rheumatoid factor:** IgM antibody against IgG
288. **Pseudogout crystal:** if needle shaped, blue when parallel to the slow axis of the compensator; chunky crystal is always calcium pyrophosphate; association with chondrocalcinosis of the knee in primary hyperparathyroidism
289. **Sterile pyuria (WBCs in the urine) and negative culture (standard culture) after 24 hours:** always think renal TB, could also be Chlamydia trachomatis
290. **Gross photo of a large saddle embolus in a patient on prolonged bed rest**
291. **Child develops a rash while running through bushes:** probable poison ivy, which is a type IV contact dermatitis

292. **Antimicrosomal antibodies:** Hashimoto's thyroiditis and Graves disease; stem of the question should determine which one to pick
293. **Exophthalmos and pretibial myxedema:** unique to Graves disease and no other cause of hyperthyroidism
294. **Hepatocellular carcinoma:** choose HCV if HBV is not listed
295. **Trophozoite of *E. histolytica* phagocytizes RBCs:** diagrams of different types of protozoans accompanied a history of diarrhea with ulcers
296. **Neonatal pneumonia, afebrile, staccato cough, eosinophilia, wheezing:** *C. trachomatis* contracted while passing through the birth canal
297. **ABO typing of mother and father to see if the child is theirs:** remember AB parents cannot have an O child, and O parents cannot have an AB child
298. **Patient with hemolytic anemia post dapsone and aspirin:** G6PD deficiency
299. **Test for infectious mononucleosis:** heterophile antibody
300. **Eisenmenger's syndrome:** when a left to right shunt reverses to a right to left shunt owing to pulmonary hypertension and RVH leading to cyanosis (cyanosis tardive)
301. **Duchenne's muscular dystrophy:** SXR; deficiency of dystrophin (gene deletion); increased serum CK; pseudohypertrophy of calf muscles; Becker's dystrophy is a milder variant (gene mutation rather than deletion)
302. **Juvenile polycystic kidney disease:** AR; bilateral disease; oligohydramnios in mother; cysts in other organs
303. **Cystic fibrosis:** AR disease; defect in chromosome 7 (3 nucleotide deletion which codes for phenylalanine) leading to defective CF transport regulator for chloride ions (decreased Cl reabsorption in sweat glands [basis of sweat test]; increased Na reabsorption and decreased Cl secretion in terminal bronchioles [inspissated mucus]), malabsorption, respiratory infections/failure (most common cause of death; *P. aeruginosa*), secondary biliary cirrhosis, infertility in males, most common cause of bronchiectasis, diabetes mellitus, meconium ileus in newborn
304. **α-Thalassemia:** AR disease; Blacks and Asians; 4 genes control α-chain synthesis; all hemoglobins underproduced (normal Hb electrophoresis in 1 and 2 gene deletions); 3 gene deletions Hb H disease (4 β-chains); 4 gene deletions Hb Bart disease (4 γ-chains; incompatible with life; hydrops fetalis)
305. **Cardiac myxoma:** most common heart tumor; **left** or right atrium; embolize, fever, syncope; benign myxomatous tissue
306. **Cardiac rhabdomyoma:** children; part of tuberous sclerosis complex
307. **Colon cancer risk factors:** age, tubular adenoma >2 cm, familial polyposis (100% penetrance), villous adenoma (villus component increases the cancer risk), low fiber diet; stool guaiac yearly after 50 years old with flexible sigmoidoscopy every 3-5 years
308. **Chronic renal failure:** loss of concentration (first) and dilution, increased BUN/creatinine ratio (maintain 10/1 ratio); waxy and broad casts, normocytic anemia due to loss of erythropoietin, vitamin D deficiency, low calcium with normal to high phosphorous, secondary hyperparathyroidism, renal osteodystrophy: osteoporosis (bone is a buffer for acidosis) and osteomalacia, increased bleeding time (platelet dysfunction), hemorrhagic pericarditis; diabetic nephropathy most common cause
309. **Essential hypertension:** most common type; retention of sodium raises the plasma volume leading to an increase in stroke volume (increased systolic pressure); sodium in smooth muscle cells of peripheral resistance vessels (arterioles) opens up calcium channels, hence increasing vasoconstriction and the diastolic pressure; **Blacks: low** renin hypertension due to increased plasma volume; AMI most common cause of death; control of BP has its greatest effect on reducing incidence of stroke; hyaline arteriolosclerosis small vessel disease; nephrosclerosis is the renal disease; concentric LVH occurs; intracerebral bleeds in the **putamen area (ruptured Charcot-Bouchard aneurysms)**
310. **Hypertension in young woman:** birth control pills increase synthesis of angiotensinogen in liver hypertension
311. **Renovascular hypertension:** most common secondary cause of hypertension; atherosclerosis of renal artery in male, fibromuscular hyperplasia in female; high renin hypertension; uninvolved kidney has suppressed renin levels; bruit in the epigastric area; Captopril markedly increased baseline renin levels
312. **Waterhouse-Friderichsen syndrome:** disseminated meningococcemia with adrenal hemorrhage from DIC; petechial lesions over the body
313. **Hemophilia A:** SXR; prolonged PTT, normal PT; low VIII:C, normal VIII:antigen, normal VIII: VWF; hemarthroses, late rebleeding, mucous membrane bleeding; recombinant factor VIII for severe cases; DDAVP for mild cases
314. **Classical VWD:** AD; prolonged bleeding time, normal PT, prolonged PTT; low VIII:C, low VIII: antigen, low VIII:VWF; most common genetic coagulopathy; DDAVP; cryoprecipitate
315. **Thrombotic thrombocytopenic purpura:** small vessel damage with consumption of platelets due to platelet thrombi (not DIC), microangiopathic hemolytic anemia (RBCs hit platelet plugs; schistocytes), fever, CNS problems, renal failure; treat with plasmapheresis; HUS in children similar except kidney is worst hit while in TTP the brain is worst hit (HUS has O157:H7 *E. coli* relationship as well)
316. **Valvular diseases:** review the tables in the cardiovascular notes
317. **Sudden death in a young athlete:** probable hypertrophic cardiomyopathy
318. **Hypertrophic cardiomyopathy:** aberrant myofibers, conduction disturbances; improve: increase venous return to heart (squatting, lying down), decrease cardiac contractility to increase filling (β-blocker, calcium channel blockers); make worse: Valsalva, cardiac inotropic agents, venodilators

319. **Review chart comparing rheumatoid arthritis with osteoarthritis:**

Characteristic	Osteoarthritis	Rheumatoid Arthritis
Classification	**Group I noninflammatory**	**Group II inflammatory**
Sex/Age	Female dominant. Middle to late decades of life.	Female dominant. All ages.
HLA relationships	Possible HLA A1, B8	**HLA Dr4**
Pathogenesis	**Degenerative**	**Immunologic destruction**
Initial site of involvement	**Articular cartilage**	**Synovial tissue**
Key abnormalities	**Cartilage fibrillation, subchondral bone cysts, osteophytes, secondary synovitis** leading to reduced joint mobility without fusion.	**Inflamed synovial tissue grows over articular cartilage (pannus)** and releases degradative enzymes that degrade bone and cartilage. Reactive fibrosis leads to **fusion (ankylosis)** of the joint and immobility.
Clinical	**Asymmetric involvement of weight bearing joints and small joints of hands (DIP and PIP).** Mild morning stiffness. **Heberden's nodes (DIP)** and **Bouchard's nodes (PIP).** Compression neuropathies in vertebral column disease.	**Symmetric joint involvement.** Involves smaller joints and knee. **Morning stiffness >1 hr. Targets MCP and PIP joints** in hands. Ulnar deviation. **"Swan neck" deformity:** hyperextension of PIP, flexion of DIP joint. **Boutonniere's deformity:** flexion deformity of PIP and extension of DIP joint. **Atlantoaxial joint:** subluxation (potential for vertebrobasilar insufficiency, particularly when the patient looks down). **Baker's cysts** (synovial cyst) in popliteal fossa (confused with popliteal artery aneurysms). **Extraarticular disease:** *RA vasculitis* (fingers, ankles; correlates with high RF titers), *subcutaneous* (rheumatoid) *nodules* (fibrinoid necrosis), *pulmonary disease* (restrictive lung disease), **Caplan's syndrome** (coal worker's pneumoconiosis or silicosis + RA lung disease), *fibrinous pericarditis, hematologic disease* (anemia chronic disease, iron deficiency anemia, autoimmune hemolytic anemia), *reactive (secondary) amyloidosis*, **Sjogren's syndrome** (RA + dry eyes and dry mouth), **Felty's syndrome** (RA + autoimmune neutropenia and splenomegaly), *uveitis, carpal tunnel syndrome.*
Laboratory	**Slight elevation of alkaline phosphatase** from osteophyte formation.	**Positive rheumatoid factor** (RF; IgM antibody against IgG; positive in 70%). High RF titers correlate with increased severity of disease, rheumatoid nodules, greater frequency of systemic complications, vasculitis, poorer prognosis. Normal to increased serum complement (C3). Increased erythrocyte sedimentation rate (ESR). Polyclonal gammopathy. Positive serum ANA (30%).
X-ray	**Narrowing of joint space. Osteophytes.** Dense, sclerotic bone. **Subchondral bone cysts.**	**Narrowing of joint space from destruction of articular cartilage.** Marginal bone erosions. Fusion (ankylosis) of joint.

MCP = metacarpophalangeal joint PIP = proximal interphalangeal joint DIP = distal interphalangeal joint

320. **Communicating hydrocephalus:** CSF communicates with the subarachnoid space; **choroid plexus papilloma** (makes too much CSF), block arachnoid granulations
321. **Non-communicating hydrocephalus (obstructive):** no communication with subarachnoid space; block at aqueduct of Sylvius (most common), blocks in 4th ventricle, blocks at base of the brain (TB meningitis, blood), Dandy Walker syndrome, Arnold Chiari syndrome
322. **AIDS dementia:** most common HIV-related CNS disease; **multinucleated microglial cells (reservoir for the virus)**
323. **Psoriasis:** hyperkeratosis, regular rete ridge hyperplasia, Munros microabscess, superficial dermis next to epithelial surface (Auspitz sign), erythematous plaques with silvery scales, nail pitting, psoriatic arthritis if HLA-B27 positive, elbows and scalp
324. **Read skin notes for quick coverage of main skin diseases**
325. **Bone tumors in order of increasing age:** Ewings ("onion skinning", fever, small cells), osteogenic sarcoma (knee area, "sunburst appearance", "Codman's triangle"), chondrosarcoma (pelvic girdle, knee area, most common malignant cartilage tumor), multiple myeloma (most common primary cancer of bone)
326. **Paget's disease of bone:** male dominant; initial osteoclastic breakdown and then osteoblastic; thick, weak, mosaic bone prone to pathologic fracture; large head; AV fistulas in bone (high output failure), risk for osteogenic sarcoma, elevated alkaline phosphatase; bisphosphonates treatment of choice
327. **Know CNS bleeds: epidural** (top of dura, skull fracture, torn middle meningeal artery), **subdural** (convexities, tear of bridging veins, fluctuating levels of consciousness), atherosclerotic stroke (usually pale infarct, since no reperfusion), **embolic stroke** (hemorrhagic infarct extends to surface of the brain), **intracerebral bleed** (hypertension; rupture of lenticulostriate Charcot-Bouchard aneurysms; hematoma not an infarct; globus pallidus/putamen area most common), **subarachnoid bleed** (ruptured congenital berry aneurysm [junction of communicating branch with anterior cerebral artery, severe occipital headache, blood covers the brain [may turn yellow after a week from breakdown into bilirubin])

328. **Hodgkin's lymphoma:** RS cell is the neoplastic cell; nodular sclerosing most common type (females, lacunar cells, anterior mediastinum involvement); fever, night sweats, weight loss; youngest (lymphocyte predominant, very few RS cells, excellent prognosis); oldest (lymphocyte depletion; many RS cells, poor prognosis); death by second malignancies from alkylating agents (non-HD lymphoma)
329. **Breast cancer risk:** overall, age most common risk; family history (mother, sister only); history of contralateral breast cancer); unopposed estrogen (early menarche, late menopause); history of endometrial cancer
330. **Silicosis;** risk for TB, not cancer; nodules in lung with crystals; foundry worker, sandblaster
331. **Asbestos:** pipefitter in shipyard, roofer; no risk for TB; smoker + asbestos = primary lung cancer; non-smoker + asbestos = mesothelioma; asbestos body (ferruginous body) looks like a dumbbell (fiber covered by iron)
332. **Fibrocystic change:** most common breast mass <50 years (atypical ductal hyperplasia only risk factor for cancer), bloody nipple discharge <50 (benign intraductal papilloma in lactiferous duct), tumor <35 years of age (fibroadenoma); breast mass >50 (infiltrating ductal cancer)
333. **Breast cancer types:** infiltrating ductal (most common), Paget's (nipple involvement by underlying cancer), medullary (bulky tumor with pushing margins), inflammatory carcinoma (peau du orange; plugging of subepidermal lymphatics by tumor, worst prognosis), lobular cancer (most common cancer of terminal lobules; bilaterality), comedocarcinoma (central area of necrosis in ducts resembling a zit)
334. **How to recognize leukemia and leukemia types:** acute vs chronic (bone marrow exam revealing >30% blast cells is acute leukemia, blast count not high in chronic); usual profile: anemia, thrombocytopenia (CML only leukemia that may have thrombocytosis), high WBC count with blast cells (may be a normal count, but blast cells will be present), generalized lymphadenopathy, hepatosplenomegaly, bone pain, fever; use age brackets to pick out most likely choice (see #438); always do a bone marrow to diagnose leukemia; stains: PAS for ALL, specific esterase for AML, LAP score for CML, non-specific esterase for monocytic leukemias, TRAP stain for hairy cell leukemia
335. **Hemangioma on face of a child:** leave it alone
336. **Osteopetrosis:** too much bone; anemia; marble bone disease; pathologic fractures; entrapment of cranial nerves; deafness
337. **Polycystic ovarian syndrome:** obesity, hirsutism, irregular menses, infertility; increased LH stimulates ovary to produce testosterone and 17-ketosteroids (androgens leading to hirsutism); increased adipose aromatizes androgens to estrogens (endometrial hyperplasia/cancer), which inhibit FSH and enhance LH release, hence continuing the cycle of LH stimulation; lack of FSH causes atresia of follicles and large ovaries with subcortical cysts; LH/FSH ratio >3/1; treat with BCP or clomiphene if patient wants to become pregnant
338. **Pituitary Cushings:** no suppression with low dose dexamethasone but can be suppressed with high dose dexamethasone (indicates only partial autonomy); cannot suppress adrenal Cushings or ectopic Cushings;
339. **Anemia since birth, splenomegaly:** probable congenital spherocytosis, do splenectomy
340. **CT with enlarged internal acoustic meatus in a patient with tinnitus, nerve deafness, vertigo:** acoustic neuroma (schwannoma, neurilemoma)
341. **Hemoptysis with foul smelling stools or pneumonia with foul smelling stools (malabsorption) in a child:** cystic fibrosis, do sweat test
342. **Mother states that child has a salty taste when kissed:** cystic fibrosis, do sweat test
343. **Picture of coronary vessel:** atherosclerosis (slit like spaces), dystrophic calcification (blue blotches), fibrofatty plaque (beneath intimal surface)
344. **Picture with acute inflammation:** numerous neutrophils (nucleus looks like squigglies, small capillaries
345. **Picture with chronic inflammation:** numerous round cell nuclei (lymphocytes) and plasma cells (eccentric nucleus with perinuclear clearing)
346. **Picture of healed myocardial infarction:** blotchy fibrosis unlike sheets of pale staining tissue as in a pale infarction
347. **Heart softest and prone to rupture:** 3-10th day; rupture with tamponade (pericardial sac filled with blood), posteromedial papillary muscle rupture (murmur of mitral insufficiency; pansystolic, apical, systolic; RCA thrombosis), interventricular septal rupture (systolic murmur, hole in IVS)
348. **Peripheral blood pictures:** hypersegmented neutrophil (folate/B_{12}) microcytic hypochromic cells (iron deficiency, ACD, thalassemia, sideroblastic anemia), sickle cells, target cells (bullseye), spherocytes (no central area of pallor), macroovalocytes (PA, folate), tear drop (myelofibrosis), Howell Jolly body (spleen surgically removed or dysfunctional spleen as in HbSS disease), platelet (small, red, anucleate cell), lymphocyte (black dot with a thin rim of cytoplasm), Auer rod (myeloblast with immature nucleus and splinter-like structures in the cytoplasm), smudge cells with lymphocytes (CLL; smudge cells are fragile lymphocytes that rupture), hairy cells (projections from cytoplasm; HCl; B cell malignancy), atypical lymphocyte (big cell with abundant sky blue cytoplasm), eosinophil (large red granules that do not cover the nucleus, same color as RBCs), basophil (large purple granules that do cover the nucleus), rouleau (RBCs with stack of coins effect), schistocytes (fragmented RBCs), reticulocyte (special stain; thin filaments representing RNA), Heinz bodies (special stain, large blue inclusions with involvement of the RBC membrane), coarse basophilic stippling (routine stain, looks like measles of the RBC)
349. **Bone marrow pictures:** megaloblastic marrow (all the cells appear big; giant band; B_{12}/folate deficiency), myelofibrosis (marrow is composed of fibrous tissue, large cells represent megakaryocytes), aplastic anemia (empty marrow with predominantly fat, and islands of lymphocytes), multiple myeloma (plasmablasts with bright blue cytoplasm, eccentric nuclei, perinuclear halo), ringed sideroblast (Prussian blue stain, ring of blue around the nucleus of a normoblast; defect in heme synthesis, sideroblastic anemias [alcohol, pyridoxine, Pb poisoning])

350. **Patient with left supraclavicular node:** Virchow's node, associated with metastatic stomach cancer or any cancer arising in the abdominal cavity; right supraclavicular node drains the lung and upper neck
351. **Roth's spot in the retina, splinter hemorrhages, Osler's nodes (painful) on hands/feet, Janeway lesions hand and feet (painless), hematuria with RBC casts:** immunocomplex vasculitis associated with infective endocarditis
352. **X-ray with local dilated bowel:** *sentinel loop* indicating localized infection, near duodenum or transverse colon = acute pancreatitis, cecum = retrocecal appendicitis
353. **X-ray with step-ladder appearance and air/fluid levels:** bowel obstruction
354. **X-ray with collapsed lung and clear space along the margin:** spontaneous pneumothorax
355. **X-ray of baby with loops of bowel in left pleural cavity:** diaphragmatic hernia
356. **Classic urine casts: RBC casts** = nephritic syndrome (post-streptococcal, IgA nephropathy, Goodpasture), **WBC casts** = acute pyelonephritis, renal tubular casts = acute tubular necrosis, **waxy casts** = chronic renal failure, **broad casts** = chronic renal failure, **hyaline casts** (ghost-like casts, non-refractile, smooth borders) = proteinuria or no clinical significance, **fatty casts** with Maltese crosses = nephrotic syndrome (minimal change, membranous GN)
757. **Urine crystals:** calcium oxalate (looks like the back of an envelope or a square with an X drawn in it; think stone, Crohn's disease, ethylene glycol poisoning), cystine (hexagonal crystal, cystinuria)
358. **Staghorn calculus in kidney:** struvite stone, magnesium ammonium phosphate, alkaline urine that smells like ammonia indicating a urease producing urinary pathogen (e.g., Proteus)
359. **Lipid deposits:** Achilles tendon xanthoma = familial hypercholesterolemia (AD; absent LDL receptor), xanthelasma (yellow plaque on eyelid, consider type II hyperlipidemia with increase in LDL), arcus senilis (rim of white around the outer part of the cornea, consider increased LDL if a young patient or normal age-related change if older patient), eruptive xanthomas (yellow papular lesions over the body; increased triglyceride)
360. **Psammoma bodies:** dystrophic calcification of apoptotic neoplastic cells; meningioma, papillary adenocarcinoma of thyroid, serous cystadenocarcinomas of the ovaries
361. **Addison's disease:** autoimmune destruction; hyperpigmentation; hypotensive; hyponatremia, hyperkalemia, normal gap metabolic acidosis from aldosterone lack; hypoglycemia from hypocortisolism (no gluconeogenesis); eosinophilia (no cortisol effect)
362. **Diabetes insipidus:** central DI: hypernatremia (increased Posm) with very low Uosm (no concentration, losing free water from lack of ADH); after water deprivation, Uosm increases >50% with injection of ADH—nephrogenic DI: same as for central, except ADH is present but cannot reabsorb free water in the collecting tubules and Uosm is <50% increased after ADH administration
363. **Pathology of DM:** non-enzymatic glycosylation: HbAIc for long-term glycemic control (4-8 weeks), hyaline arteriolosclerosis (nephropathy, lacunar infarcts in the brain), enhanced large vessel atherosclerosis; osmotic damage due to conversion of glucose to sorbitol by aldolase reductase: cataracts, microaneurysm in the eye, peripheral neuropathy (Schwann cell destroyed)
364. **DM most common cause of:** blindness, chronic renal disease, peripheral neuropathy (most common cause of pressure ulcers on the bottom of the feet), non-traumatic amputation of the lower leg, ketoacidosis, Charcot neuropathic joint, glucosuria
365. **DKA:** read endocrine notes and the discussion on diabetes mellitus
366. **Pheochromocytoma:** benign tumor (brown color) of adrenal medulla; most unilateral, in adrenal medulla, benign; paroxysmal hypertension, headache, drenching sweats; screen: urine VMA, metanephrines (best); associations: neurofibromatosis, MEN IIa and IIb, von Hippel Lindau
367. **Neuroblastoma:** child; malignant tumor in adrenal medulla and paraganglial tissue; hypertension; metastasis to bone, skin, orbit; Homer Wright rosettes; increased urine catecholamines; S100 antigen positive; age <1 best prognosis
368. **ZE syndrome:** malignant islet cell tumor secreting gastrin; ulcers in usual place but can be multiple or in unusual places; increased basal acid output; increased gastrin with IV secretin test; Whipple's procedure if operable; proton blockers can decrease gastrin; rule out other causes of hypergastrinemia (H2 or proton blockers, chronic atrophic gastritis of body and fundus, renal failure, gastric distention)
369. **MEN I (AD inheritance):** pituitary tumor, parathyroid adenoma, ZE syndrome, peptic ulcers
MEN IIa (AD inheritance): parathyroid adenoma, pheochromocytoma, medullary carcinoma of thyroid (calcitonin tumor marker; calcitonin converted into amyloid)
MEN IIb (AD inheritance): mucosal neuromas in lips, pheochromocytoma, medullary carcinoma
370. **Left heart failure:** decreased cardiac output, dyspnea, pulmonary edema (increased pulmonary venous hydrostatic pressure), left ventricular dilatation (volume overload), S3 heart sound, mitral insufficiency murmur (stretching of MV ring), paroxysmal nocturnal dyspnea and/or pillow orthopnea at night (increased venous return at night cannot be handled by the left heart)
371. **Right heart failure:** most commonly cause by LHF, decreased cardiac output, volume overload of right ventricle, S3 heart sound, murmur of tricuspid insufficiency (stretching of TV ring), jugular neck vein distention, congestive hepatomegaly (nutmeg liver, increased LDH5 isoenzyme, RHF most common cause), ascites, dependent pitting edema (kidney reabsorbs slightly more water than salt, but both are increased and are pushed into the interstitial space by the increased venous hydrostatic pressure; restrict water and salt; ACE inhibitor decreases preload and afterload; diuretics decrease preload)
372. **High output failure:** hyperthyroidism, thiamine deficiency, too much isotonic saline, AV fistula, endotoxic shock in early phases, Paget's disease of bone