

MINERAL & BONE METABOLISM

1. _____ is the balance between osteoblasts and osteoclasts.
2. _____% of skeletal minerals are exchanged yearly by adults.
3. Mineral and bone metabolism is reliant on _____, _____, and _____.
4. Where is most calcium found in the body?
5. What are the functions of calcium?
6. A decrease in calcium causes _____ neuromuscular excitability and _____
7. _____ displaces Ca^{++} from pH dependent proteins.
8. What are the two most important functions of phosphorus?
9. _____% of phosphorus is found in the bone.
10. What is the bone pool?
11. Plasma ionized Ca, PO_4 , and Mg facilitate _____.
12. PTH is produced by _____, and are released when _____ is low.
13. PTH functions to increase _____, _____, and _____. Its decreases _____.
14. Calcitriol stimulates the kidneys to _____.
15. Calcitonin stimulates the kidneys to _____.
16. What produces PTH related protein? (PTHrP)
17. What does PTHrP do?
18. What are the two major causes of hypercalcemia?
19. Why can multiple myeloma cause hypercalcemia?
20. What is the most common cause of hypocalcemia? Secondary?
21. The rare hypermagnesemia causes _____, _____, _____, and _____.
22. Hypomagnesemia is associated with what symptoms?
23. Hypomagnesemia is found in alcoholics, so what else would you associate with it?
24. Alkaline phosphatase is an ____ found in the _____ and _____.
25. ALP tends to be elevated in _____ and _____ disease.
26. Bone ALP increase whenever there is increased _____ activity.
27. Osteoporosis is the ____ loss of _____.
28. What is the most useful test to monitor Vitamin D deficiency and Paget's?

RENAL FUNCTION AND URINALYSIS

29. Who makes erythropoietin?
30. A disease that is pre-renal, such as _____, results in _____ & _____.
31. What three things are typically measured to determine renal function?
32. Which kidney assessment is not affected by daily living changes?
33. What is the prime indicator of glomerular filtration/clearance rate?
34. Why is creatine such a good indicator of filtration rate?
35. Uric acid is the product of _____.
36. What can cause hyperuricemia?
37. Describe the lab findings in gout.
38. What are the risk factors for gout?
39. What are the renal complications of gout?
40. What is the typical kidney stone of gout? Why is it so dangerous?
41. Urine is mostly _____ & _____.
42. When is a midstream catch indicated?
43. What are the three stages of a routine urinalysis?



44. What is checked during the physical stage of urinalysis?
45. When is a microscopic exam required?
46. What is the first indication of renal disease? When is this normal?
47. What are the benign causes of proteinuria?
48. What is orthostatic proteinuria?
49. More than _____ grams of protein per day always suggest glomerular problems.
50. Which collagen disease may lead to proteinuria?
51. Trauma, infection, renal stones, and malignancy can all cause _____.
52. The dipstick measures _____, not _____; the microscope does that.
53. What is the difference between hemoglobinuria & hematuria?
54. If the urine is hemoglobin positive, but no RBCs are visible, _____ has occurred.
55. More than ____ of WBCs in the urine is called _____.
56. If WBC casts are seen you should suspect _____.
57. If you are nitrite negative, are you free of infection? Why or why not?
58. What group commonly gets UTIs?
59. An acidic diet may lead to _____ stones.
60. An alkaline diet may lead to _____ stones.
61. Who tends to have ketonuria?
62. What is the renal threshold for releasing glucose into the urine?
63. ASO is for what?

PLASMA PROTEINS

64. Which plasma proteins are not produced in the liver?
65. A negative nitrogen balance would signify what?
66. What can determine the protein families? How many signatures are there?
67. _____ stimulate hepatic synthesis of acute phase reactants.
68. What are acute phase reactants?
69. What transport proteins are not synthesized during acute inflammatory states?
70. What is total protein composed of?
71. What changes total protein?
72. What can cause hyperproteinemia?
73. What can cause hyperalbuminemia?
74. Albumin is a sensitive marker for _____ & _____ integrity.
75. What does the A/G ratio tell us?
76. What is an important protease inhibitor involved in emphysema or infantile hepatitis?
77. _____ transports free hgb.
78. Haptoglobin is used to monitor what? When will it increase? Decrease?
79. What is ceruloplasmin?
80. When does ceruloplasmin decrease? Increase?
81. Transferrin increases in _____, while decreases in _____.
82. What can be used to detect pathologies during pregnancy?
83. CRP is non-specific but is the _____ acute phase reactant, thus its used to monitor _____.
84. Who reacts quicker, CRP or Neutrophils? Which disperses quicker?
85. Immunoglobulins are composed of one _____ and one to three _____.
86. How many antigens is a plasma cell sensitive too? This is known as a _____ immunoglobulin.
87. Who is the memory immunoglobulin? Most abundant in blood?



88. What is the most common immunoglobulin in the body?
89. Who is the rapid response immunoglobulin?
90. What is a monogammopathy?
91. What will lead to hypoproteinemia & hypoalbumemia?
92. In essence, what does A/G ratio tell us?
93. Alpha1-antitrypsin is a _____ inhibitor, preventing tissue breakdown by _____.
94. A lack of alpha1-antitrypsin results commonly in _____.
95. During pregnancy for determining illness, _____ is useful & _____ is not.
96. Immunoglobulin production by multiple clones is known as _____.
97. Polyclonal gammopathies are caused by _____.
98. What can be used to visualize monoclonal gammopathies?
99. What is a benign monoclonal gammopathy? What percentage becomes malignant?
100. MM is a monoclonal malignant proliferation of plasma cells, what clone is elevated in MM?
101. In about a 5th of MM cases, only the _____ chain is produced.
102. In over half of MM cases the _____ protein is seen, which is a _____.
103. Name a IgM monoclonal gammopathy.
104. How does Waldenstrom Macroglobulinemia present?
105. Hypogammaglobulinemia tends to be due to _____, and thus often have recurrent _____.
106. A hypogammaglobulinemia due to increased secretion would likely be in a case of _____.
107. What prevents immune complexes & antigens from circulation removal?
108. Portal hypertension results in what gammopathy?
109. If you viewed an electrophoresis graph that had a wide beta + gamma lump, what is suspected?

HEPATIC BILIARY DISORDERS

110. What breaks down substances into waste for elimination?
111. What happens to coagulation protein levels in end stage liver disease? Clinical symptom?
112. What are synthesized in the liver?
113. What are the names for insoluble bilirubin?
114. What bilirubin is measured typically by serum labs?
115. What are the three phases of bilirubin?
116. Unconjugated bilirubin is bound to _____, and thus _____ be excreted in bile or urine.
117. Does unconjugated bili cross the placenta? BBB?
118. Interference of the enzyme _____ leads to jaundice.
119. When does conjugated bilirubin appear in the urine?
120. What reduces bilirubin in the intestines? What does it become?
121. What is a metabolite of urobilinogen that colors the stool?
122. Most of the body's urobiligen is _____; 20% is _____.
123. What colors urine?
124. What bilirubin is meant when referring to urine?
125. Jaundice bilirubin deposition occurs where?
126. What is a yellowish patch in the eye due to chronic sun exposure?
127. What is a serious cause of silent jaundice?
128. Excess _____ can cause pruritis and scratching.
129. What are the three forms of hyperbilirubinemia?
130. Jaundice is often _____-causal.
131. Pre-hepatic jaundice is predominantly _____ hyperbilirubinemia with a _____ liver.



132. What is the most common cause of pre-hepatic jaundice?
133. What are the laboratory findings of Pre-hepatic jaundice?
134. ____ jaundice is a problem of the hepatocytes resulting in possible trouble with ____, ____, or ____.
135. What can cause decreased uptake, conjugation, and excretion?
136. What can cause decreased uptake, and conjugation?
137. What can cause decreased conjugation?
138. What can cause decreased excretion?
139. Why does direct bilirubin elevates in hepatitis?
140. Urine is often _____ colored in acute hepatitis.
141. Who tends to get Gilbert's syndrome? What type of bilirubin is involved?
142. Crigler-Jajjar syndrome is a _____ disorder that causes _____ hyperbilirubinemia.
143. ____ is the progressive destruction of interlobular bile ducts resulting in _____ and _____.
144. What is the common mechanism of post hepatic jaundice?
145. In post hepatic jaundice, since no ____ gets to the GI tract, no _____ is produced.
146. What are the lab findings of post hepatic jaundice?
147. How does the urine appear in post-hepatic jaundice? Feces?
148. What can indicate bile duct obstruction in the presence of liver disease?
149. What is the most sensitive to chronic liver disease?
150. AST, formally _____, is sensitive to _____ since its made in the _____.
151. ALT was formally known as _____.
152. LDH 1 & 2 is found where? LDH 5?
153. Serum albumin & cholesterol _____ in long-standing liver disease.
154. Hepatitis is considered acute if _____.
155. What are the symptoms of acute viral hepatitis?
156. What are the common physical findings of acute viral hepatitis?
157. What are the lab findings of acute viral hepatitis?
158. What are primarily measured in HAV?
159. Hepatitis A (HAV), aka _____, is transmitted via _____.
160. What is the most common cause of cirrhosis & liver cancer worldwide? Transmission?
161. What are the states of HBV?
162. HBV surface antigen (HBsAg) is elevated when? Antibody levels?
163. How is Hep C transmitted? What is the incubation of hep C? Lab test?
164. The delta agen, Hep D, is a defective _____ that needs _____ to infect.
165. What is the mode of transmission of HEV?

HEPATIC BILIARY DISORDERS PART II

166. Is fatty liver reversible? Cirrhosis?
167. How would a fatty liver & alcoholic liver disease appear on a lab?
168. In what conditions is RUQ pain seen?
169. What are the symptoms of Alcoholic hepatitis?
170. Why is repetitive hepatocellular regeneration bad?
171. ____ grams of alcohol for 10-15 years increases liver disease risk in men. Women?
172. What are the features of portal hypertension?
173. What are the lab findings of cirrhosis?
174. Why does gynecomastia occur in cirrhosis?
175. Ascities is _____ portal hypertension



176. _____ may manifest in late stage Hep B or C?
177. What are the lab findings of hepatic cancer?
178. Most stones are composed of a _____.
179. _____ is a supersaturation of bile in the gall bladder.
180. What is the MC cause of pancreatitis? 2nd most common?
181. Where does cholelithiasis tend to lodge?
182. What is the difference between a gallstone & acute gallstone/biliary attack?
183. What are the symptoms of acute cholelithiasis?
184. What are the lab findings of acute cholelithiasis?
185. Are gallstones painful?
186. Mixed content gallstones often exhibit _____ sign.
187. What is used to usually visualize gallstones?
188. In rare cases acute cholecystitis results from _____. MC cause?
189. Cholecystitis obstruction leads to _____ and _____.
190. Cholecystitis is very dangerous to what type of individual?
191. In acute cholecystitis there is a _____ that the patient may exhibit _____.
192. What is Murphy's sign?
193. What is seen in an acute cholecystitis laboratory?
194. What is a bile duct stone?
195. What is an infection of the common bile duct (CBD)? What syncope suggests this?
196. Where are most CBD stones from? Where else can they form?
197. Charcot's triad consists of _____, _____, and _____.
198. So.... when I say CHOLE-whatever lab findings, you say...
199. What is a precursor to Gall bladder or biliary carcinoma? Describe it.

PANCREAS & GASTROINTESTINAL

200. What is the major cause of peptic ulcer?
201. What stimulates the secretion of HCl and gastric enzymes?
202. How is gastrin formation evaluated?
203. Puked up blood from a deep gastric ulcer is described as _____.
204. What often happens to the fecus with gastric ulcers?
205. What does the Guaiac test measure?
206. What are the pancreatic enzymes?
207. What is the most common pancreatic disease? What is occurring in it?
208. What is the most common cause of acute pancreatitis?
209. What can cause severe midepigastic pain?
210. In acute pancreatitis, what can be seen?
211. What is enzyme is sensitive for acute pancreatitis? Specific?
212. What is discoloration of the flanks and groin in pancreatitis?
213. What is the major tumor marker of pancreatic cancer?
214. Chronic pancreatitis may lead to _____, _____, _____, or _____.
215. Why does malabsorption occur in chronic pancreatis?

ENDOCRINOLOGY

216. What makes calcitonin for calcium regulation?
217. What do follicular cells produce?



218. _____ is oxidized in the thyroid and binds to _____ to make thyroid hormones.
219. T3 and T4 are primarily transported by _____.
220. Give an example of a primary hyperthyroidism? Secondary?
221. What is the most common initial test for thyroid disease?
222. Thyroid hormones exert their effects once they bind and _____.
223. The _____ thyroglobulin in the gland that is elevated in _____ and _____.
224. What test is used to assess the available binding sites on TBG?
225. In the T3U, the amount of T3 removed by resin is _____ related to the binding sites.
226. What do we actually care more about, free thyroxin or TBG bound thyroxin?
227. In pregnancy, the total T3/T4 can make an appearance of ___-thyroid, while T3U can appear ___-thyroid.
228. What would happen to T3U in hyperthyroidism?
229. Increase T3 resin uptake tells us that there is _____ binding sites.
230. If TBG increase _____ increases, while _____ is unaffected.
231. How effective is testing antithyroid antibodies?
232. TSH receptor antibodies can _____ the effector.
233. What are the general lab findings of hyperthyroidism?
234. A thyroid nodule that produces excessive thyroid hormones is a _____.
235. Hyperthyroidism patients are what type of temperature sensitive?
236. _____ is a protrusion of the eyeball due to inflammatory infiltrate.
237. Grave's disease is caused by _____ against _____.
238. Pregnancy increases _____.
239. Lid lag, pretibial myxedema, vitilago, & pseudoclubbing (thyroid acropathy) of the nails are seen in _____.
240. Toxic goiters are the clinical picture of _____.
241. What are the lab findings of primary hypothyroidism?
242. What are the lab findings of secondary hypothyroidism?
243. The onset of hypothyroidism is usually _____.
244. What neuromuscular symptoms of hypothyroidism are of particular importance?
245. What happens to the skin and hair in hypothyroidism?
246. How would the lab appear with primary hypothyroidism?
247. What is Hashimoto's Thyroiditis?
248. What is a reversible autoimmune hypthyroidism?
249. How would the lab appear with secondary hypothyroidism?
250. What drug can cause goiter? Food type? Mineral?
251. _____ goiter is one that lacks iodine.
252. What is the most important test in the differential diagnosis of hypercalcemia?
253. PTH increase serum _____ and decreases serum _____.
254. What is the most common cause of secondary hypocalcemia is _____ or _____.
255. Primary hypoparathyroidism is typically caused by _____.
256. _____ is the resistance of the tissues to the action of PTH.
257. _____ is the endproduct of production and tests for adrenal medullary _____ production.
258. VMA is measured from what sample?
259. What is a pheochromocytoma?
260. What assess adrenal androgen production?
261. What is the important glucocorticosteroid produced in the adrenal cortex?
262. Excessive GH is most commonly caused by a _____.



TUMOR MARKERS

263. What is a tumor marker?
264. Which tumor marker is specific enough to screen for carcinoma in an asymptomatic person?
265. What are general tumor markers effective for?
266. What are the two tumor classifications?
267. CA 125 is seen primarily in _____ and _____ cancer monitoring.
268. CA 19-9 is used primarily for _____ cancer screening.
269. CA 15-3 is used primarily for _____ cancer screening.
270. The _____ antigen, CEA, was the _____ tumor marker.
271. CEA is used primarily for _____ & _____ cancer screening.
272. CEA often increases with what lifestyle choice?
273. _____ is a general oncogenic antigen often elevated in chronic hepatitis.
274. hCG is used to monitor _____ and _____.
275. PSA is a protein found in the _____.

AUTOIMMUNE DISORDERS

276. The presentation of Autoimmune disorders are _____ from person to person
277. What are the common mechanisms of autoimmune disorders?
278. What is the major laboratory screening test in autoimmune disease?
279. ANA is a _____ of antibodies that detect _____.
280. What are the major ANA antigens?
281. What test that is less subjective can be used to assess autoimmune diseases?
282. Auto antibodies are _____ to autoimmune diseases.
283. RF is a _____ autoantibody that reacts with the _____.
284. Autoimmune patients will usually have _____ CBC, _____ ESR, and _____ complement.
285. What organs are impacted the most in SLE?
286. In SLE, 98% of the time they are _____ positive.
287. What test often results in a false positive when a patient has lupus?
288. How does the CBC appear in lupus?
289. _____ is the autoimmune destruction of lacrimal and salivary glands. Does ANA work?
290. What test measures tear production?
291. Scleroderma is characterized by excessive _____ deposition throughout the body.
292. In scleroderma, the ANA will have a _____ appearance.

Don't forget to review old material for this test.

