Chapter 18 Reading guide

1. For each of the conditions discussed in chapter 18, answer the following to the same level of detail as the text:
    a. Define/describe the condition; when covered by the book, explain the physiological changes that occur that cause the symptoms
    b. Describe symptoms
    c. List causes/risk factors, if known
    d. Describe prevention and treatment, if any
    e. Explain prognosis or complications if not treated
    f. Categorize each condition following the textbook's example (ex, neurological disorders include narcolepsy, epilepsy; etc)

2. Categorize each of the diseases/conditions based on:
    a. Exercise is suggested as a prevention and/or treatment
    b. Plentiful intake of fruits and veggies (the book only says "diet," "healthy diet," "balanced diet," etc, but this is specifically the strongest defense) is suggested as a prevention and/or treatment
    c. Overweight/obesity increases risk
    d. There is a known or suspected genetic link (ie, it is hereditary to some degree)
    e. Environmental exposure to toxins (pesticides, pollution etc) is listed as a possible or known risk factor
    f. Smoking is listed as a possible or known risk factor
    g. Breastfeeding reduces risk (see supplemental lecture)

3. Define each of the following terms. When appropriate, explain the term in the context of the condition it is associated with: idiopathic, alveoli, allergy, antigen/allergen, antibody, histamines, hyperglycemia, insulin.
4. Explain an allergic response, using figure 18.1.
5. Describe some "keys" for preventing asthma
6. Contrast central with obstructive sleep apnea.
7. What are often some early signs of sleep apnea?
8. Be sure to separate out the headache types when answering #1
9. List and describe the seizure types.
10. Describe what to do if you are with somebody who has a seizure.
11. Explain what causes diabetes mellitus, in terms of how insulin works (or, is supposed to anyway). Be sure to use figure 18.4 in addition to the text.
12. Why is blood glucose elevated in diabetics?
13. What are some differences between type 1 and type 2 diabetes? Also, be sure to differentiate them, when appropriate, when answering #1.
14. Discuss some of the costs of diabetes.
15. To what do the "five fs" apply? What ARE the five fs?
16. What are the most common causes of physical disability in the US?
17. Be sure to differentiate osteo- and rheumatoid arthritis when answering #1.

18. What are some suggestions for how to use your backpack to reduce risk of back injury?
19. What does Harvard's Nutrition have to say about preventing diabetes?

Supplemental Lectures

I. Lactose Intolerance- I think it's funny that this is treated like a disease or condition. In fact, most people in the world are lactose intolerant. It's actually really strange that anybody is lactose tolerant! Why?

Lactose is only in milk. Mammals normally only drink milk when they are babies, including humans. Most mammals only drink their mother's milk. No other mammal ever regularly drinks milk into adulthood, especially not the milk of another species! Think about how weird that would be! How on Earth would they even get it? Now of course our domestic pets are happy to drink milk because they have evolved alongside us to eat our food scraps and they are opportunists.

Normally, a mammal only makes the enzyme that digests lactose (the enzyme is called lactAse) during the time that mammal would normally be nursing (for humans, the "normal" period to make lactase is until around 5 years of age). Somewhere along the line in human evolution (maybe more than once), the genes that regulate WHEN to stop making the lactase experienced mutations that caused the genes to allow lactase production into adulthood. This was a real boon to the line of humans who inherited this mutation, because it opened up a whole new food source if they could procure the milk. Once we were domesticating hooved mammals, this became possible.

However, as stated earlier, most people do not have the ability to make sufficient lactase into adulthood. And actually, even people who do not continue to make much lactase into adulthood do not always suffer the symptoms of lactose intolerance (symptoms occur because the undigested lactose from milk goes into the large intestine; here, two major things occur. First, lactose pulls water with it, making you feel bloated and potentially leading to diarrhea. Second, the friendly bacteria in your large intestine eat the lactose and byproducts of their metabolism can include gases… so you get bloated and flatulent).

Here's a quote from ConsumerReports.org: "Whether dairy products agree with you may depend on your ethnic background. Lactose intolerance affects up to 95 percent of Native Americans, 90 percent of Asian Americans, 70 percent of African Americans, 60 percent of Jewish Americans, and 50 percent of Mexican Americans, but less than 25 percent of other Caucasian groups. You can lessen symptoms by eating only small quantities of dairy (such as 1 cup of milk or less a day with meals)."

I'll add that cultured dairy (yogurt and real sour cream, look for "cultured" specifically to be on the label) often do not cause symptoms because the bacteria in them digest a lot of the lactose for you before you eat it!

II. **More benefits of breastfeeding-** I couldn't find one website that concisely provided an overview of all of the known or suspected long-term benefits of breastfeeding to help you with #2, so I'll do that here. Breastfeeding a baby reduces the risk of that person developing the following conditions IN ADULTHOOD and later in childhood (ie, breastfeeding is good for them not only as infants but also as adults!)

a. both type 1 and type 2 diabetes
b. obesity (so any condition for which obesity is a risk factor is potentially affected)
c. allergies and related problems (eczema etc)
d. asthma (though some research has found no link)
e. stress (probably having to do with frequent skin-to-skin touch during infancy)
f. some types of lymphomas, leukemias
g. there are a variety of other connections that have been found at least to some extent; these are the ones most relevant to this and recent chapters. Keep in mind, too, that if you breastfeed, it does not guarantee your child will not develop these things, it only reduces the risk.

III. **Ergot-** what an interesting little fungus. It is a fungus that infects rye. You may have caught a brief mention by the text that many of the migraine medications are ergot derivatives. Here are a couple more things that make it interesting:

There is much suspicion that the people "cursed by witches" back around the time of the Salem witch trials had actually eaten rye infected with Ergot, and that's what caused their crazy behavior. Ergot disease causes all sorts of freaky stuff, including "pseudo" hallucinations and severe, out of this world muscle contractions that cause people to flail about in positions and with intensity that you would not believe possible. No wonder all those Puritans thought those poor people were cursed! Anyway, unfortunately hundreds of innocent people were executed, accused of being witches and putting curses on their neighbors.

As if that weren't interesting enough, the chemist who discovered LSD actually discovered it accidentally when he was separating compounds from ergot. He somehow ingested a little of one of the compounds (d-lysergic acid diethylamide) and then… well, had a trip. Thus was born LSD. I forget why he was extracting compounds from ergot in the first place. If you're interested in reading the story, here's a link to a quick overview including his own description of his "trip":
http://www.druglibrary.org/schaffer/library/studies/cu/CU46.html