

Chapter 14

Sections that will not be on Exam III (but are highly recommended for you to skim over for your own knowledge):

-pp 614-618: “Nutrition and Infectious Disease,” but see supplemental lecture for a highly truncated version which you DO need to know.

Reading Guide

1. What are “atherosclerosis” and “plaques?” (I recommend you read over Highlight 16 for background, plus it’s interesting)
2. What are some factors that can cause “...cells lining blood vessels [to] incur damage?” (pg 621)
3. How are inflammation and the development of plaques related?
4. How is a diet rich in omega-3 fatty acids heart-protective?
5. Explain thrombosis; what’s the difference between coronary and cerebral thromboses?
6. What is an embolism?
7. How does hypertension contribute to vessel damage?
8. When do heart attacks and strokes occur?
9. List the major risk factors for heart disease, categorizing them based on modifiable vs. not modifiable.
10. How do LDL and HDL levels each affect risk of heart disease?
11. What is an “atherogenic diet?”
12. Explain recommendations for reducing risk of heart disease.
13. What are some specific measures you can take to increase HDL and decrease LDL levels?
14. Explain how folate, B6 and B12 affect risk of heart disease.
15. Explain why “...some experts believe that physical activity should be THE primary focus of efforts to prevent cardiovascular disease.”
16. What are the risk factors for hypertension?

17. How does hypertension affect heart function?
18. Explain the recommendations for decreasing risk of hypertension.
19. What is the DASH diet (ie, what does it recommend)?
20. Explain the difference between type I and type II diabetes in terms of: a) age of onset, b) which is a problem with insulin production and which is a problem with insulin sensitivity, c) which you have the most control to prevent.
21. Why do diabetics have elevated levels of glucose in their blood?
22. Why is excess glucose dangerous (ie, what are some SPECIFIC effects)?
23. What can a person with type II diabetes do to limit the manifestations of the disease (decrease symptoms)?
24. How can you prevent type II diabetes?
25. Explain the development of a cancer.
26. Can cancer have a genetic component?
27. Does immune system health play a role in cancer development?
28. See figure 18-9. A) Identify 5 factors that show up repeatedly as INCREASING the risk of cancer. B) Identify 4 factors that show up repeatedly as DECREASING the risk of cancer.
29. What is one hypothesis proposed to explain one reason obese women are more prone to breast cancer?
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30. What are 2 food preparation/processing methods that MAY increase the food's carcinogen load?
31. Have any cancer "promoters" been absolutely identified?
32. What two food groups seem to be the best "antipromoters"?
33. What are the recommendations for reducing risk of cancer?
34. Does eating healthfully, exercising, moderating alcohol consumption and refraining from smoking guarantee that a person will not develop a chronic

- disease? Will every person who does not eat healthfully, and/or exercise, and/or who smokes, die prematurely?
35. Explain how understanding the human genome will likely change the way chronic diseases are prevented and treated.
 36. What are two specific benefits of synthesized supplements over natural extracts? *Note, in most cases, the synthesized version is chemically identical, but this is not ALWAYS true; then, there MAY be some differences in effect.
 37. What are some specific precautions to be aware of when buying herbal remedies?
 38. At this point, is there a lot of sound scientific research behind alternative/complementary medicine? Why might it be worth pursuing?
 39. See tables H18-2 and 3. List the purported benefits of (these are NOT all proven), drug interactions with (if any), and known risks of (if any): chamomile, chapparal, Echinacea, garlic (high doses), kava, and valerian. These are the only specific herbs I will ask you about.

Supplemental Lectures

- I. What you need to know about “Nutrition and Infectious Disease” (for this class, anyway!)**
 - A. The immune system consists of specific types of cells and proteins that work together to seek out and destroy harmful invaders such as bacteria and viruses. They also look for and kill cancerous self-cells. They also clean up debris from injured tissues, and help to recycle the nutrients liberated from those tissues.
 - B. Proper nutrition supports the immune system, and poor nutrition can severely compromise it. Even the immune systems of AIDS sufferers can be enhanced through careful nutrition. While all nutrients, and sufficient energy, are required to support immune function, a few specific vitamins and minerals seem to be particularly important; for example, protein,

vitamin C (and all the antioxidants) and zinc. Know what else trumps up immune systems (at least in healthy people)? Exercise! And- laughing!

II. Just a reminder about omega-3s, the text in this chapter was less direct in it's reminder than I'd like. Remember, the eicosanoids made from omega-3s are the ones involved in controlling (limiting) inflammation and limiting and cleaning up blood clots.

III. Information about influencing HDLs, LDLs, and triglycerides:

A. Remember, DIETARY CHOLESTEROL HAS VERY LITTLE EFFECT ON BLOOD CHOLESTEROL in most people. That means, if you eat a LOT of cholesterol, your blood cholesterol isn't necessarily going to go up. The dietary components that raise blood cholesterol (especially LDLs) are saturated and trans-fats. Trans-fats are worse than saturated fats!

That's why the recommendations have changed for eggs and shellfish, for example. While each has lots of cholesterol, each also has a good profile of fatty acids: either low saturated fats, high omega-3s, or both.

I will remind you, however, that SOME people are more sensitive to dietary cholesterol. This is genetic. Discuss with your doctor how to figure out if you suspect you may be more sensitive to dietary cholesterol.

B. Some saturated fats do NOT seem to raise LDLs, and in fact seem to have benefits similar to unsaturated fatty acids. These include some of the saturated fats found in tropical oil. Some reputable sources are tentatively beginning to lift the "unofficial ban" on tropical oils such as coconut and

palm FRUIT oils. They are absolutely better than shortening, if you are dead-set on cooking something with a solid fat!

C. Exercise increases HDLs and has a positive effect on heart function and blood pressure.

D. Garlic (raw is probably best) may increase HDLs.

E. Refined carbs may actually increase triglycerides.

F. Fiber decreases LDLs. This is especially true of soluble fibers, found in oats, beans and fruits!

IV. A little more about diabetes

A. In diabetes, cells either don't get the message to take in and use glucose (this is type I) or they do not respond to the message (type II). Either way, it doesn't matter how many carbs diabetics eat, most of their cells will not use it. That's why excess glucose accumulates in the blood, so much that some of it ends up in the urine.

Brain cells, by the way, don't need insulin to "allow" them to eat glucose, so they do eat glucose, even in diabetics.

Most other cells of the body DO need insulin. Without enough insulin (type I), or without the ability to respond to it (type II), most cells of the body believe they are fasting or starving! They act as if they are trying to conserve glucose for the brain, and eat fatty acids and amino acids for fuel. Remind me again, what substance is produced and enters the blood when lots of fatty acids are being used for energy?

So, one of the potential dangers of diabetes (especially type I), is ketoacidosis.

B. Preventing type II diabetes- the two biggest lifestyle options: maintain a healthy weight, and get regular exercise. Some authorities suspect that frequent intake of refined carbohydrates MAY contribute to the development of TII diabetes.

V. Herbal Supplements: a caution

Be very aware of the fact that herbal supplement manufacturers can make lots of statements about their products, whether those statements have been shown to be true or not. AND herbal supplements do not have to be shown to be safe before going on to the market! This is true whether you're shopping at QFC, Trader Joes, or PCC. Please do your research before buying the claims on herbal labels.