Cholesterol and Heart Disease
Reasons

• Heart disease #1 cause of death in US (25.4% in 2007) (CDC vital statistics)

• Cholesterol receives attention

• 6 years of experience
Overview

• Series of questions & answers
  – heart attack
  – cholesterol
  – HDL & LDL
  – recommendations
What happens in a heart attack?

• Plaque build-up, narrowing of the arteries

• A blood clot gets caught in the narrowed heart artery.

• Coronary artery blood gets cut off, heart tissue dies
How’s cholesterol involved?

• Cholesterol is a primary component of plaque.
Is all cholesterol bad?

- Cholesterol is necessary for healthy cells, especially nerves.
- Cholesterol is made in the liver naturally.
What are HDL and LDL?

• Background:
  – Oil and water don’t mix, so how can lipids travel in the bloodstream?
  – Lipids are packaged in proteins; Lipid + Protein = Lipoprotein
What are HDL and LDL?

- Proteins contain hydrophobic and hydrophilic regions; they can carry lipids (hydrophobic areas inside) and still be soluble in water (hydrophilic outside).
What are HDL and LDL?

• HDL: High Density Lipoprotein; high % protein, low % lipid

• LDL: Low Density Lipoprotein; low % protein, high % lipid
How do HDL and LDL work?

• HDL is “good” lipoprotein; like garbage trucks; clean up excess cholesterol and take to liver. Liver catabolizes it.

• HDL seems to prevent accumulation of plaque in the arteries.
How do HDL and LDL work?

- LDL is “bad” lipoprotein; carries cholesterol to body tissues
- Contributes greatly to plaque build-up
What are healthy and unhealthy levels and ratios?

- <200mg/100ml total cholesterol seems to be healthy.
- >240mg/100ml greatly increases the risk of heart disease.
What are healthy and unhealthy levels and ratios?

• LD/L/HDL level: 3.2 for women, 3.6 for men seems to have average risk. (5.0, 6.3, respectively, doubles risk)

• 1-1.5 are associated with half the normal risk of heart disease.
What is recommended?

• Low-fat diet
• Low animal fat
• No trans-fat
• Use vegetable oils
• Eat fish or flaxseed (omega-3 f.a.s)
• Exercise
Summary

• What atherosclerosis and heart attacks are
• How cholesterol is involved
• Who the good guys and bad guys are
• Levels to strive for
• Recommendations for heart health
References


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