Anti Hyperlipidemic Drugs
Lipoproteins

- Low-density lipoproteins (LDL)
  - Transport cholesterol to the peripheral cells
  - Elevation of LDL
    - Atherosclerotic plaque formation
    - Increases the risk for heart disease
- High-density lipoproteins (HDL)
  - Take cholesterol from the peripheral cells and transport it to the liver
- Triglycerides—store unused calories for use as energy
Cholesterol Levels

- HDL cholesterol: Protects against heart diseases
- Higher the LDL level: Greater the risk for heart disease
- Drugs used to treat hyperlipidemia
  - Bile acid sequestrants
  - HMG-CoA reductase inhibitors
  - Fibric acid derivatives
  - Niacin
Bile Acid Sequestrants: Actions and Use

- Cholestyramine, colestipol, colesevelam

- Increased loss of bile acids
  - Liver uses cholesterol to manufacture more bile

- Used to treat: Hyperlipidemia; pruritus associated with partial biliary obstruction
Bile Acid Sequestrants: Adverse Reactions

- Constipation
- Aggravation of hemorrhoids
- Abdominal cramps
- Flatulence
- Nausea

- Increased bleeding tendencies related to vitamin K malabsorption, and vitamin A and D deficiencies
Bile Acid Sequestrants: Contraindications and Precautions

• Contraindicated in patients with:
  – Known hypersensitivity to the drugs
  – Complete biliary obstruction

• Used cautiously in patients:
  – With liver disease, kidney disease
  – During pregnancy and lactation
HMG-CoA Reductase Inhibitors: Actions

- **Statins:** atorvastatin, fluvastatin, lovastatin, pravastatin, simvastatin

- **HMG-CoA reductase**
  - An enzyme that is a catalyst during the manufacture of cholesterol

- Inhibits the manufacture of cholesterol or promotes the breakdown of cholesterol

- Lowers the blood levels of cholesterol Increases blood levels of HDLs
HMG-CoA Reductase Inhibitors: Uses

- As adjunct to diet in the treatment of hyperlipidemia
- For primary prevention of coronary events
- For secondary prevention of cardiovascular events
HMG-CoA Reductase Inhibitors: Adverse Reactions

- Central nervous system reactions
  - Headache, blurred vision, dizziness, insomnia

- Gastrointestinal reactions
  - Flatulence, abdominal pain, cramping, constipation, nausea

- Other
  - Elevated CPK level, rhabdomyolysis with possible renal failure
HMG-CoA Reductase Inhibitors: Contraindications And Precautions

• Contraindicated in patients:
  – With hypersensitivity to the drugs, serious liver disorders
  – During pregnancy and lactation

• Used cautiously in patients with:
  – History of alcoholism, acute infection, hypotension, trauma, endocrine disorders, visual disturbances, and myopathy
Fibric Acid Derivatives: Actions

- Fibrates: Fenofibrate, gemfibrozil
- Fenofibrate
  - Reduces VLDL; stimulates catabolism of triglyceride-rich lipoproteins; decreases plasma triglyceride, cholesterol
Fibric Acid Derivatives: Actions (cont’d)

• Gemfibrozil
  – Increases excretion of cholesterol in the feces
  – Reduces the production of triglycerides by the liver
  – Lowers serum lipid levels
Miscellaneous Antihyperlipidemic Drugs: Niacin

- **Action:** lowers triglycerides and increases HDLs
- **Uses:** Adjunctive therapy for lowering very high serum triglyceride levels in patients who are at risk for pancreatitis
- **Adverse reactions**
  - Gastrointestinal reactions: Nausea, vomiting, abdominal pain, diarrhea
  - Other reactions: Severe generalized flushing of the skin, sensation of warmth, severe itching or tingling
Foods to reduce Cholesterol and BP

- Oatmeal and foods with soluble fiber
- Fish and Omega-3 fatty acids
- Walnuts, almonds and other nuts
- Olive oil
- Foods with added plant sterols and stanols
• **True/False**
  1. Niacin is used as adjunctive therapy for lowering very high serum triglyceride levels in patients who are at risk for pancreatitis.
  2. Fibric acid derivatives are contraindicated in patients with complete biliary obstruction.
  3. Clofibrate stimulates the liver to increase breakdown of very low-density lipoproteins.
  4. The bile acid sequestrants are used to treat individuals with very high serum triglyceride levels.
  5. Blurred vision is a central nervous system reaction associated with the use of HMG-CoA reductase inhibitors.

• **Fill-in-the-Blank**
  1. Low-density lipoproteins transport _____________ to the peripheral cells.
  2. _____________ emulsifies fat and lipids as these products pass through the intestine.
  3. Cholesterol and the _____________ are the two lipids present in the blood.
  4. Interaction of fibric acid derivatives with HMG-CoA increases the risk of _____________.
  5. _______________ is a disorder in which lipid deposits accumulate on the lining of the blood vessels.
Study Guide

- Drugs: class, use, actions, nursing process, patient education
  - Digoxinamlodipine
  - Quinidine  lovastatin
  - Diltiazem  propafenone
  - Simvistatin  amiodarone
  - Gembibrizil  carvedilol
  - Atenolol  verapamil
  - Bradycardia  disopyramide
  - Atropine  nitroglycerine
  - Propranolol
  - enalapril