

The balance –diet of a human being should be 60% carbohydrate, 30% proteins and 10 % lipids.

Fat intake should be reduced.

Triglyceride concentrations rise after a meal **but** return normal after 2-4 hr.

In fasting state must be normal TG **but when lipoproteins not work**

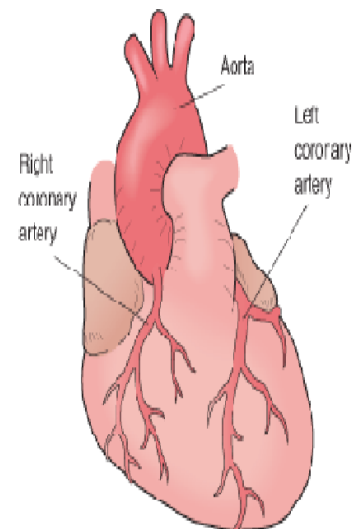
**(Disorder of lipoprotein)** lead to high TG in fasting state

Everybody needs cholesterol; it serves a vital function in the body.

- Cholesterol is the precursor of three important classes of biologically active compounds
  - ✓ The bile acids
  - ✓ The steroid hormones
  - ✓ Vitamin D

### Heart Disease

- + Heart: The most hard-working muscle of our body – pumps 4-5 liters of blood every minute during rest
- + Supplies nutrients and oxygen rich blood to all body parts, including itself
- + Coronary arteries surrounding the heart keep it nourished with blood



What are factors that Increases Risk incidence of heart disease ?

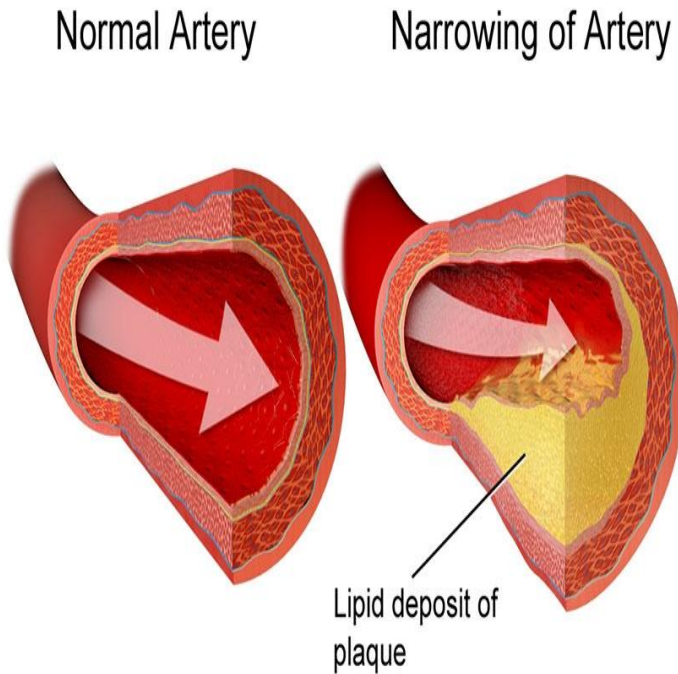
- High Cholesterol
- Smoking
- Diabetes
- Obesity
- Alcohol
- Physical Inactivity
- High Blood Pressure



Too much cholesterol can deposit in the arteries

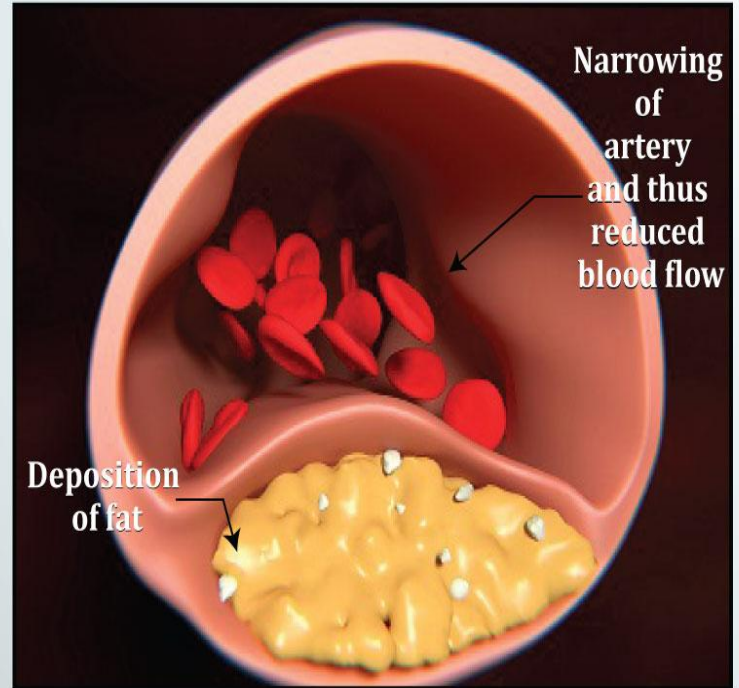
**High** concentrations of cholesterol in the blood, particularly the cholesterol in lipoprotein particles called low density lipoproteins (**LDL**) [50% cholesterol+ 8% TG+ 20% apolipoprotein + 22% PL] contribute to the formation of atherosclerotic plaques, these plaques (fatty deposits on **arterial walls**) the artery becomes narrow. This is atherosclerosis are associated with heart attacks and strokes.

When this occurs in the coronary arteries, heart does not get sufficient blood, the condition is called coronary artery disease, or coronary heart disease



Coronary Artery Disease

## Coronary Artery Disease



A high content of  $\uparrow$  **saturated fat** in the diet tends to increase circulatory levels of  $\uparrow$  **LDL** cholesterol and contributes to the development of atherosclerosis.

[Fat should account for 10% or less of total dietary calories]

- Cholesterol intake should be less than 300 mg/day in subjects without atherosclerotic disease and less than 200 mg/day in those with established atherosclerosis.

Imbalances of lipid metabolism can lead to some of the major clinical problems encountered by physicians, such as atherosclerosis and obesity. This is a potentially life-threatening occurrence when the lipid deposition leads to plaque formation, causing the narrowing of blood vessels (atherosclerosis) and increased risk of coronary artery disease (CAD).

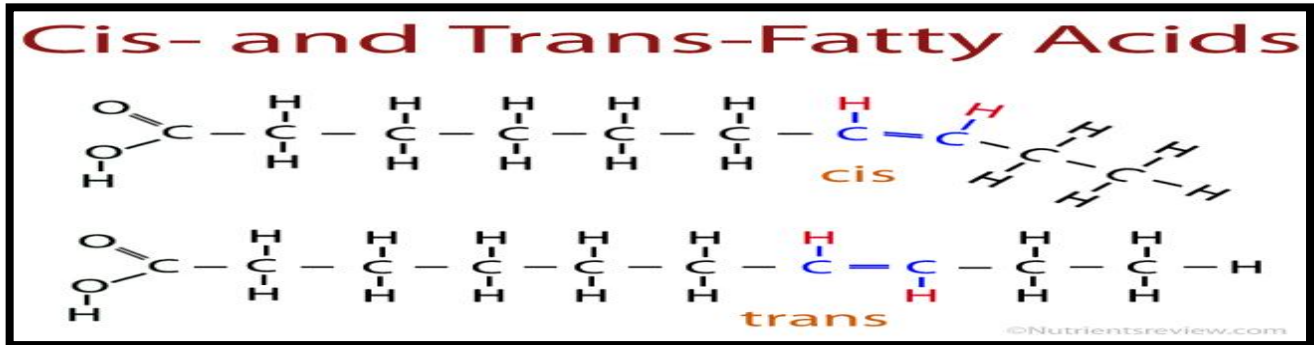
Two sources of cholesterol:

Food & made in your body (liver)



- Food sources: All foods containing animal fat and meat products

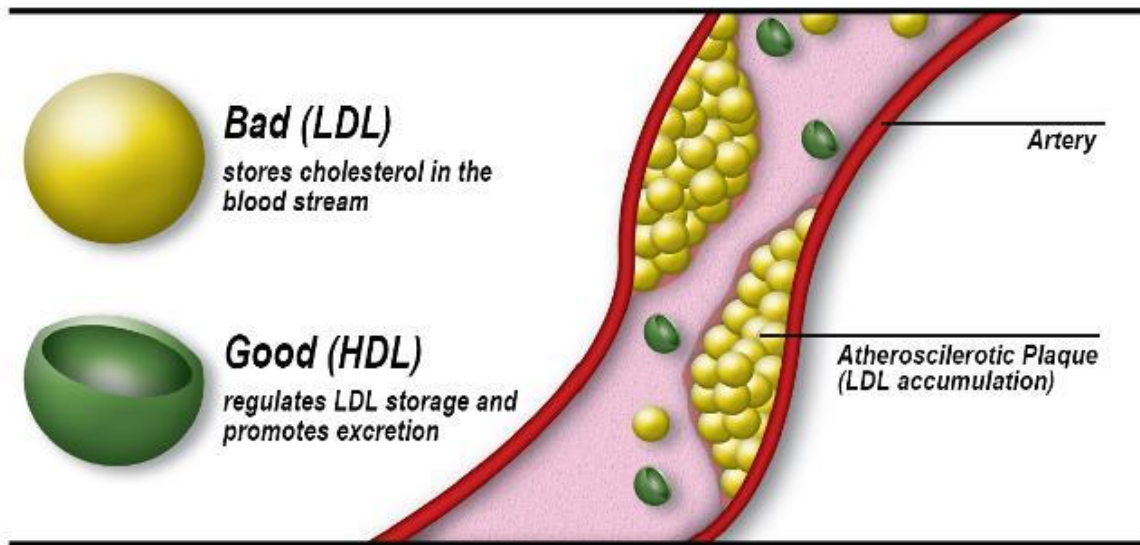
Foods high in saturated fat include cheese, whole milk, butter, regular ice cream, and many cuts of beef. Trans fatty acids **should also be avoided.**



#### Good vs. BAD Cholesterol

- LDL cholesterol is known as bad cholesterol. It has a tendency to increase risk of heart disease, LDL cholesterol is a major component of the plaque that clogs arteries
- HDL cholesterol is known as the good cholesterol. Higher in women, increases with exercise, HDL cholesterol helps carry some of the bad cholesterol out of arteries.

## Bad vs. Good Cholesterol



**Cholesterol medications:** Aggressively lowering your low-density lipoprotein (LDL) cholesterol, the "bad" cholesterol, can slow, stop or even reverse the buildup of fatty deposits in your arteries. Boosting your high-density lipoprotein (HDL) cholesterol, the "good" cholesterol, may help, too. cholesterol medications, including drugs known as statins and fibrates. In addition to lowering cholesterol, statins have additional effects that help stabilize the lining of your heart arteries and prevent atherosclerosis.