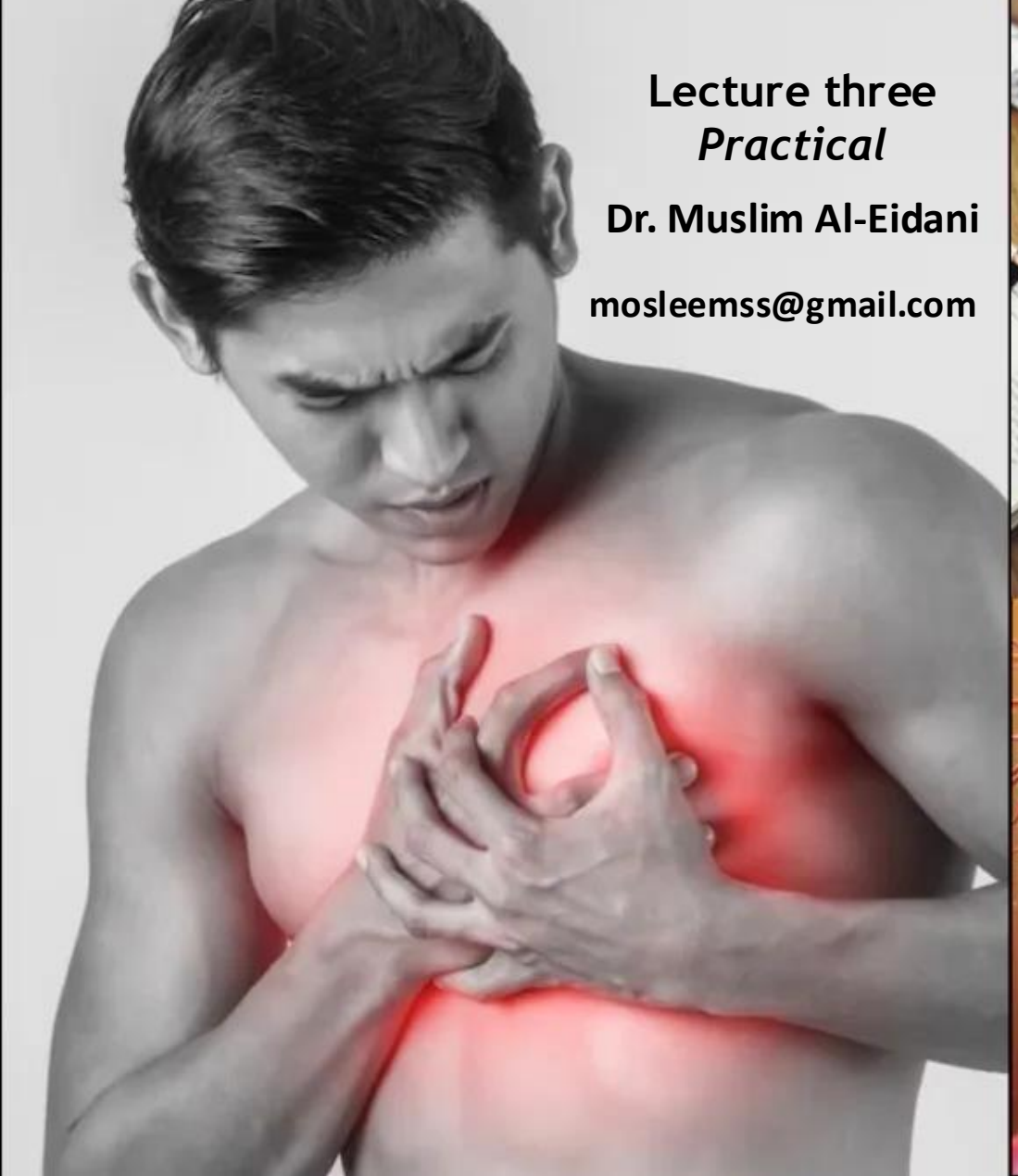

Lecture three
Practical

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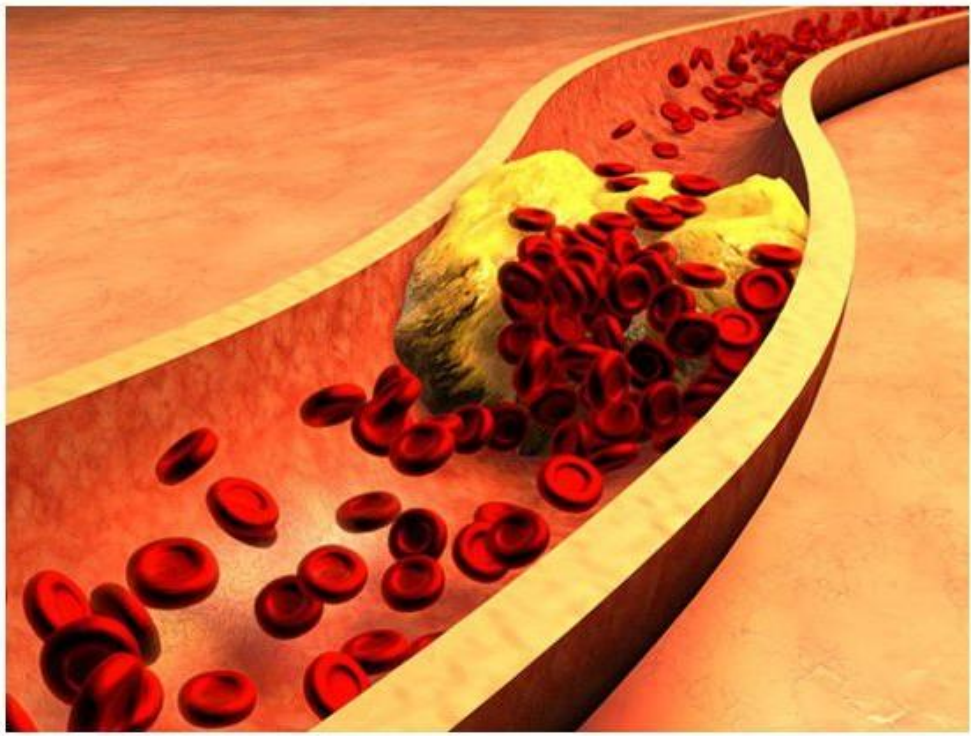
Objectives

- What is Cholesterol?
- Classification of lipoprotein.
- Risk factors of Hypercholesterolemia.
- Serum Cholesterol test.
- Clinical significant.
- Procedure.
- Calculation.
- Reference values.

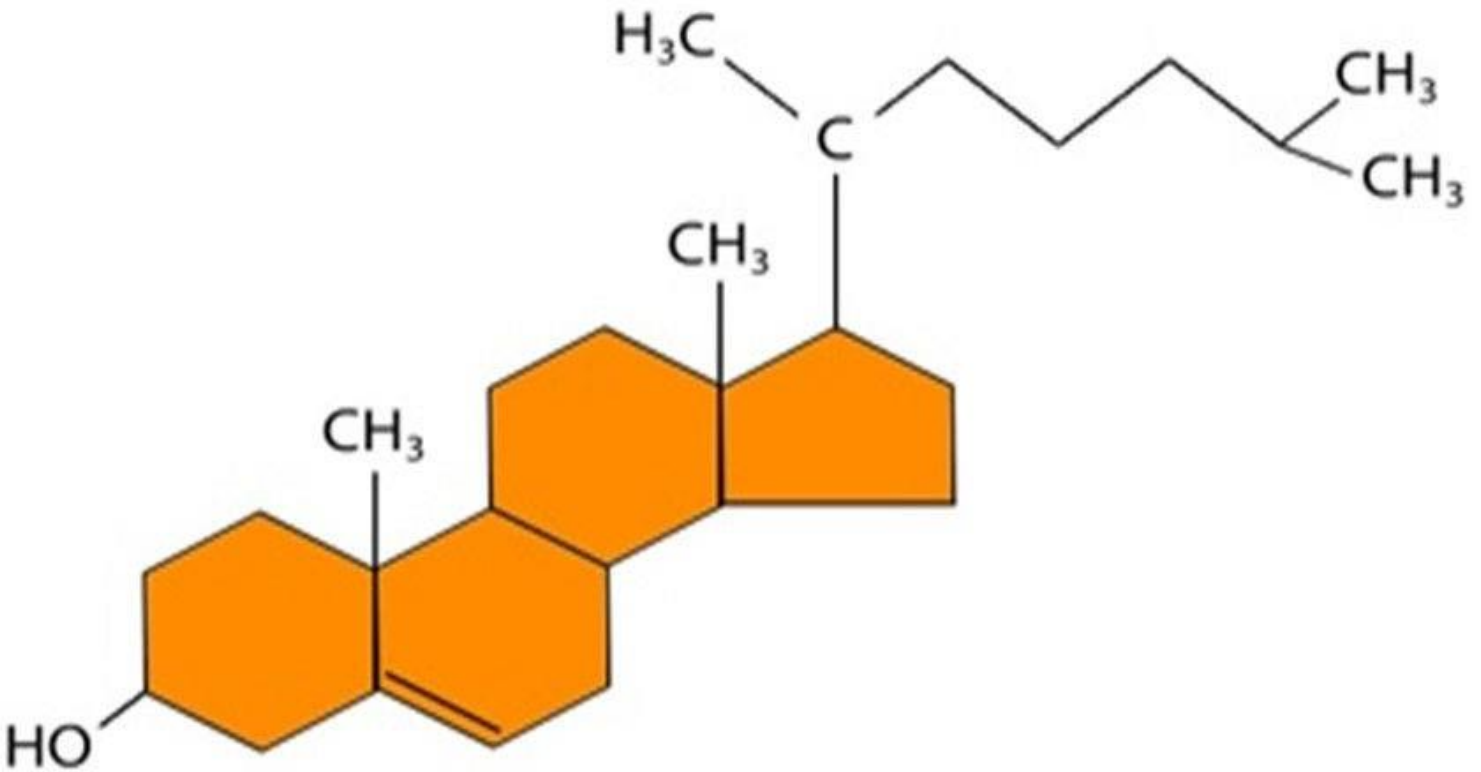
What is Cholesterol?

- **Cholesterol** is a type of lipid. It's a waxy, fat-like substance that liver produces naturally. It's vital for the formation of cell membranes, certain hormones, and vitamin D.
- **Cholesterol** doesn't dissolve in water, so it can't travel through the blood on its own.
- Lipoprotein transports **cholesterol** through the blood.

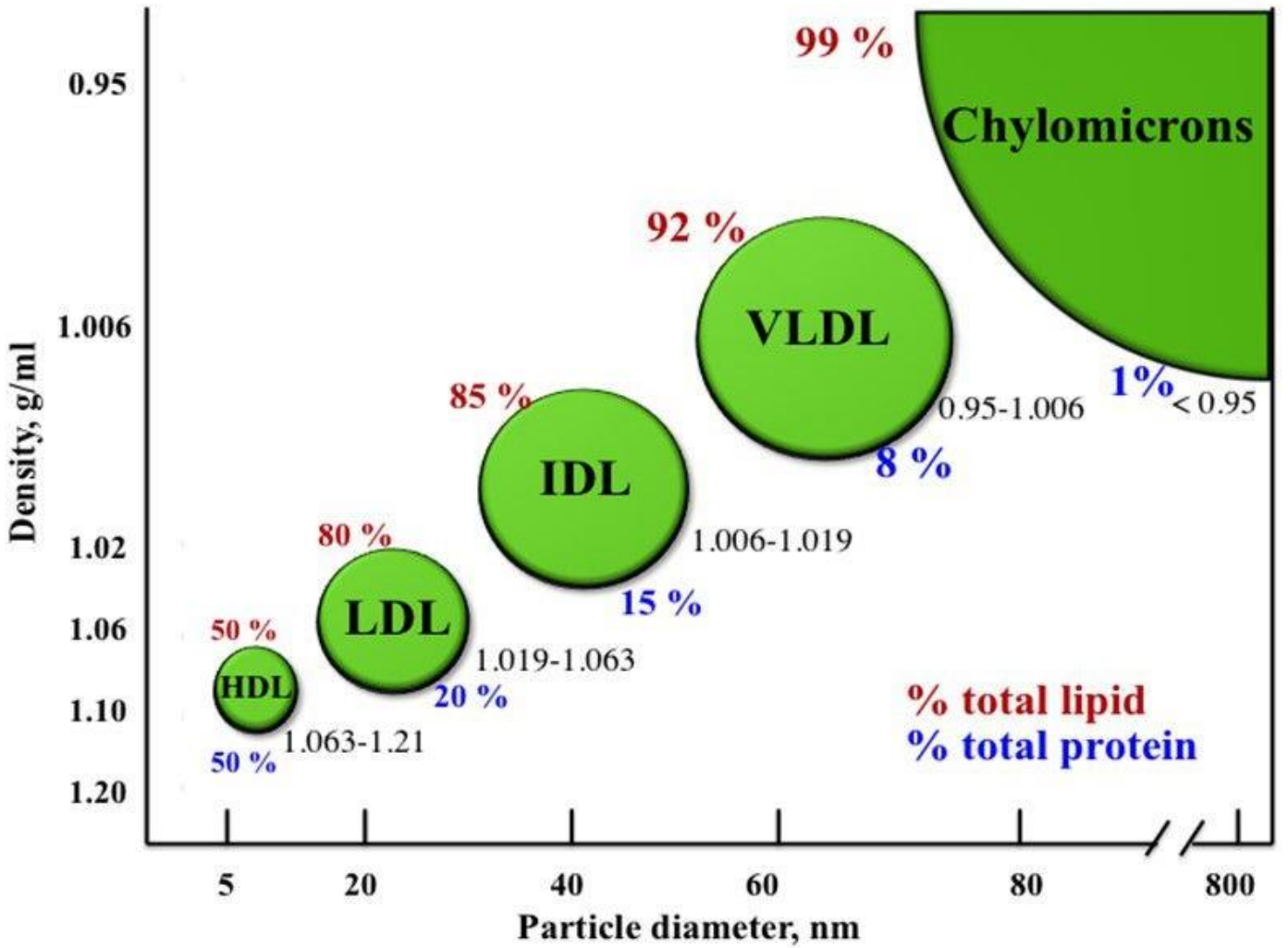


Chemical structure of cholesterol

Chemical formula ($C_{27}H_{45}OH$) and structural formula as shown:

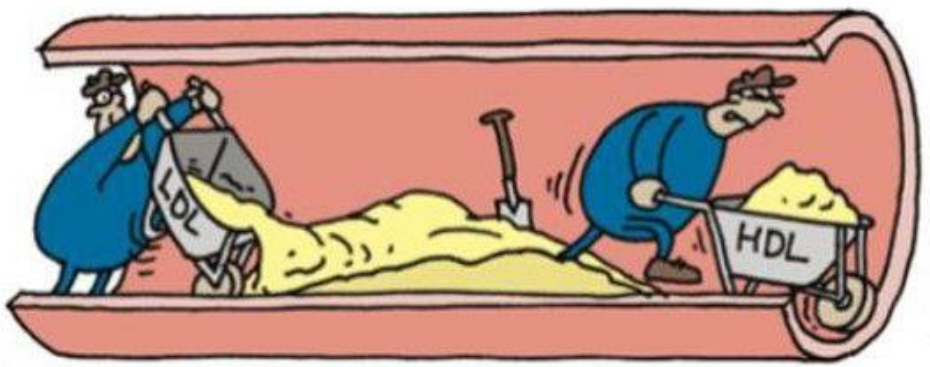


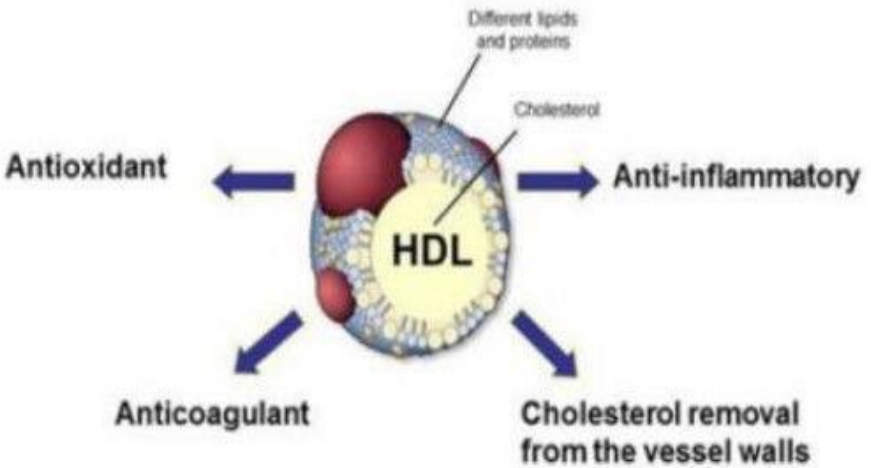
Classification of lipoprotein



Classification of lipoprotein

LDL Vs HDL





HEART DISEASE FACTORS

SMOKING

INFECTIONS

ALCOHOL

GENETIC PREDISPOSITION

UNHEALTHY FOOD

OBESITY

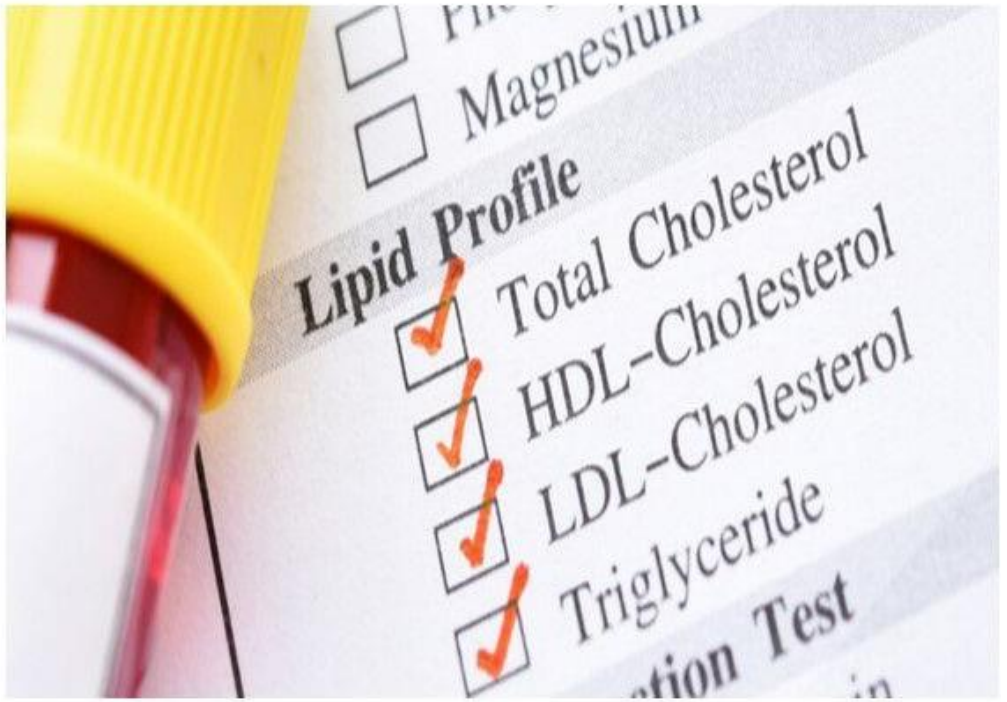
SEDENTARY LIFESTYLE

AGE

STRESS

Serum Cholesterol test

- A lipid profile includes measuring plasma levels of cholesterol, triglyceride, HDLs, LDLs, and VLDLs. The purpose of lipid profile is to detect disorders of lipid metabolism and to assess the risk of atherosclerosis, heart disease.



Clinical significant

Hypercholesterolemia	Hypocholesterolemia
Atherosclerosis	Hyperthyroidism
Heart diseases	Hepatitis
Nephrotic syndrome	
Diabetes mellitus	
Obstructive Jaundice	

Procedure

1- Bring reagents and samples to room temperature.

2- Pipette into labelled tubes:

	Blank	Standard	Sample
Reagent (ml)	1.0	1.0	1.0
Standard (µl)	--	10	--
Sample (serum) (µl)	--	--	10

3- Mix and let the tubes stand 10 minutes at room temperature or 5 minutes at 37ºC.

4- Read the absorbance (A) of the samples and the standard at 500 nm against the reagent blank.

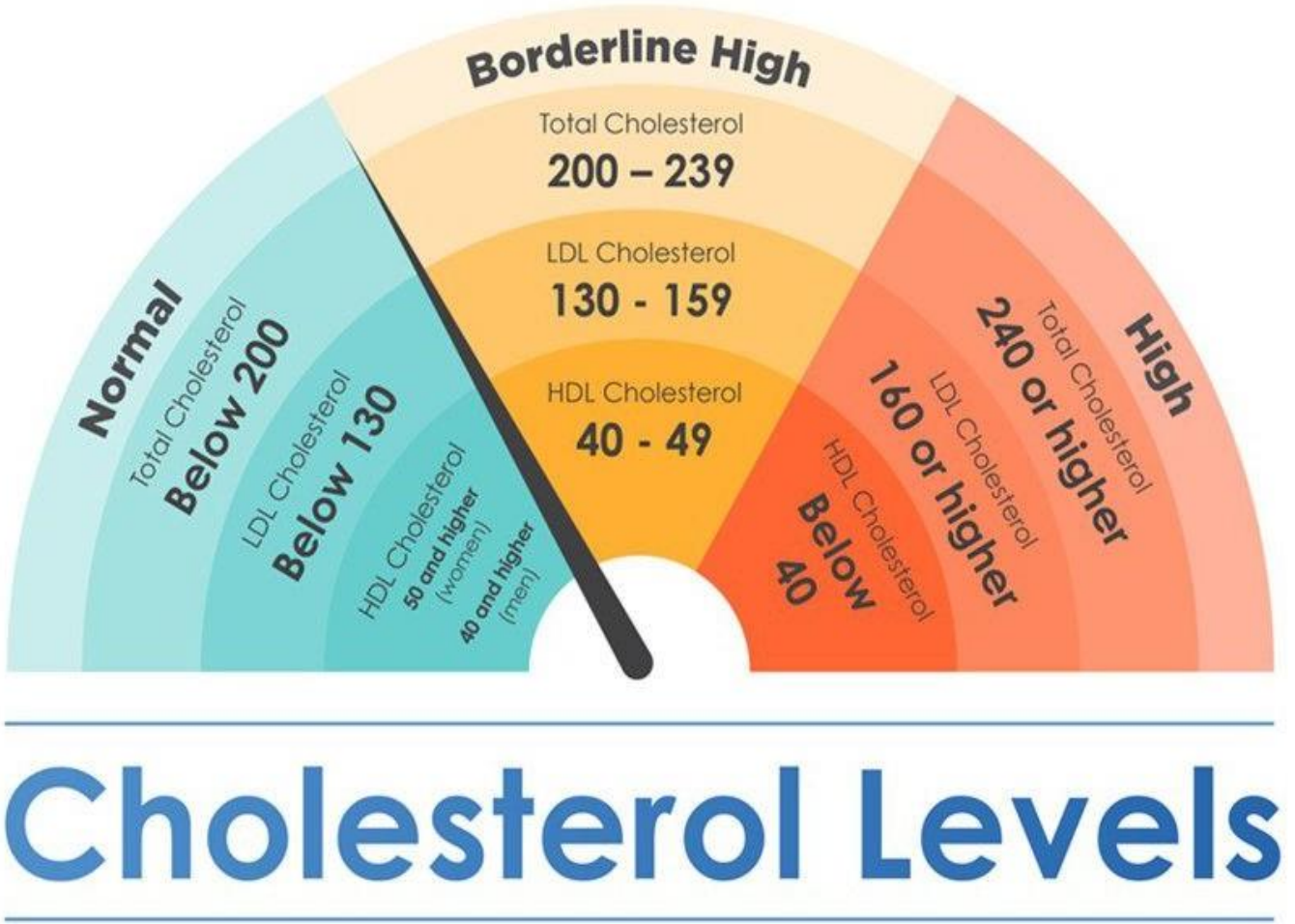
Calculation

- ***Serum or plasma***: $\text{C sample} = \frac{Abs\ \text{sample}}{\text{Abs standard}} \times \text{C standard}$

  $= \text{mg/dl}$

- C_{sample} = concentration of sample (unknown)
- $C_{st.}$ = concentration of standard (200 mg/dl)
- Abs $_{sample}$ = absorbance of the sample
- Abs $_{st.}$ = absorbance of standard

Reference value of cholesterol




THANK YOU