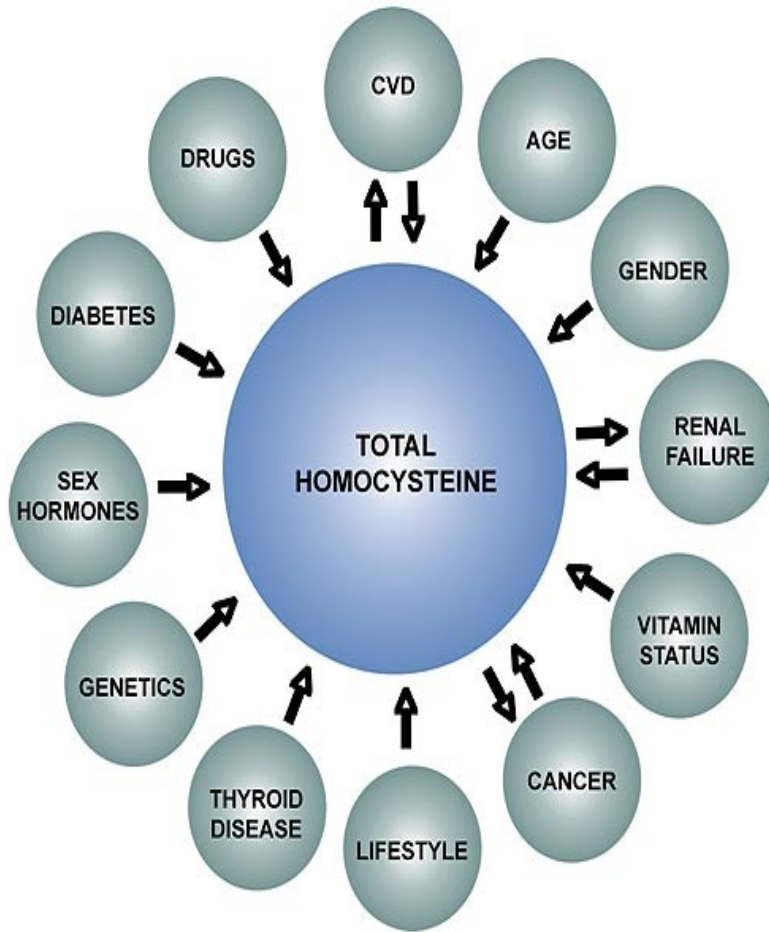


# Homocysteine, Serum

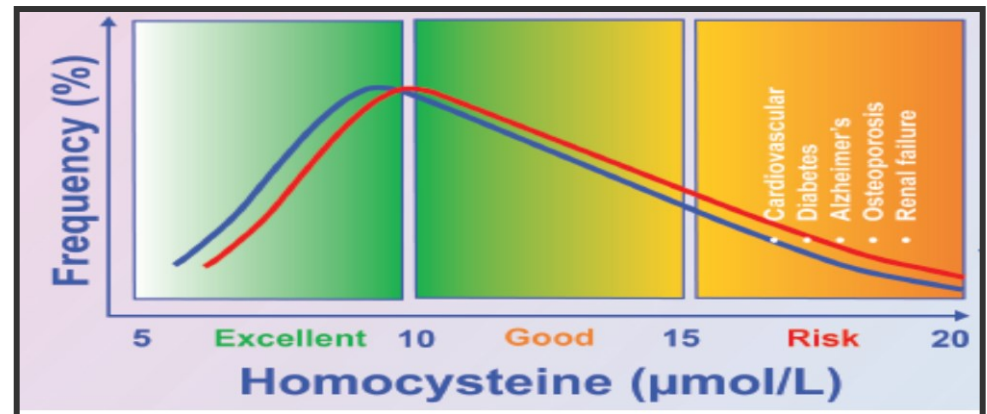
- Homocysteine, a sulfur containing amino acid, is formed from *methionine*, an essential amino acid found in many animal and plant foods. Methionine is especially abundant in animal and cereal proteins
- Homocysteine levels are typically higher in men than women, and increase with age
- The normal range of plasma total homocysteine in adults is 5- 12 micromoles per liter

# Many Factors Contribute to Increased Homocysteine Levels



**Hyperhomocysteinemia** : Elevated blood homocysteine

Categories	Plasma total homocysteine level
Mild	20-30 micromole per liter
Moderate	30-100 micromole per liter
Severe	More than 100 micromole per liter



# Causes of Hyperhomocysteinemia

- Both genetic and acquired factors
- Homocystinuria, a disease characterized by the excretion of large amounts of homocysteine in the urine, is an autosomal recessive disorder
- Deficiencies of folate, Vitamin B12 and Vitamin B6 cause hyperhomocysteinemia
- It is also associated with chronic alcoholism
- Strict vegans usually have lower plasma homocysteine levels than individuals who consume large amounts of animal protein

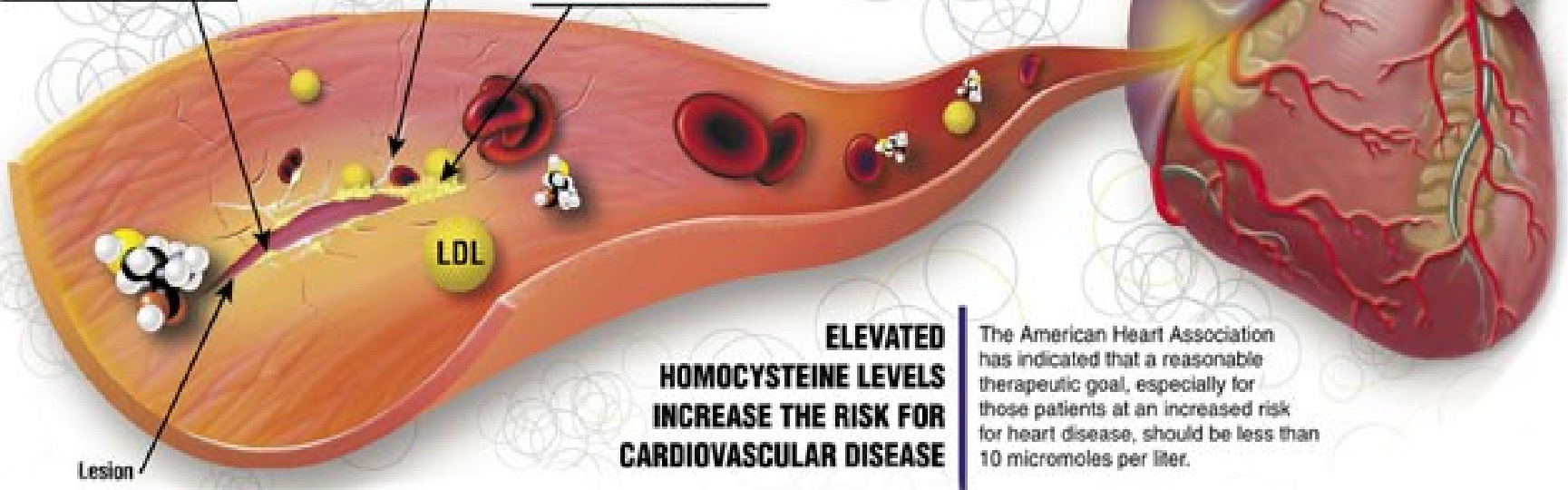
# Homocysteine : An Independent Risk Factor for Cardiovascular Diseases (CVD)

## Homocysteine Molecule

Homocysteine injures the arterial wall, and fatty substances accumulate.

Circulating immune cells known as monocytes rush to the site of injury, causing inflammation.

Arterial cells proliferate in an effort to heal the lesion, causing plaque to form on the vessel lining.



**ELEVATED  
HOMOCYSTEINE LEVELS  
INCREASE THE RISK FOR  
CARDIOVASCULAR DISEASE**

The American Heart Association has indicated that a reasonable therapeutic goal, especially for those patients at an increased risk for heart disease, should be less than 10 micromoles per liter.

# Homocysteine : Mediator or Biomarker of CVD ?

- Elevated homocysteine (100- 500 micromoles) plays a causal role in the development of cardiovascular disease
- In advanced disease, homocysteine may be a marker and not a mediator
- It is also a biomarker for Dementia, Alzheimer's Disease and Complications of Pregnancy
- **Treatment** : A cocktail of folic acid, Vitamin B12 & Vitamin B6

# Recommendations for Homocysteine Testing by American Heart Association

- Individuals that are at risk for developing cardiovascular disease
- Young individuals, as treatment of hyperhomocysteinemia at young age may be beneficial
- Elderly population, as homocysteine is a risk factor for cognitive dysfunction
- Pregnant women who suffer from early- onset pregnancy complications
- Siblings of high- risk patients

# Homocysteine, Serum



TEST DETAILS	
Test Name	Homocysteine
Technology	CLIA
Detection	Cardiovascular diseases, Homocystinuria, Cobalamin or Folate deficiency, Pregnancy complications & Birth defects
Starting Material	2 ml Serum
Turnaround Time	1 day