

Healthy Liver for Healthy Body

Dr. Sanjiv Saigal

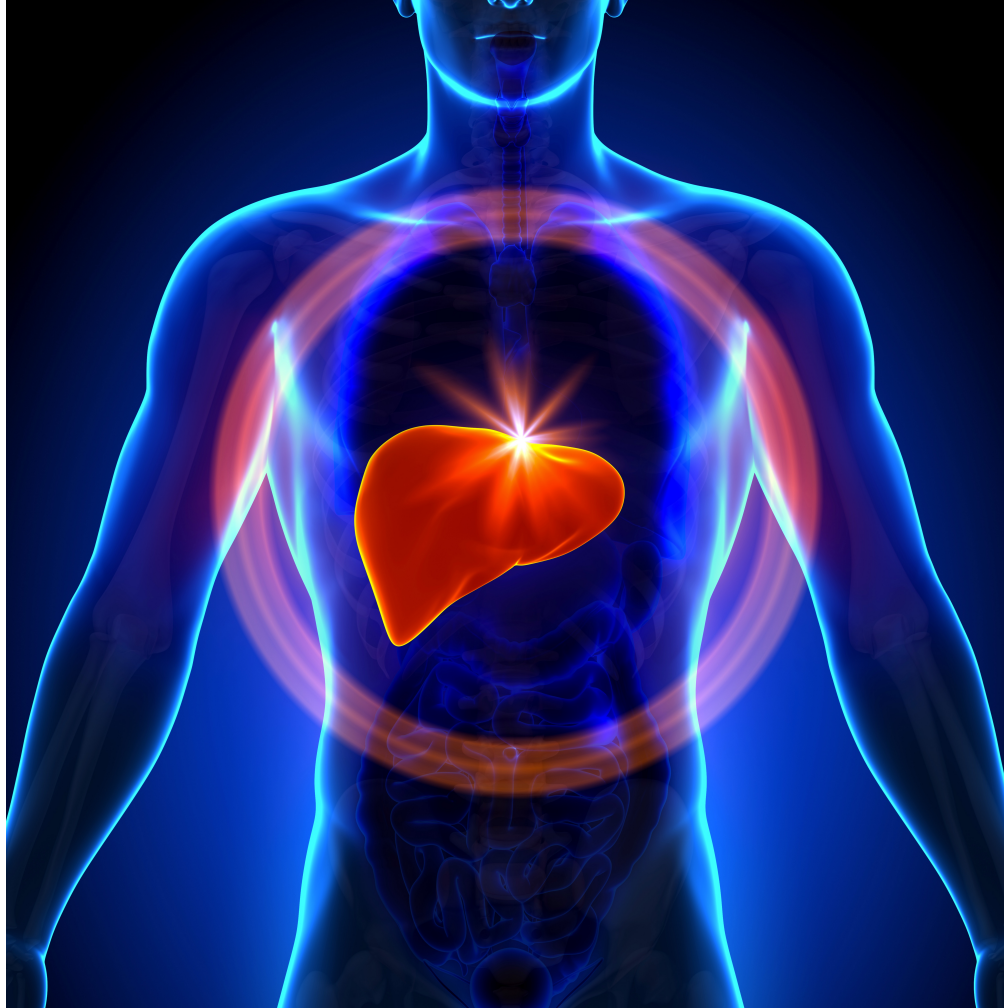
MD, DM, DNB, MAMS, CCST(UK), MRCP(UK)

Principal Director & Head

Hepatology and Liver Transplant Medicine

Max Super Specialty Hospital, Saket

Liver: Metabolic factory of our body



Functions of Liver

Metabolic

Storage

Excretory/
Secretory

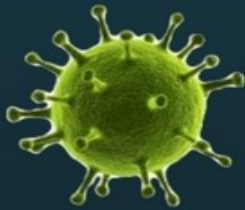
Protective

Circulatory

Coagulation

The Amazing Liver

Immunity



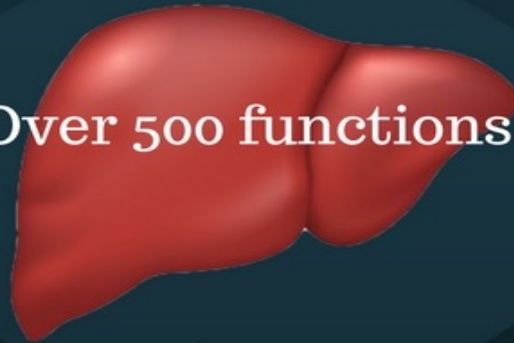
Phagocytes called
Kupffer cells
destroy pathogens,
like bacteria,
that enter the gut.

Blood

Creates blood
clotting factors
Filters blood of toxins
Destroys old or
damaged blood cells



Over 500 functions



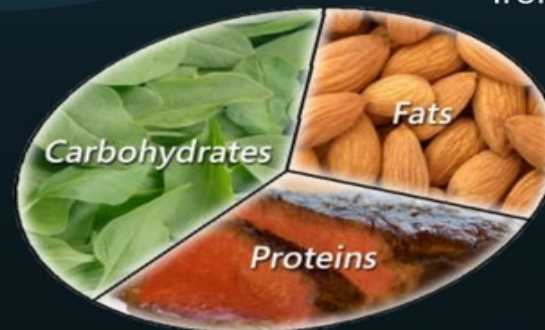
Storage

Fats,
Proteins,
Glycogen,
Vitamins
Copper
Iron

Metabolism



Creates bile
Breaks down
fats, proteins
Involved in regulation
of blood glucose



Functions of the Liver

Detoxification:

- Drugs/Alcohol
- Fatty acids
- Steroid hormones
- Ammonia → Urea
- Environmental toxins/allergens

Metabolism:

- Conversion of T4 → T3
- Detoxification of fat

Immune System:

- Contains viruses and pathogens
- Maintenance of the hepatic and portal vein immune system

Production of Cholesterol:

- Precursor to sex hormones, Vitamin D

Storage of Micronutrients:

- Minerals: Copper, Zinc, Magnesium, Iron
- Vitamins: Vitamin A, D, E, K, B12

Blood Sugar Balance:

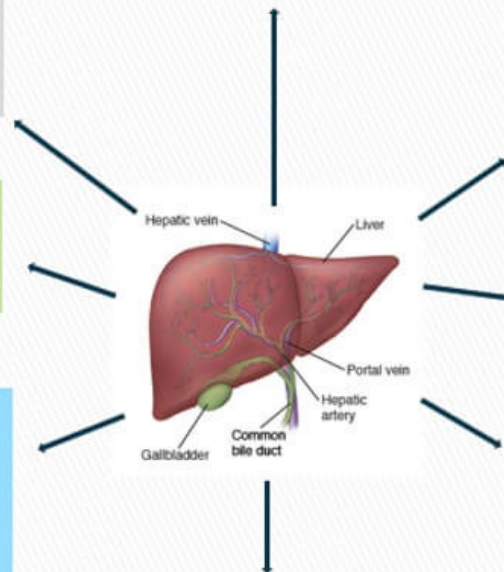
- Storage of glycogen

Production of Bile:

- Needed for digestion
- GI anti-microbial

Protein Synthesis:

- Blood clotting (prothrombin)
- Cholesterol transport (lipoproteins)
- Immune Function (globulins)
- Oncotic pressure (albumin)
- Copper bioavailability (ceruloplasmin)



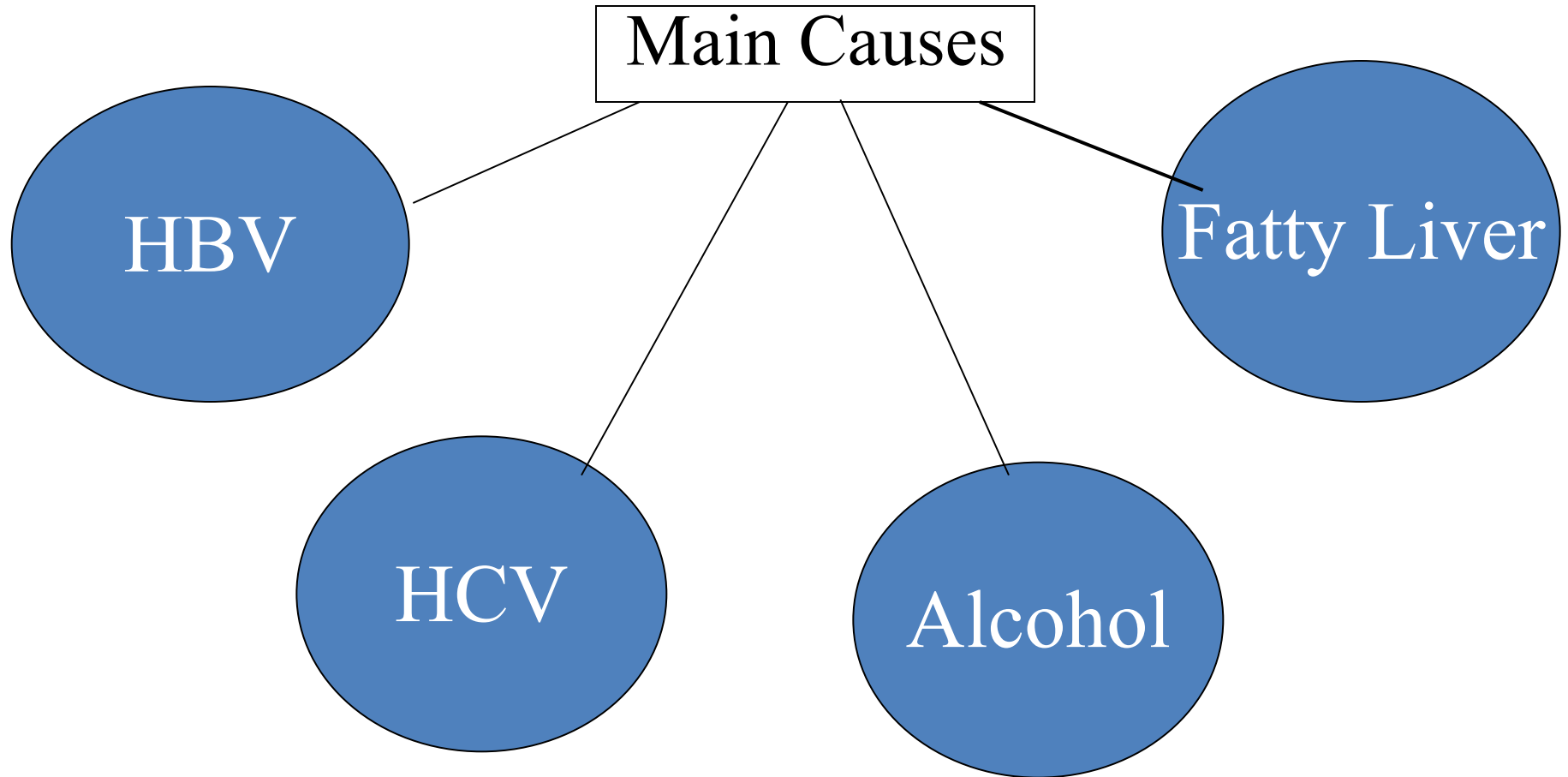
COMMON LIVER DISEASES

- **Hepatitis**
.....
- **Alcoholic liver disease**
.....
- **Fatty liver disease**
.....
- **Non-alcoholic fatty liver disease**
.....
- **Cirrhosis**
.....
- **Liver cancer**

THOSE AT RISK

- **Overweight persons**
.....
- **Those who consume alcohol**
.....
- **Hepatitis B or Hepatitis C patients**
.....
- **Fatty liver disease patients**

Main Causes of Liver Disease in India



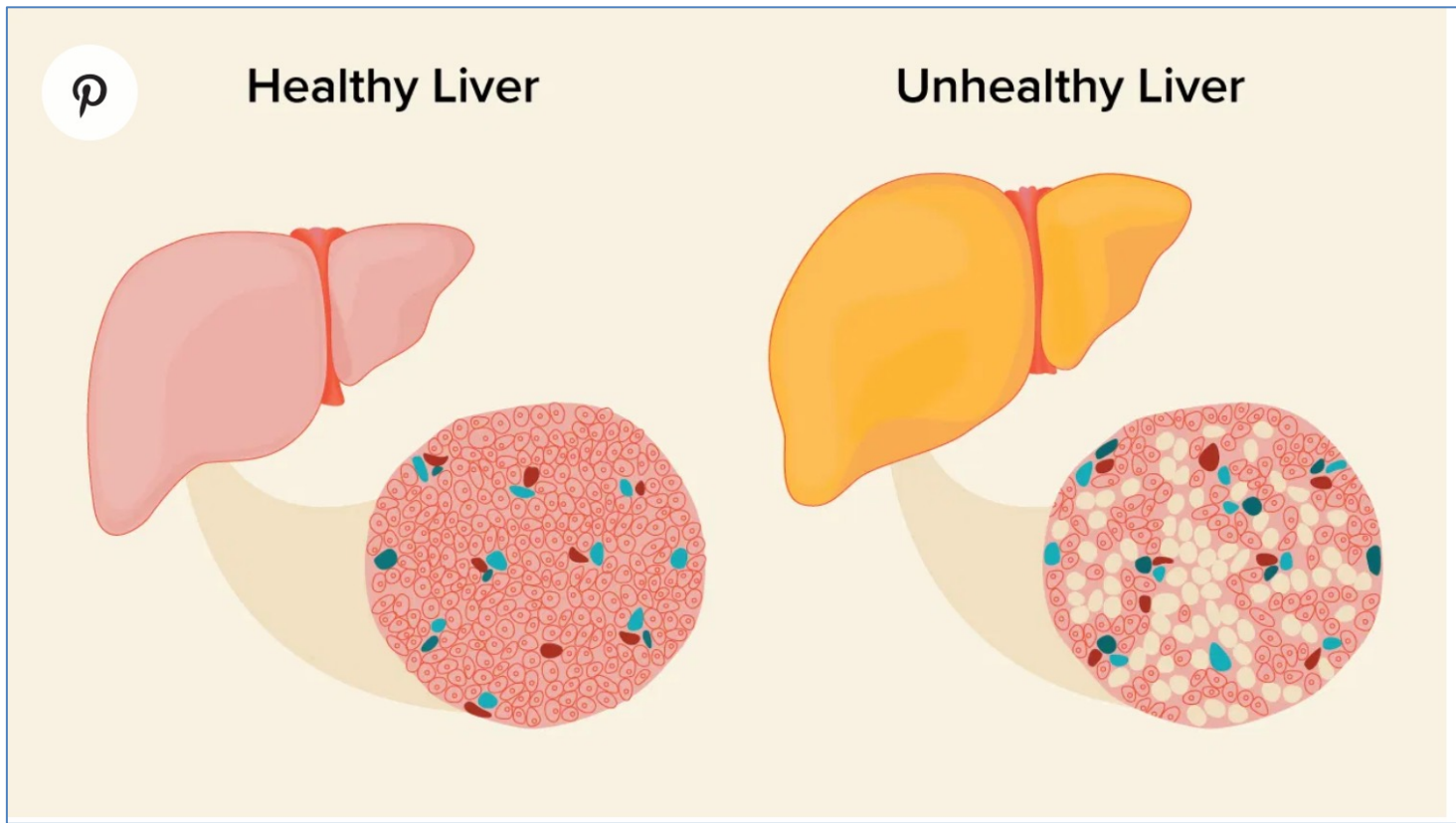
What is Fatty Liver

- Also known as Hepatic Steatosis
- Due to excess accumulation of fat in the liver (>5% of liver weight)
- Types:

Alcoholic Fatty Liver

Non-Alcoholic Fatty Liver

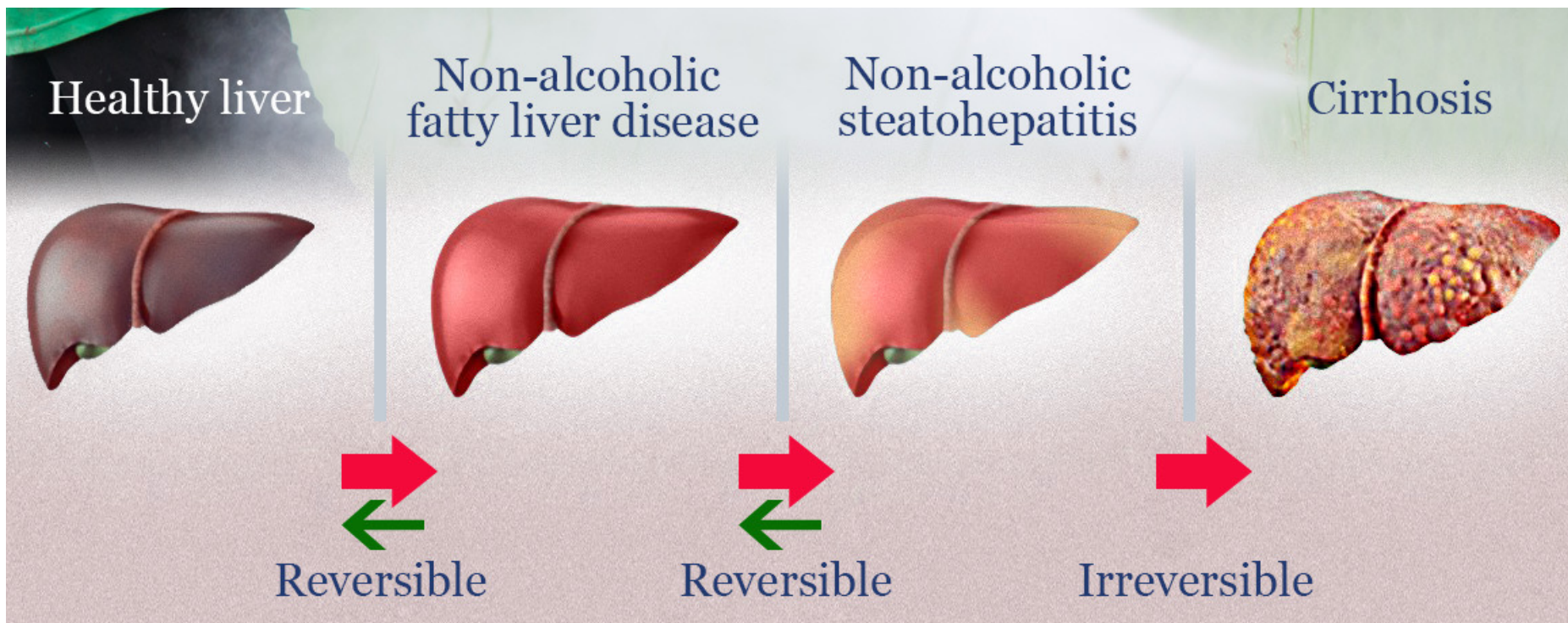
What is Fatty Liver



Stages of Fatty Liver Disease

- **Simple fatty liver.** There is a build-up of excess fat in the liver.
- **Steatohepatitis.** In addition to excess fat, there is inflammation in the liver.
- **Fibrosis.** Inflammation in the liver has caused scarring.
- **Cirrhosis.** Scarring of the liver has become widespread.

Stages of Liver Damage



What Causes Fatty Liver ?



What Causes Fatty Liver ?

- Obesity
- Diabetes
- Insulin resistance
- Dyslipidemia (High levels of fats in blood)

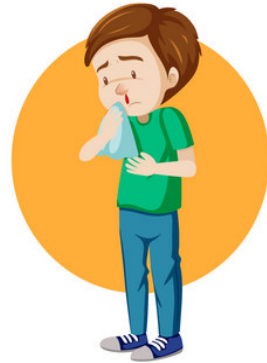
Other less common causes:

- Pregnancy
- Rapid weight loss
- Certain drugs and toxins

Symptoms of Fatty Liver ?

- Often asymptomatic, picked up routine health check up
- Weakness, tiredness, fatigue
- Discomfort in right upper abdomen
- Symptoms related to its complications - cirrhosis

Symptoms of Liver Disease (Cirrhosis)



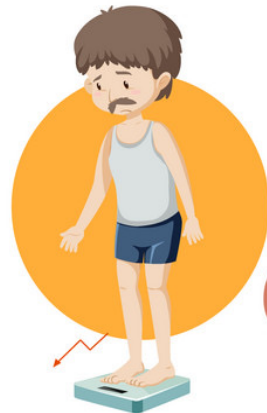
**Bleeding
from nose**



**Vomiting
Blood**



**Stomach
pain**



Weight loss



Fatigue



Jaundice

Symptoms / Signs of Cirrhosis



Water in Tummy (Ascites)



Jaundice



Esophageal Varices



Liver Cancer

Fatty Liver Disease in India

- Simple fatty liver is very common in India reflecting the number of people who are obese or overweight
- It is one of the most common forms of liver disease, with an estimated 30-40%% people in India having early forms of NAFLD.

Fatty Liver Disease in India

General
population

- 9-32 %

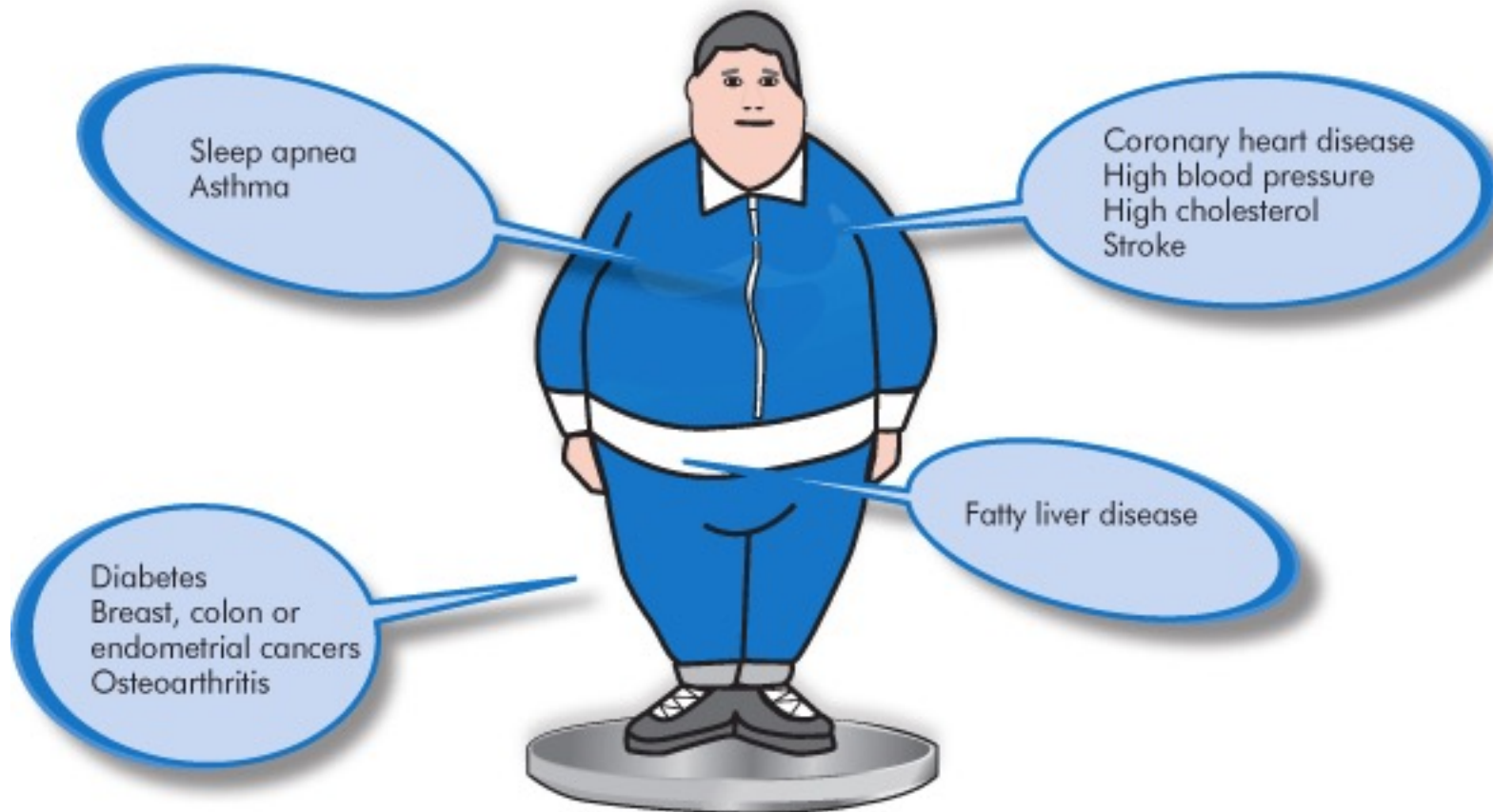
Type 2
DM

- 56.5%

Female

- 60%

Obesity: A major Risk Factor



**Criterion for overweight:
BMI > 25 kg/m²!**

Kolkata NAFL Study

- Most of the NAFLD subjects (75%) were not overweight.
- 103/164 (63%) had normal BMI (18.5-24.9 kg/m²).
- 20/164 (12%) were underweight (BMI <18.5 kg/m²).

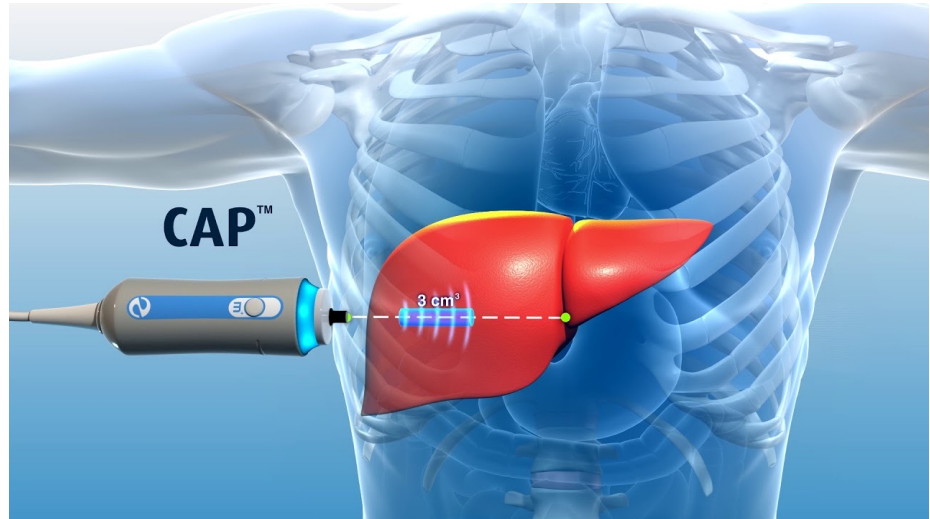
Fatty Liver: Diagnosis

- Medical history
- Examination
- Blood tests- Liver function tests showing elevated AST or ALT
- High Blood sugar, HBAiC,
- High Cholesterol, Triglyceride

Imaging:

- Mostly diagnosed by Ultrasound Test
- Sometimes CT Scan or MRI of liver
- Fibroscan

Fibroscan



Fatty Liver: Diagnosis

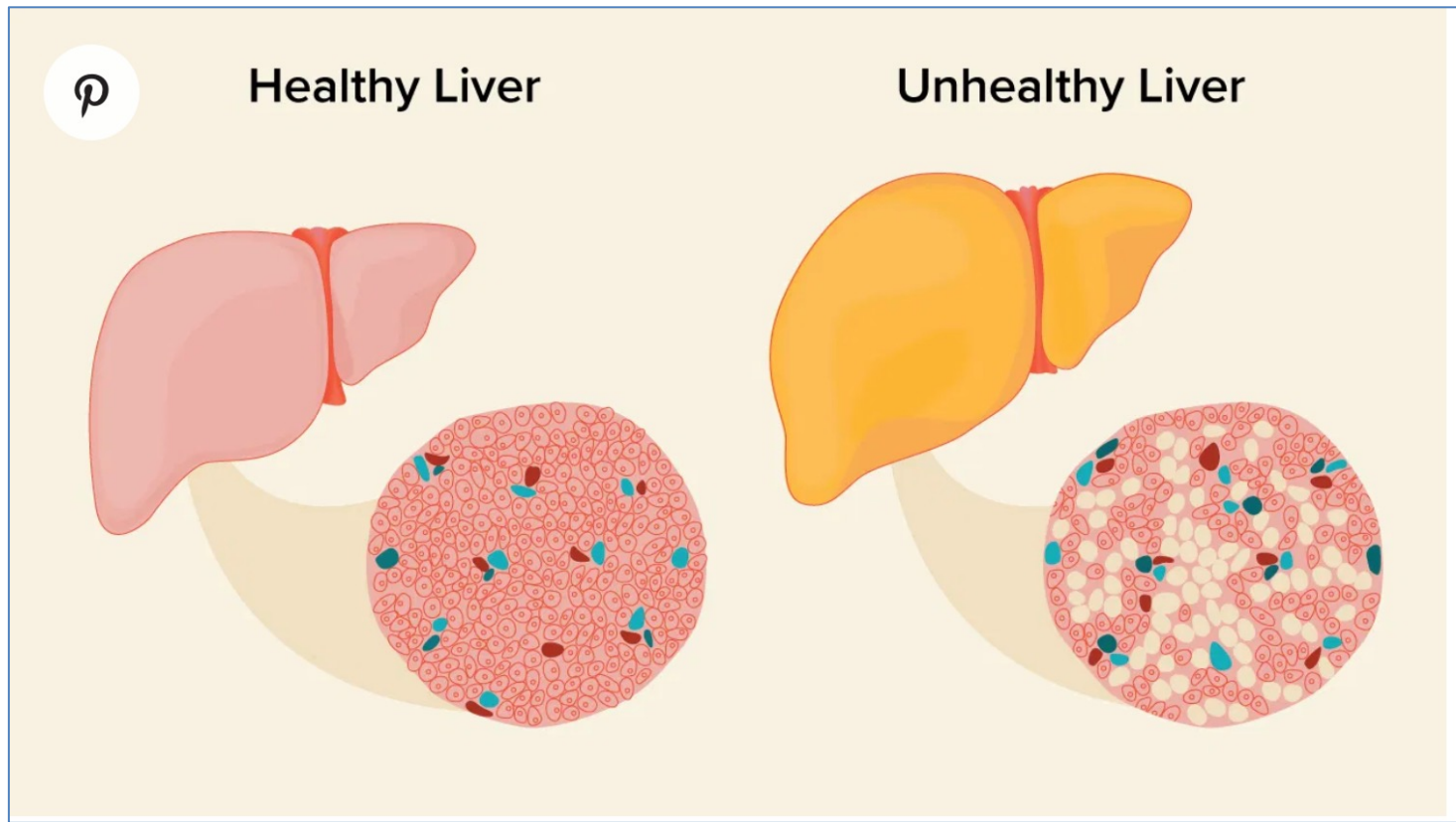
- Medical history
- Examination
- Blood tests- Liver function tests showing elevated AST or ALT
- High Blood sugar, HBAiC,
- High Cholesterol, Triglyceride

Imaging:

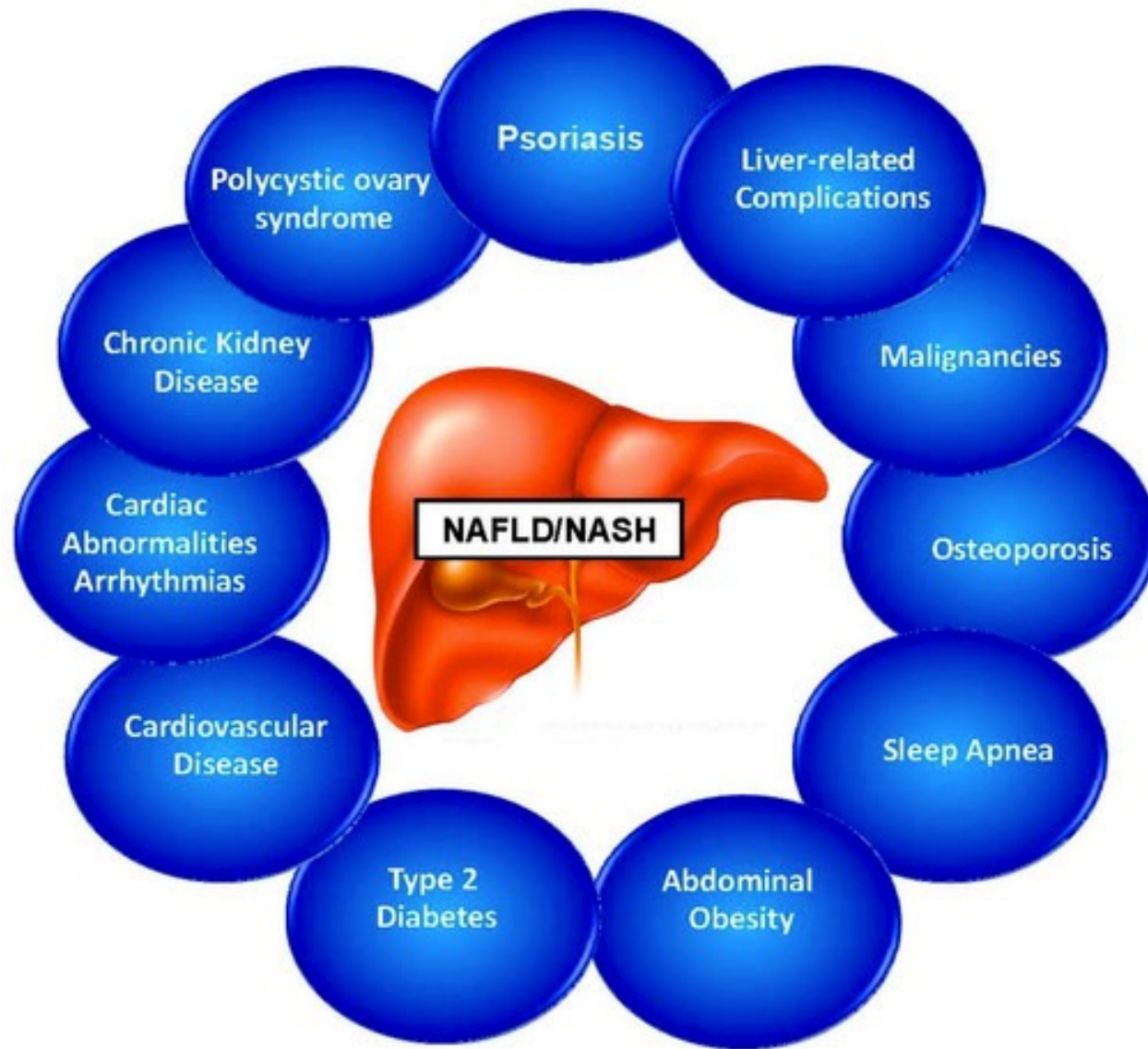
- Mostly diagnosed by Ultrasound Test
- Sometimes CT Scan or MRI of liver
- Fibroscan

Liver Biopsy

Liver Biopsy Showing Fat in Liver



Diseases Associated with Fatty Liver



Fatty Liver: Treatment



Fatty Liver: Treatment



Healthy Diet

Weight Loss

Exercise

- Correct Obesity
- Treat Dyslipidemia
- Treat Diabetes
- Treat Hypertension
- Use of specific drugs for fatty liver
- Avoid alternative medications

Healthy Liver = Healthy Lifestyle

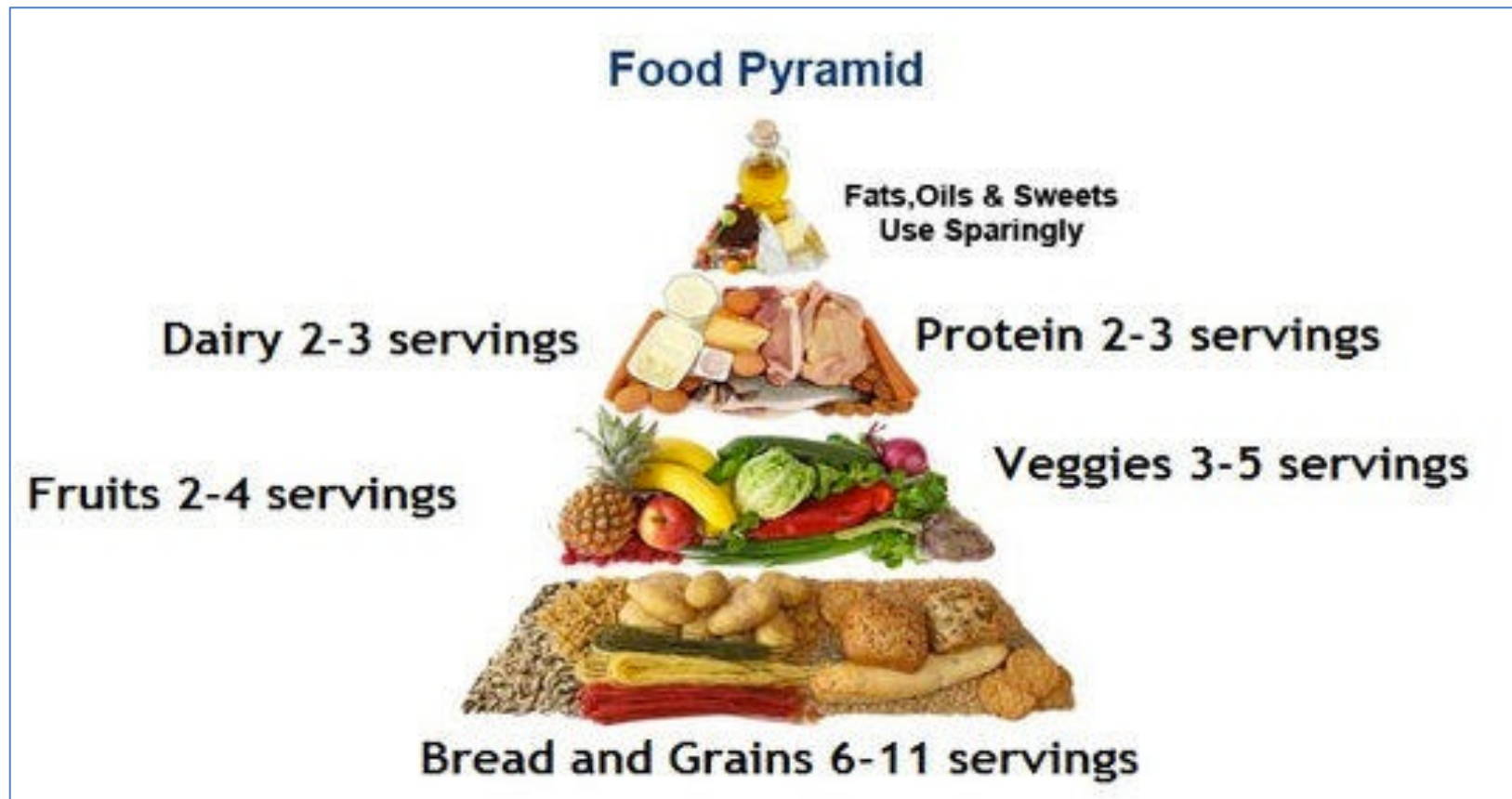




Treatment: Weight loss

- Mainstay treatment of NAFLD
- 3–5% loss of body weight can improve steatosis
- 10% loss may be needed to improve inflammation

Healthy Diet For Healthy Liver



Diet for Fatty Liver Disease

- **Eat a diet that's rich in plant-based foods**, including fruits, vegetables, legumes, and whole grains
- **Limit your consumption of refined carbohydrates**, such as sweets, white rice, white bread, other refined grain products
- **Limit your consumption of saturated fats**, which are found in red meat and many other animal products
- **Avoid trans fats**, which are present in many processed snack foods
- **Avoid alcohol**
- **If overweight, cut calories from your diet** to lose weight
- **Drink plenty of water**

Exercise





EXERCISE

**30 MINUTES A DAY
5 DAYS A WEEK**

Exercise

IT TAKES

4 WEEKS

FOR **YOU** TO SEE YOUR BODY CHANGING

IT TAKES

8 WEEKS

FOR YOUR **FRIENDS AND FAMILY**

IT TAKES

12 WEEKS

FOR **THE REST OF THE WORLD**

KEEP GOING

Liver Facts !

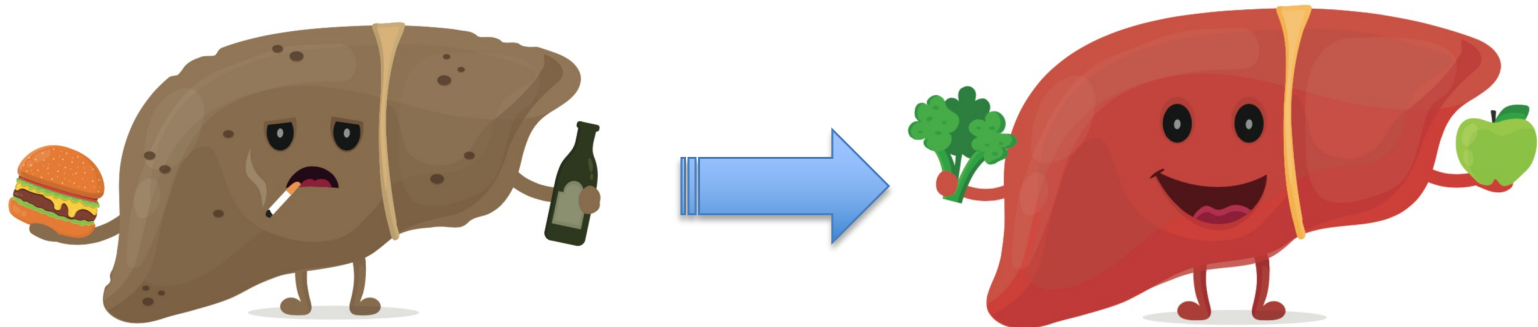
- Liver is it the largest gland in the body
- The liver can regenerate itself! As long as at least 25% of the healthy liver remains, it can become whole again
- Liver performs over 500 functions
- A healthy liver filters about 1.7 litres of blood per minute.
- As far back as 400 BC, the importance of bile was recognized.
- Although attempted in 1963, the first successful whole human liver transplant occurred in 1967
- The first successful living donor liver transplant (adult to child) was performed in 1989

Summary

- Liver is the storehouse of energy and metabolic factory of our body
- Viral hepatitis B, C, Alcohol and Non-alcoholic fatty liver disease are the topmost causes of liver disease in India
- Alcohol leads to fatty liver
- Non-alcoholic fatty liver disease: in those who do not consume alcohol
- Up to 30-40% of population in India have NAFLD
- Poor lifestyle and unhealthy diet are the most important causes
- Fatty liver can progress to cirrhosis in some patients

Summary

- Those with fatty liver often have other associated conditions such as Dyslipidemia, Hypertension, Diabetes
- Mainstay of treatment is exercise, weight loss, and healthy diet
- A healthy liver is the precursor of a healthy body !!



My Seven Pearls Towards Healthy Liver !

Learn A,B,C... for your liver health !!

A) Avoid Alcohol

B) Balanced diet

C) Control of diabetes , dyslipidemia

D) Drugs (avoid drugs and toxins)

E) Exercise

F) Follow up with doctor

G) Get vaccinated against hepatitis B

