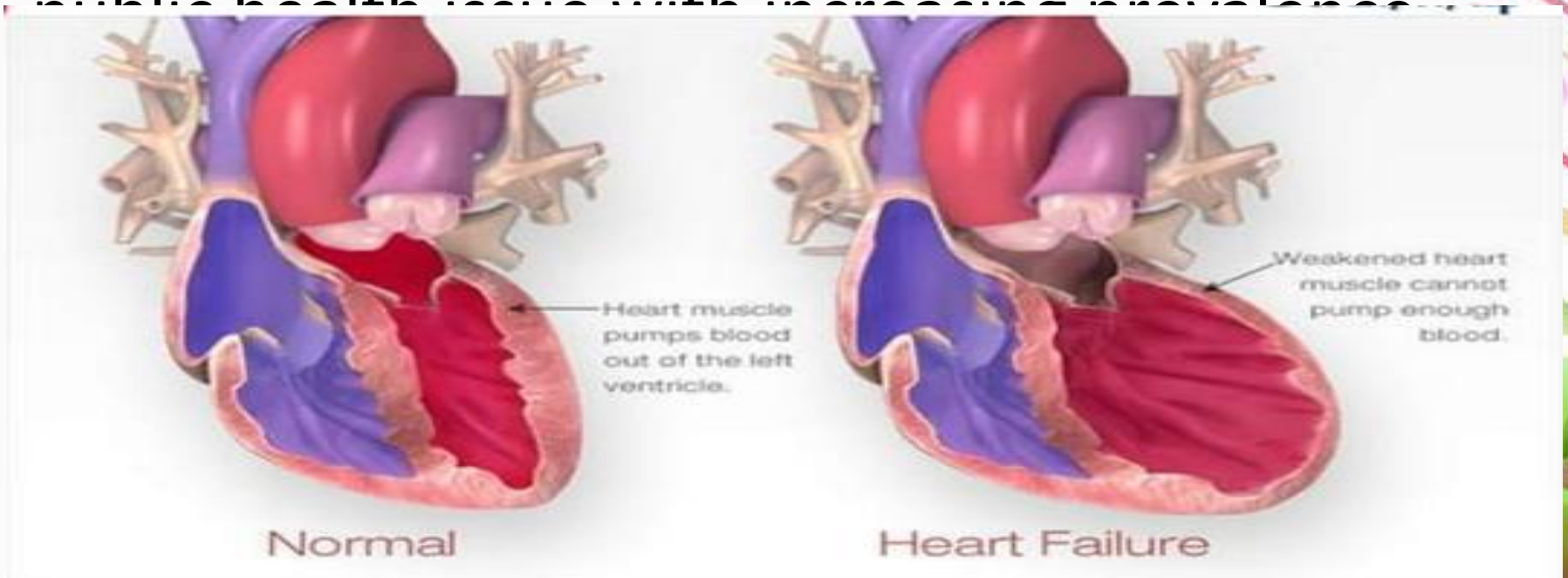
Heart Failure:Overview and Management

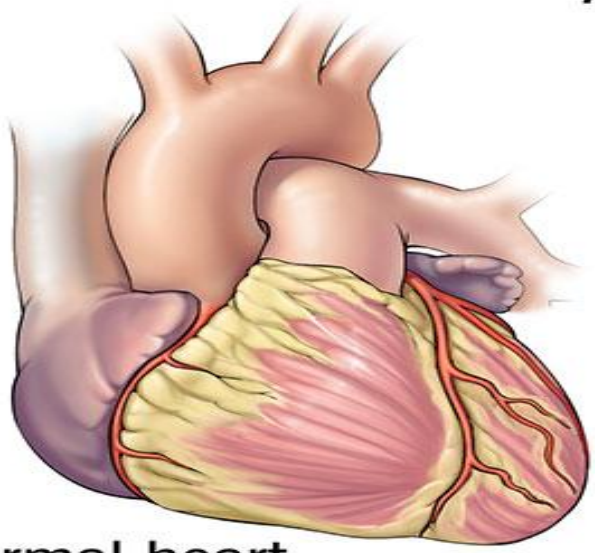
Introduction

- Heart failure (HF) is a complex clinical syndrome in which the heart is unable to pump blood effectively to meet the body's needs .
- It leads to symptoms such as shortness of breath, fatigue, and fluid retention. HF is a significant public health issue with increasing prevalence

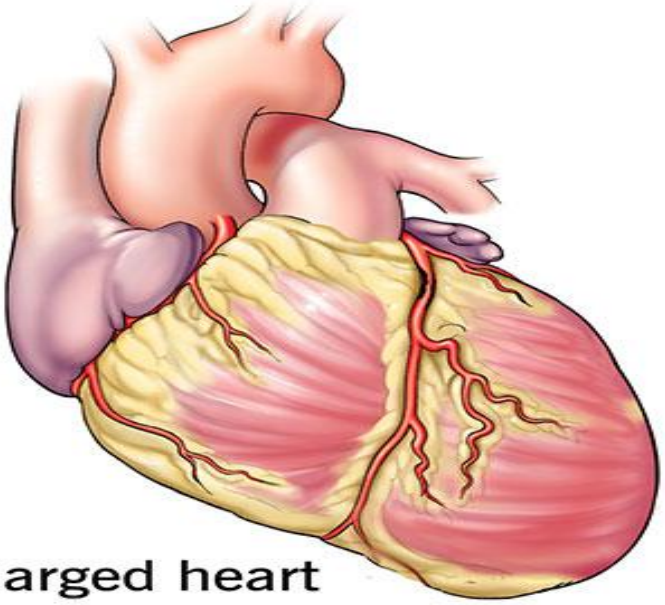


Congestive Heart Failure

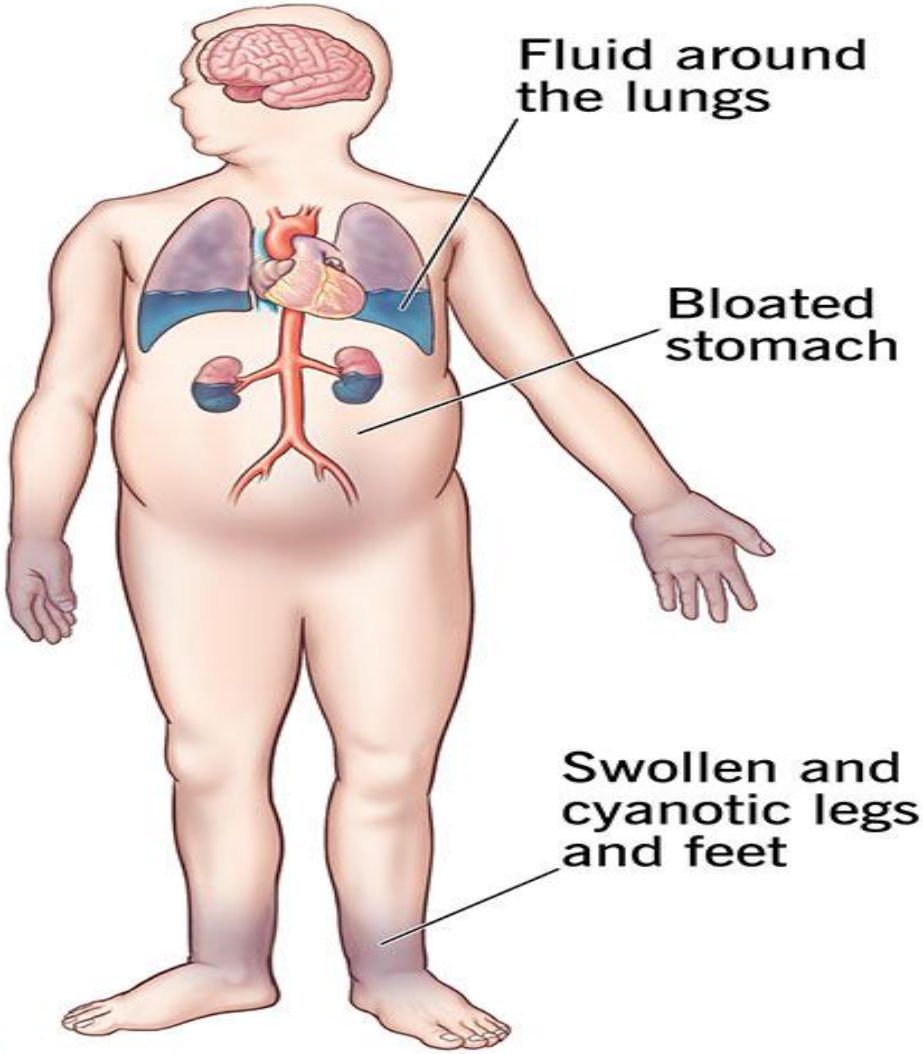
Heart Failure



Normal heart



Enlarged heart



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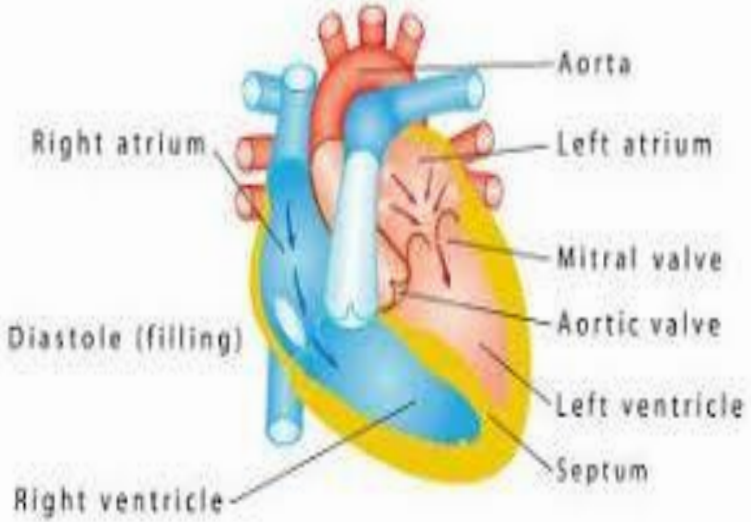
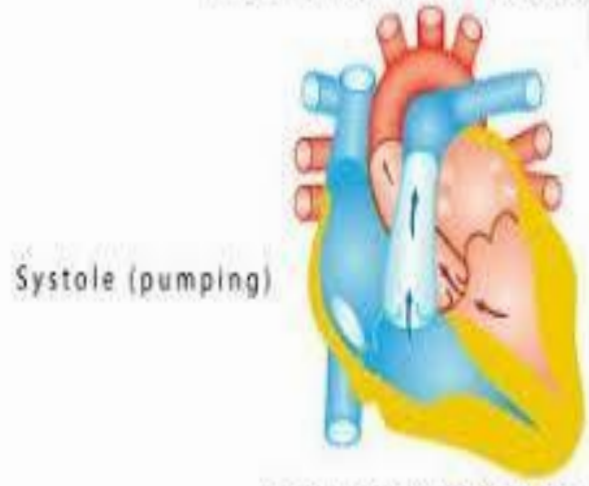
Types of Heart Failure

- 1. Heart Failure with Reduced Ejection Fraction (HFrEF): Systolic heart failure due to weakened heart muscle.
- 2. Heart Failure with Preserved Ejection Fraction (HFpEF): Diastolic heart failure where heart relaxation is impaired.
- 3. Right-sided heart failure: Affects the right ventricle causing fluid buildup in abdomen, legs, and neck veins.
- 4. Left-sided heart failure: Affects the left ventricle leading to fluid in lungs and shortness of breath.

Normal heart



The ventricles fill normally with blood



The ventricles pump out about 60% of the blood

Systolic dysfunction

The enlarged ventricles fill with blood

The ventricles pump out less than 40 to 50% of the blood

Diastolic dysfunction

The stiff ventricles fill with less blod than normal

The ventricles pump out about 60% of the blood, but the amount may be lower than normal

HEART FAILURE

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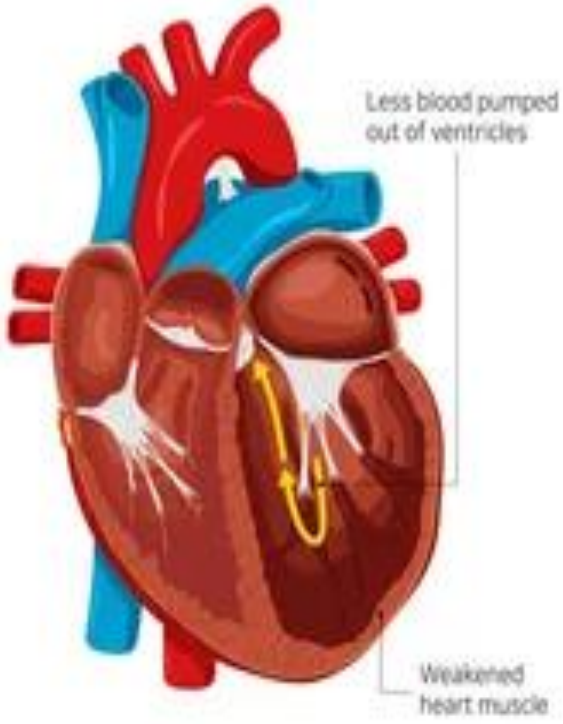
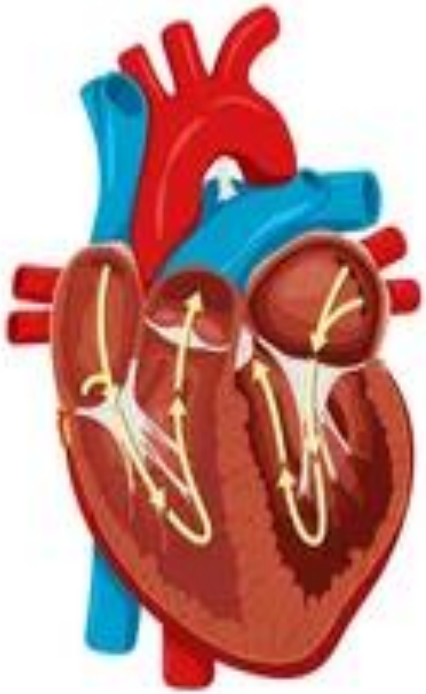
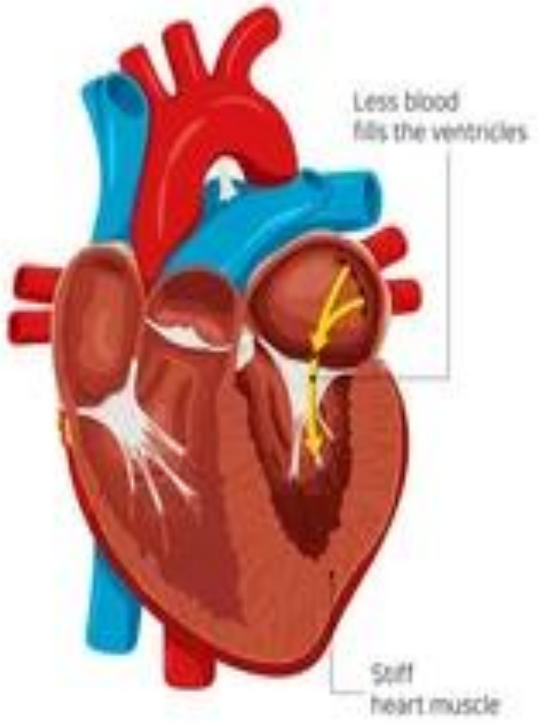


Systolic Dysfunction



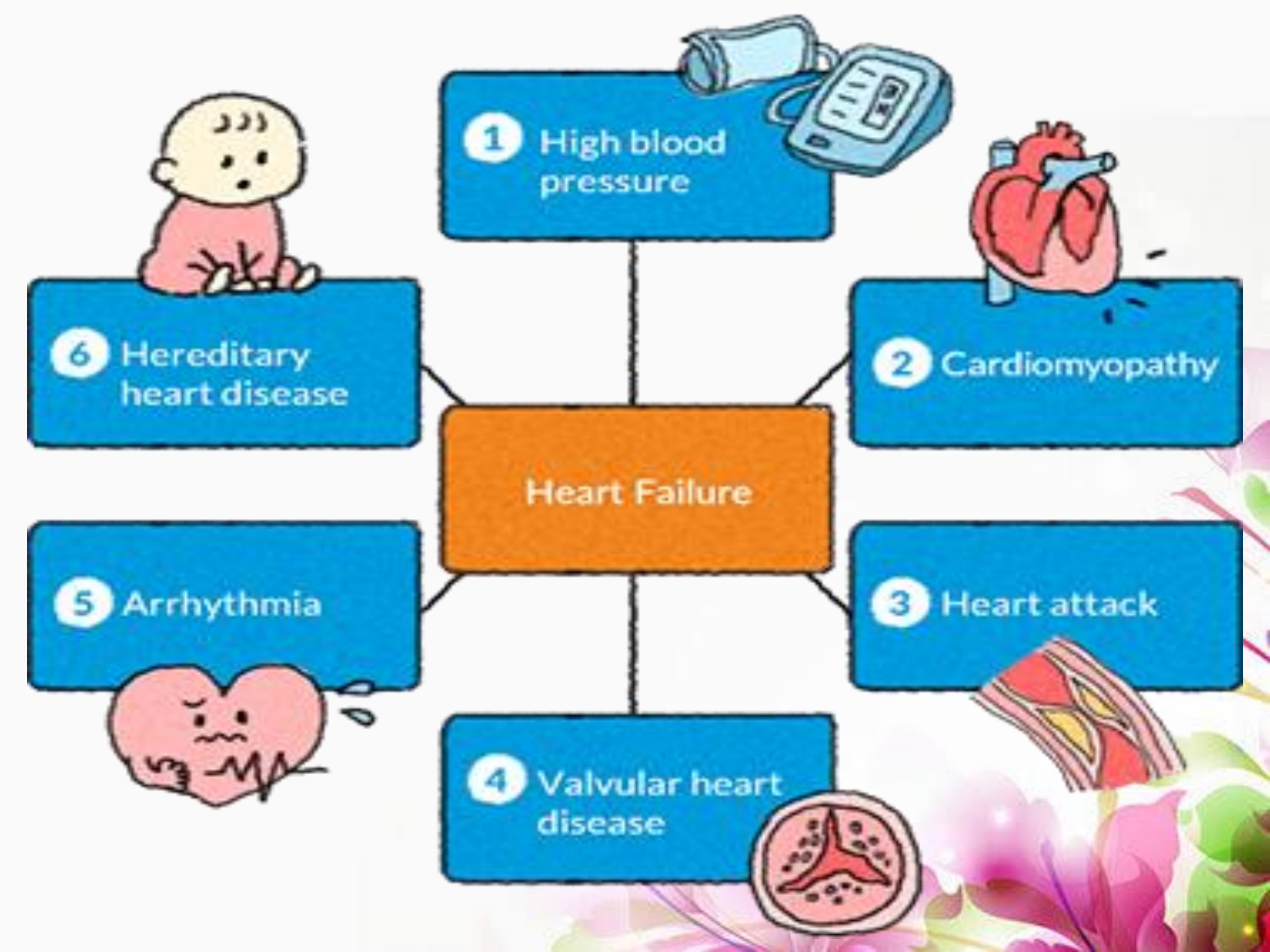
Normal



Diastolic Dysfunction

Causes of Heart Failure

- - Coronary artery disease (CAD)
- - Hypertension (high blood pressure)
- - Myocardial infarction (heart attack)
- - Valvular heart diseases
- - Cardiomyopathies
- - Diabetes mellitus
- - Chronic kidney disease


1 High blood pressure
2 Cardiomyopathy
3 Heart attack
4 Valvular heart disease
5 Arrhythmia
6 Hereditary heart disease
Heart Failure


Causes of Heart Failure
High Blood Pressure
Arrhythmias (such as atrial fibrillation)
Genetic Heart Defects
Hypertrophy (thickening and stiffening of the muscle)
Valvular Heart Disease
HIV/AIDS
Viral Heart Disease (myocarditis)
Excessive Alcohol Intake
Abuse of street drugs like cocaine
Heart Attack /Coronary Artery Disease

Symptoms of Heart Failure

- - Shortness of breath (dyspnea)
- - Fatigue and weakness
- - Swelling (edema) in the legs, ankles, or abdomen
- - Rapid or irregular heartbeats
- - Decreased ability to exercise

How Heart Failure Affects the Body

Diagnosis of Heart Failure

- -Echocardiogram: To assess heart function and ejection fraction.
- -Electrocardiogram (ECG): To check for arrhythmias.
- -Chest X-ray: To detect fluid in the lungs.
- -B-type natriuretic peptide (BNP): Biomarker to assess heart failure.
- -Blood tests: Evaluate kidney and liver function.

Heart Failure Diagnosis

EKG

heart/lung auscultation

BNP

cardiac echo

x-ray

PET

verywell

Management of Heart Failure

- 1. Lifestyle Modifications:
- - Dietary changes (low-sodium diet)
- - Physical activity and exercise programs
- - Weight monitoring for fluid retention

- 2. Pharmacologic Treatments:
- - ACE inhibitors, Beta-blockers, Diuretics, Aldosterone antagonists

- 3. Device Therapy:
- - Implantable cardioverter-defibrillators (ICD)
- - Cardiac resynchronization therapy (CRT)

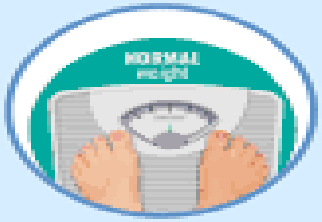
- 4. Surgical Options:
- - Heart transplantation
- - Ventricular assist devices (VAD)

Ways to reduce the risk of developing heart failure

Lifestyle Factors

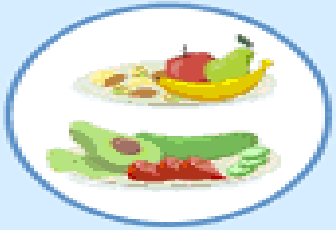
Regular physical activity

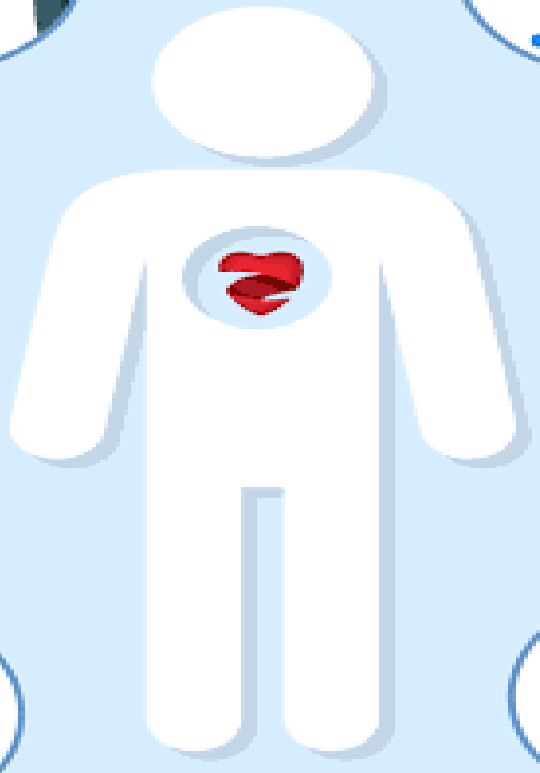
Healthy weight



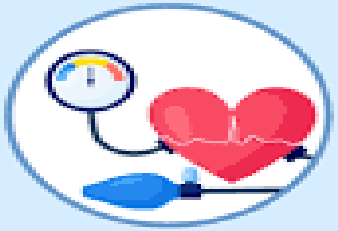
No smoking

Healthy eating

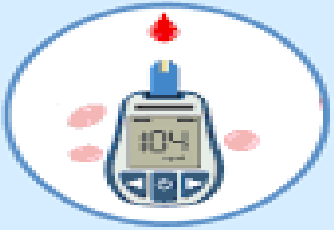




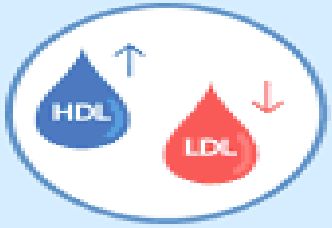
Medical Conditions



Treat high blood pressure



Control diabetes



Maintain healthy cholesterol levels

Take heart protective medication as prescribed


Maintain a balanced diet
Quit smoking
Regular exercise
Limit caffeine
Manage blood pressure
Preventing Congestive Heart Failure
Get regular health screenings
Monitor blood sugar levels

Prognosis

- Heart failure is a progressive disease requiring lifelong management. Early diagnosis and intervention significantly improve outcomes.

Multiple Choice Questions

- .1Which of the following is NOT a common cause of heart failure?
- A. Hypertension
- B. Diabetes
- C. High sodium intake
- D. Coronary artery disease

- .2What is the main difference between HFrEF and HFpEF?
- A. HFrEF is related to impaired heart relaxation, while HFpEF is due to impaired heart contraction.
- B. HFrEF involves a preserved ejection fraction, while HFpEF has a reduced ejection fraction.
- C. HFrEF refers to right-sided heart failure, while HFpEF refers to left-sided heart failure.
- D. HFrEF involves heart muscle weakening, while HFpEF is related to heart valve disease.

Cont ..

- 3. What test is primarily used to assess heart function and ejection fraction in heart failure patients?
- A. Electrocardiogram (ECG)
- B. Echocardiogram
- C. Chest X-ray
- D. B-type natriuretic peptide (BNP)

- 4. Which medication class is most commonly used to reduce fluid retention in heart failure patients?
- A. Diuretics
- B. Beta-blockers
- C. ACE inhibitors
- D. Aldosterone antagonists

Cont...

- 5. Which of the following is a surgical option for advanced heart failure?
- A. Biventricular pacing
- B. Heart transplantation
- C. Coronary artery bypass grafting (CABG)
- D. Valve replacement

Essay Questions

- 1. Discuss the differences between heart failure with reduced ejection fraction (HFrEF) and heart failure with preserved ejection fraction (HFpEF).

- 2. Explain the role of lifestyle changes in managing heart failure, including diet and physical activity.

Cont...

- 3. Describe the pharmacological treatment options for heart failure and their mechanisms of action ?

- 4. Discuss the diagnostic methods used to diagnose heart failure and how they contribute to treatment decisions?

- 5. Evaluate the impact of early diagnosis and intervention on the prognosis of heart failure patients.

References

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Thank
you