



THREATS TO OXYGENATION

Heart Failure

Poll Question

I know _____ for Heart Failure

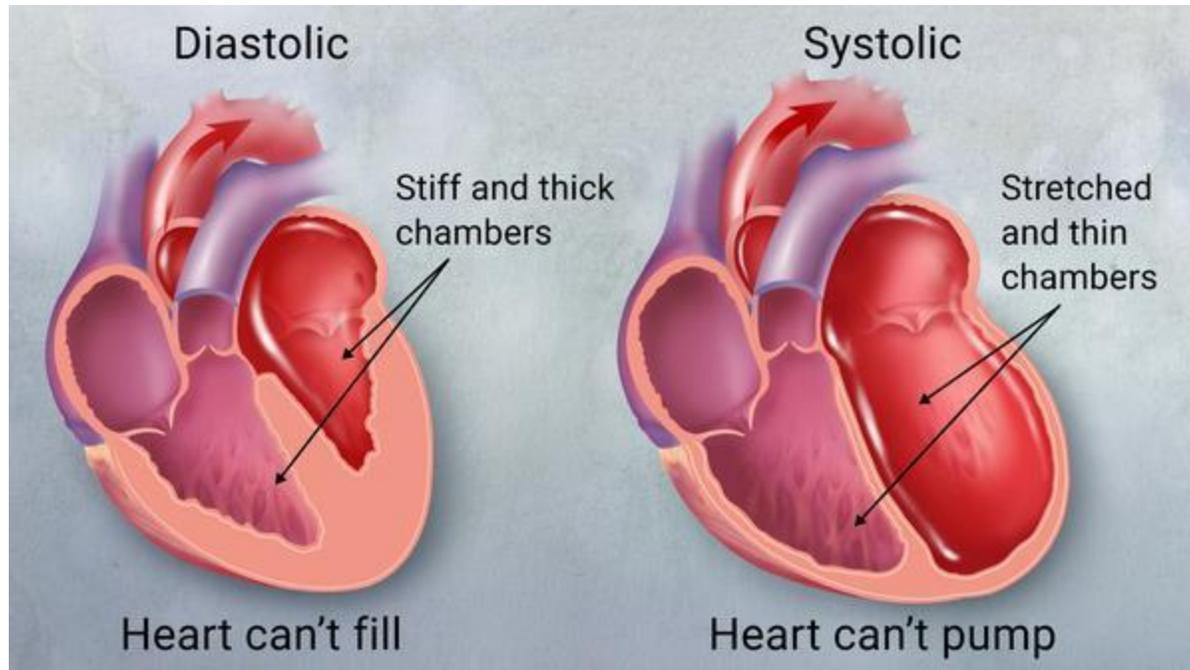
- 1.the pathophysiology
- 2.the treatment
- 3.the diagnostic tests
- 4.all of the above

Objectives

- Describe the pathophysiology of heart failure (HF).
- Review modifiable and non-modifiable risk factors for HF.
- Review Clinical Manifestations of left and right heart failure.
- Discuss diagnostic studies for HF.
- Discuss medical treatments for HF.
- Assessment Findings of heart failure client.
- Discuss client teaching methods for HF.

Is heart failure considered a ventricle filling problem or pumping problem?

- 1. Filling problem**
- 2. Pumping problem**
- 3. Both filling and pumping**
- 4. I don't know**



What is Heart Failure?

Inability of the heart to pump oxygen-rich blood to meet the oxygen needs of tissue and organs.

Systolic: Ventricles can't contract vigorously indicating **pumping problem.**

Diastolic: Ventricles can't relax or fill fully indicating **filling problem.**

Systolic and Diastolic Heart Failure



Primary Causes of Heart Failure

Causes of Congestive Heart Failure

- Primary causes:
 - Cardiomyopathy
 - Coronary artery disease
 - Hypertension
 - Side effects of drug therapy
 - Kidney failure
 - Stress
- Secondary causes:
 - High salt intake
 - Noncompliance with treatment
 - Infection and inflammation
 - Cigarette smoking
 - Obesity

Heart Failure Manifestations

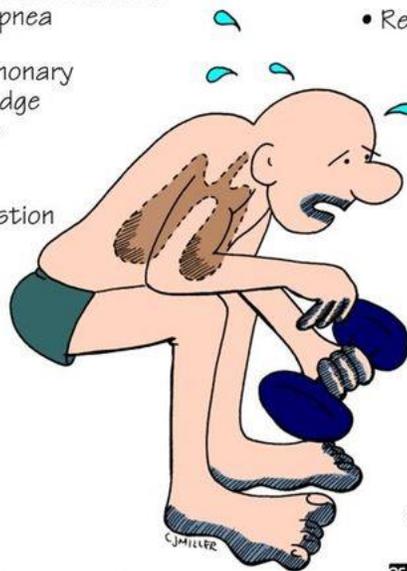
RIGHT SIDED ♥ FAILURE

(Cor Pulmonale)

- Fatigue
 - ↑ Peripheral Venous Pressure
 - Ascites
 - Enlarged Liver & Spleen
 - May be secondary to chronic pulmonary problems
 - Distended Jugular Veins
 - Anorexia & Complaints of GI Distress
 - Weight Gain
 - Dependent Edema
- 

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LEFT SIDED ♥ FAILURE

- Paroxysmal Nocturnal Dyspnea
 - Elevated Pulmonary Capillary Wedge Pressure
 - Pulmonary Congestion
 - Cough
 - Crackles
 - Wheezes
 - Blood-Tinged Sputum
 - Tachypnea
 - Restlessness
 - Confusion
 - Orthopnea
 - Tachycardia
 - Exertional Dyspnea
 - Fatigue
 - Cyanosis
- 

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Early Stages Of Heart Failure Treatment



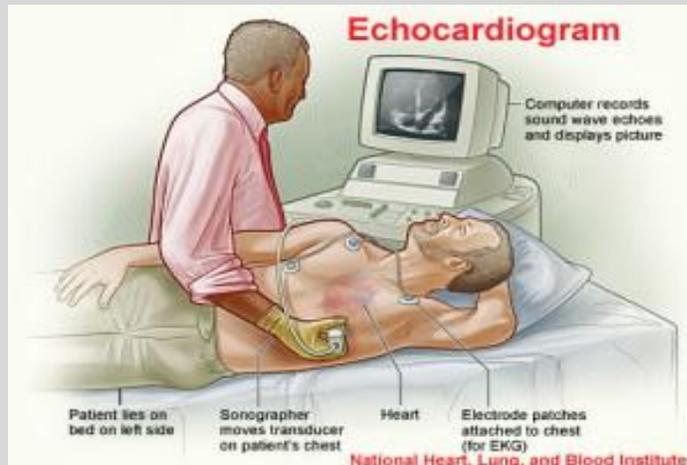
Late Stages of Heart Failure Treatment



Heart Failure

Diagnostic Exams

- CXR
- Echocardiogram
- Pulmonary Artery Catheter (Swan-Ganz)



Lab Tests

- B-type natriuretic peptide (BNP)



Brain Natriuretic Peptide (BNP) video



Echocardiogram Video



Assessment of a Heart Failure Client

Subjective

- Important health information.
- Functional health patterns.

objective

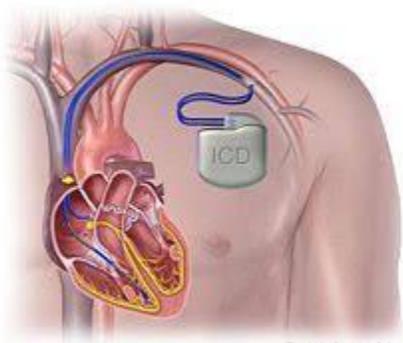
- Integumentary
- Respiratory
- Cardiovascular
- Gastrointestinal
- Neurologic
- Possible Diagnostic Findings

Heart Failure Client & Caregiver Teaching

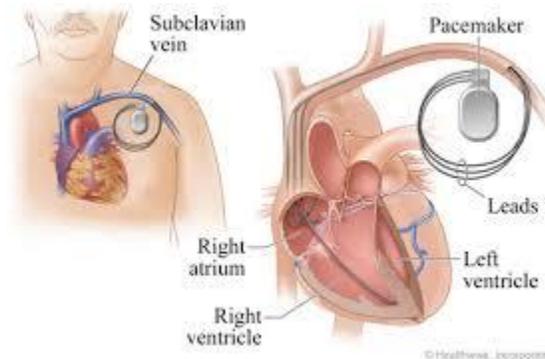
- Dietary Therapy
- Activity program
- Ongoing Monitoring
- Health Promotion
- Rest
- Drug Therapy

Heart Failure Medication Therapy

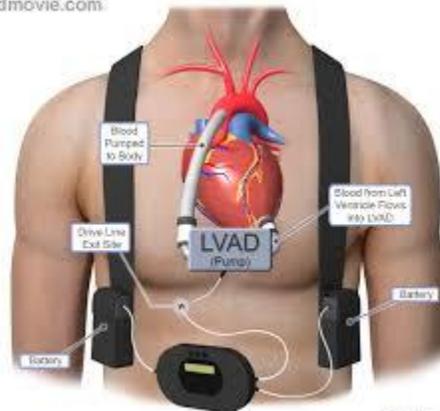
- Angiotensin Converting enzymes (ACE) inhibitors
- Angiotensin II Receptor Blockers (ARB)
- Loop diuretics
- Aldosterone antagonists
- Beta Blockers
- Neprilysin inhibitors/angiotensin II receptor blocker (Entresto)
- Hydralazine and isosorbide dinitrate (combination drug) - (Bidil)
- Jardiance (empagliflozin)



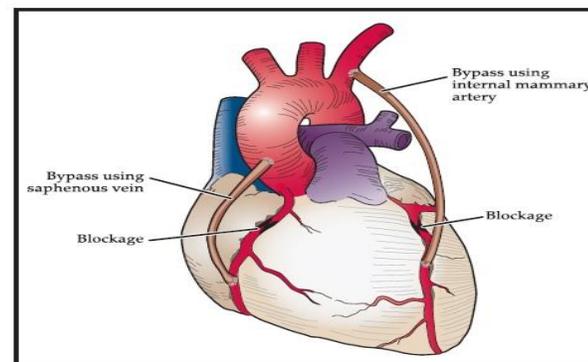
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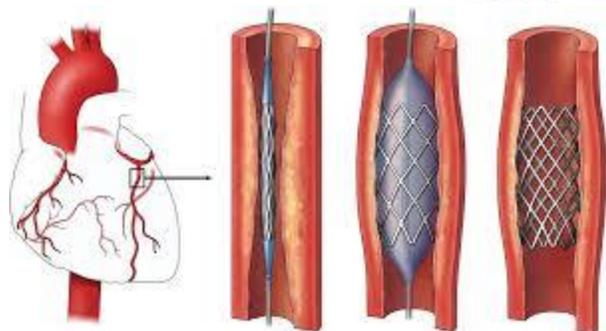
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Devices and surgical Procedures to Treat Heart Failure

- Implantable cardioverter defibrillator (ICD)
- Cardiac Resynchronization Therapy (CRT)-biventricular pacemaker
- Left ventricular assist device (LVAD)
- Heart transplantation
- Percutaneous coronary intervention (PCI)
- Coronary artery bypass
- Valve replacement



Mechanical and Tissue Mitral Valves

Which initial physical assessment finding would the healthcare provider expect to be present in a patient with acute left sided HF?

- 1. bubbling crackles and tachycardia.
- 2. Hepatosplenomegaly and tachypnea.
- 3. Peripheral edema and cool, diaphoretic skin.
- 4. Frothy, blood-tinged sputum and distended jugular veins.

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- Rationale: Early clinical manifestations of acute left sided HF are those of interstitial edema, bubbling crackles, tachypnea and tachycardia. Later signs are frothy blood-tinged sputum, severe dyspnea and orthopnea. Severe tachycardia, cool and clammy skin are present as a result of stimulation of the SNS from hypoxemia. Systemic edema reflected by jugular vein distention, peripheral edema, and hepatosplenomegaly are right sided heart failure.

Which diagnostic test is most useful in differentiating dyspnea related to pulmonary effects of HF from dyspnea related to pulmonary disease?

- 1. Exercise Stress Test
- 2. Cardiac catheterization
- 3. B-type natriuretic peptide (BNP) levels
- 4. Determination of blood urea nitrogen BUN

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2. Cardiac catheterization
3. B-type natriuretic peptide (BNP) levels
4. Determination of blood urea nitrogen (BUN)

- Rationale: b-type natriuretic peptide (BNP) is released from the ventricles in response to increased blood volume in the heart and is a good indicator for HF. If the BNP is elevated, then the dyspnea is caused by HF. If BNP is normal, then dyspnea is caused by pulmonary disease. Exercise stress test and heart catheterization are more important tests to diagnose CAD. BUN determines renal perfusion.

A 2400-mg sodium diet is prescribed for a patient with chronic heart failure. The healthcare provider recognizes that additional teaching is necessary when the patient makes which statement?

- 1. "I should limit my milk intake to two cups a day."
- 2. "I can eat fresh fruits and vegetables without worrying about sodium content."
- 3. "I can eat most foods as long as I do not add salt when cooking or at the table."
- 4. "I need to read the labels on prepared foods and medicines for their sodium content."

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- Rationale: Not adding salt to foods will not eliminate enough sodium from the 2400-mg sodium diet. All foods that are high in sodium should be eliminated in a 2400-mg sodium diet, in addition to the elimination of salt during cooking and on the table. Examples of high sodium foods: processed foods, canned meats, canned soups, bacon, cold cuts, bread.....

Which statement by the patient with chronic heart failure should cause the healthcare provider to determine that additional discharge teaching is needed?

- 1. "I will call my health care provider if I wake up breathless at night."
- 2. "I will look for sodium content on labels of foods and over-the-counter medicines."
- 3. "I plan to organize my household task, so I don't have to constantly go up and down the stairs."
- 4. "I should weigh myself every morning and go on a diet if I gain more than 2 to 3 pounds in 2 days."

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- Rationale: Further teaching is needed if the patient believes a weight gain of 2 to 3 pounds in 2 days is an indication of dieting. In a patient with HF, this type of weight gain reflects fluid retention and is a sign of HF that should be reported to the HCP. The other options show patient understanding of the HF management teaching.

The healthcare provider determines that treatment of heart failure has been successful when the patient experiences

- 1. weight loss and diuresis
- 2. warm skin and less fatigue
- 3. clear lung sounds and decreased heart rate
- 4. absence of chest pain and improved level of consciousness (LOC)

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- Rationale: Successful treatment of HF is indicated by an absence of symptoms of pulmonary edema and hypoxemia, such as clear lung sounds, and normal HR. Weight loss and diuresis, warm skin, less fatigue and improved level of consciousness (LOC) may occur without resolution of pulmonary symptoms. Chest pain is not a common finding in HF unless coronary artery perfusion is impaired.



QUESTIONS???