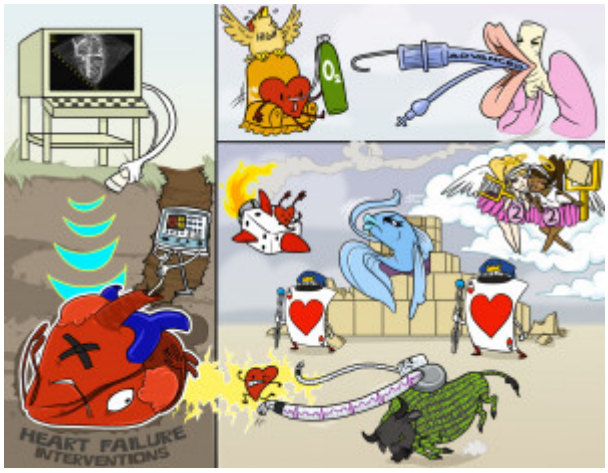
Heart Failure Interventions

The main goals of treatment in heart failure aim at treating the underlying cause and contributing factors, improving gas exchange, and maximizing cardiac output. Patients should be educated on the importance of taking medications as scheduled, plan for rest periods, follow a low sodium (and possibly fluid restricted) diet, and record daily weights as this is the best way to assess fluid retention.



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Diagnostic Tests

Echocardiogram
Echoing Cardiogram
An echocardiogram uses high-frequency sound waves to produce a graphic image of the heart and is routinely used in the diagnosis of heart failure. Often done as a transesophageal echo (TEE) test, an ultrasound transducer is positioned on an endoscope and lead down the esophagus, allowing for visualization of the heart’s valves and chambers.

Invasive Hemodynamic Monitoring
Invasive Heart-monitor
Invasive hemodynamic monitoring is used to directly measure pressures in the heart and great vessels and provides valuable information regarding vascular capacity, blood volume, pump effectiveness, and tissue perfusion. It involves placing a catheter with an infusion system into the pulmonary artery and interpreting waveforms displayed on a monitor.

Improve Gas Exchange

High Fowler's Position
High Fowl
Placing the patient in high fowler’s position is the easiest and quickest way to improve gas exchange. This position decreases venous return due to the pooling of blood in the extremities and increases thoracic capacity, which eases the work of breathing.

Oxygen
O2-tank
Supplemental oxygen is used to increase the percentage of oxygen in inspired air. The goal should be to maintain an SpO2 above 90 percent.

Advanced Airway
Advanced Airway
In situations of severe pulmonary edema, an advanced airway (initiating intubation and ventilation) may be required. Noninvasive ventilatory support such as a BiPap (bilevel positive airway pressure) can also be used in less severe circumstances and at home as this device is effective in decreasing preload.

Drugs and Devices

Diuretics
Die-rocket
Diuretics are used to decrease preload of the heart by promoting sodium and water loss thereby allowing the ventricles to contract more efficiently. Cardiac output is increased, pulmonary vascular pressures are decreased, and symptoms of heart failure such as edema are relieved. Loop diuretics such as furosemide and bumetanide can be administered IV push for rapid action in the kidneys.

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Beta Blockers

Beta-fish with Blocks

Beta blockers are useful in the treatment of heart failure as they directly block the negative effects of the sympathetic nervous system and effectively work to decrease afterload. This will improve the heart’s pumping ability and decrease morbidity and mortality. They must be started slowly and abrupt withdrawal is not recommended.

Angiotensin II Receptor Blockers (ARBs)

Angel-tennis in (2) Tutu with Receptor Blocked

Angiotensin receptor blockers (ARBs) have the same benefits as ACE inhibitors and are therefore used in patients who cannot tolerate ACE inhibitors.

ACE Inhibitors

Ace with Inhibiting-chains

Angiotensin-converting enzyme (ACE) inhibitors work as vasodilators to open up blood vessels, allowing for improved blood flow and decreased workload of the heart, thereby decreasing afterload and increasing cardiac output.

Digoxin (Lanoxin)

Digital-ox

Digoxin is a positive inotrope that improves left ventricular function because it works by increasing the strength of myocardial contractions and thus, also improves myocardial oxygen consumption. However, due to the length of time needed to reach therapeutic levels, it is not recommended for use in acute decompensated heart failure, but rather used who those who have not responded to conventional pharmacotherapy and those with chronic heart failure.

Pacemaker

Pacemaker

For serious heart failure, an implanted device such as a pacemaker may be indicated to help the heart’s chambers pump. There are various devices that can be used to treat heart failure clients. Cardiac resynchronization therapy (CRT) or biventricular pacing can increase left ventricular function and cardiac output. Implanted ventricular assist devices (VAD) are often used for long-term support, as patients wait for a heart transplant.

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