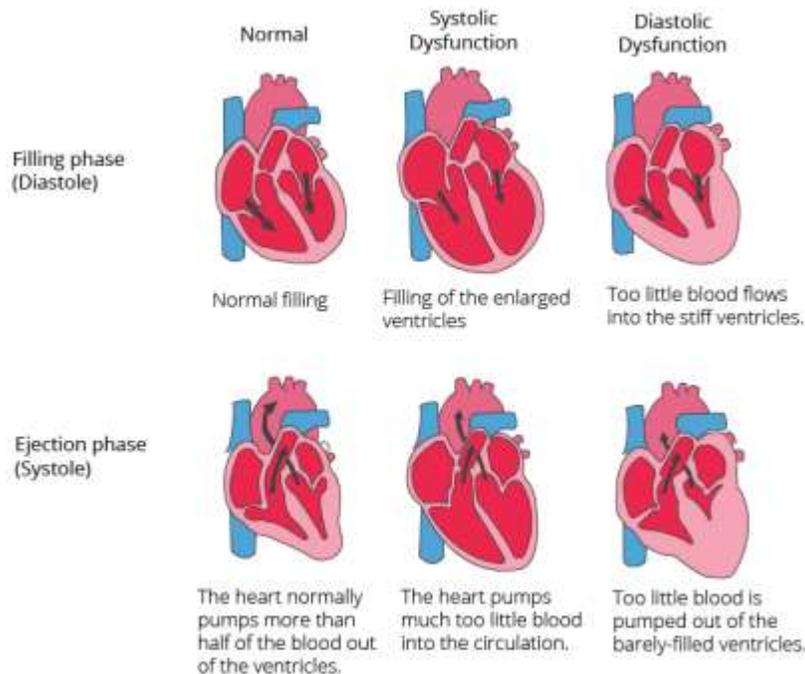


Heart Failure

What is heart failure?

Heart failure, also known as congestive heart failure, occurs when your heart muscle doesn't pump blood as well as it should. Certain conditions, such as narrowed arteries in your heart (coronary artery disease) or high blood pressure, gradually leave your heart too weak or too stiff to fill and pump blood efficiently.



Causes:

Heart failure is caused by diseases that affect or damage the heart muscle. The common causes of chronic heart failure are:

- **Coronary artery disease (CAD)** is triggered by the narrowing of the coronary blood vessels (coronary arteries), most commonly due to atherosclerosis. A heart attack is due to a decrease in circulation of oxygen-rich blood to the heart muscle, causing the tissue to irreversibly die. This damage affects the pump function of the heart, leading to heart failure. A large portion of those affected also suffer from high blood pressure, which additionally intensifies the situation.

- **High blood pressure** (hypertension) is the sole reason for heart failure in up to 20% of individuals.
- **Heart valve problem.** Through narrowed or leaky aortic valves, the heart must pump stronger or
- **Heart rhythm disorders** beat more frequently, which also leads to a chronic increased burden. Such as a heart rate that is too low (bradycardia), can also be the trigger of heart failure, as too little blood is circulated.
- **Hereditary diseases** of the heart that lead to an increase in muscle mass can be the cause of heart failure. Pregnancy, autoimmune disorders, alcohol, drugs, or misuse of medications, heart rhythm disorders and an overactive thyroid, as well as metabolic disorders (diabetes mellitus) can all be causes of heart failure.

Symptoms:

Heart failure can be ongoing (chronic), or your condition may start suddenly (acute).

Heart failure signs and symptoms may include:

- Shortness of breath (dyspnea) when you exert yourself or when you lie down
- Fatigue and weakness
- Swelling (edema) in your legs, ankles and feet
- Rapid or irregular heartbeat
- Reduced ability to exercise
- Persistent cough or wheezing with white or pink blood-tinged phlegm
- Increased need to urinate at night
- Swelling of your abdomen (ascites)
- Very rapid weight gain from fluid retention
- Lack of appetite and nausea
- Difficulty concentrating or decreased alertness
- Sudden, severe shortness of breath and coughing up pink, foamy mucus
- Chest pain if your heart failure is caused by a heart attack

Diagnosis:

Tests

After the physical exam, your doctor may also order some of these tests:

- **Blood tests** - Your doctor may take a blood sample to look for signs of diseases that can affect the heart. He or she may also check for a chemical called N-terminal pro-B-type natriuretic peptide (NT-proBNP) if your diagnosis isn't certain after other tests.
- **Chest X-ray** - X-ray images help your doctor see the condition of your lungs and heart. Your doctor can also use an X-ray to diagnose conditions other than heart failure that may explain your signs and symptoms.
- **Electrocardiogram (ECG)** - This test records the electrical activity of your heart through electrodes attached to your skin. It helps your doctor diagnose heart rhythm problems and damage to your heart.
- **Echocardiogram** - An echocardiogram uses sound waves to produce a video image of your heart. This test can help doctors see the size and shape of your heart along with any abnormalities. An echocardiogram measures your **ejection fraction**, an important measurement of how well your heart is pumping, and which is used to help classify heart failure and guide treatment.
- **Stress test** - Stress tests measure the health of your heart by how it responds to exertion. You may be asked to walk on a treadmill while attached to an ECG machine, or you may receive a drug intravenously that stimulates your heart similar to exercise.
- **Cardiac computerized tomography (CT) scan** - In a cardiac CT scan, you lie on a table inside a doughnut-shaped machine. An X-ray tube inside the machine rotates around your body and collects images of your heart and chest.
- **Magnetic resonance imaging (MRI)** - In a cardiac MRI, you lie on a table inside a long tube like machine that produces a magnetic field, which aligns atomic particles in some of your cells. Radio waves are broadcast toward these aligned particles, producing signals that create images of your heart.
- **Coronary angiogram** - In this test, a thin, flexible tube (catheter) is inserted into a blood vessel at your groin or in your arm and guided through the aorta into your coronary arteries. A dye injected through the catheter makes the arteries supplying your heart visible on an X-ray, helping doctor's spot blockages.
- **Myocardial biopsy** - In this test, your doctor inserts a small, flexible biopsy cord into a vein in your neck or groin, and small pieces of the heart muscle are taken. This test may be performed to diagnose certain types of heart muscle diseases that cause heart failure.

Present day treatment

Heart failure is a chronic disease needing lifelong management. However, with treatment, signs and symptoms of heart failure can improve. For most people, the treatment of heart failure involves a balance of the right medications and, in some cases, use of devices that help the heart beat and contract properly.

Medications

Doctors usually treat heart failure with a combination of medications. Depending on your symptoms, you might take one or more medications, including:

- **Angiotensin-converting enzyme (ACE) inhibitors** - These drugs help people with systolic heart failure live longer and feel better. ACE inhibitors are a type of vasodilator. Examples include enalapril (Vasotec), lisinopril (Zestril) and captopril (Capoten).
- **Angiotensin II receptor blockers** - These drugs, which include losartan (Cozaar) and valsartan (Diovan), They are alternative for people who can't tolerate ACE inhibitors.
- **Beta blockers** - This class of drugs not only slows your heart rate and reduces blood pressure but also limits or reverses some of the damage to your heart if you have systolic heart failure. Examples include carvedilol (Coreg), metoprolol (Lopressor) and bisoprolol (Zebeta).
- **Diuretics** - Often called water pills, diuretics make you urinate more frequently and keep fluid from collecting in your body. Diuretics, such as furosemide (Lasix), also decrease fluid in your lungs so you can breathe more easily.
- **Aldosterone antagonists** - These drugs include spironolactone (Aldactone) and eplerenone (Inspra). These are potassium-sparing diuretics, which also have additional properties that may help people with severe systolic heart failure live longer.
- **Inotropes** - These are intravenous medications used in people with severe heart failure in the hospital to improve heart pumping function and maintain blood pressure.
- **Digoxin (Lanoxin)** - This drug, also referred to as digitalis, increases the strength of your heart muscle contractions. It also tends to slow the heartbeat.

Surgery and medical devices

In some cases, doctors recommend surgery to treat the underlying problem that led to heart failure. Some treatments being studied and used in certain people include:

- **Coronary bypass surgery.** If severely blocked arteries are contributing to your heart failure, your doctor may recommend coronary artery bypass surgery. In this procedure, blood vessels from your leg, arm or chest bypass a blocked artery in your heart to allow blood to flow through your heart more freely.
- **Heart valve repair or replacement.** If a faulty heart valve causes your heart failure, your doctor may recommend repairing or replacing the valve. The surgeon can modify the original valve to eliminate backward blood flow. Valve replacement is done when valve repair isn't possible. In valve replacement surgery, the damaged valve is replaced by an artificial (prosthetic) valve.
- Certain types of heart valve repair or replacement can now be done without open heart surgery, using either minimally invasive surgery or cardiac catheterization techniques.
- **Implantable cardioverter-defibrillators (ICDs).** An ICD is a device similar to a pacemaker. It's implanted under the skin in your chest with wires leading through your veins and into your heart.
- The ICD monitors the heart rhythm. If the heart starts beating at a dangerous rhythm, or if your heart stops, the ICD tries to pace your heart or shock it back into normal rhythm. An ICD can also function as a pacemaker and speed your heart up if it is going too slow.
- **Heart transplant.** Some people have such severe heart failure that surgery or medications don't help. They may need to have their diseased heart replaced with a healthy donor heart.
- A heart transplant isn't the right treatment for everyone. A team of doctors at a transplant center will evaluate you to determine whether the procedure may be safe and beneficial for you.

Protocol of treatment at Stem Cell Medicare:

We at Stem Cell Medicare have been giving treatment to patients with cardio degenerative diseases with autologous mesenchymal stem cells with great success. We strive to design protocol for each patient to suit his needs. The technique is quite effective, safe and without any side effects.

The protocol involves the following steps:

Patient Selection:

- Adult Or with Parental approval
- Patient with exclusion criteria for each disease
- Written and video consent to receive the treatment

Stem Cell Extraction: The mesenchymal stem cells are collected from

- Blood
- Bone marrow
- and or abdominal body fat

Mesenchymal cell separation The mesenchymal are separated by special procedure from the blood, bone marrow or adipose tissue samples.

Stem Cell Processing:

Half the sample is processed for separation of stem cells and these cells are administered by intravenous infusion. Parts of the sample containing stem cells are sent to a nationally accredited laboratory for amplification and differentiation into cardiac progenitor cells. These cells are administered on the subsequent visits.

Quality Certificate:

Each patient receives a third party certificate (nationally accredited laboratory), for quality, quantity of viable cells.

Implantation of Stem Cells: The stem cell implantation can be done in the following ways.

- Intravenous administration
- Intrathecal (lumber puncture)
- Intramuscular
- Intraarterial
- Subcutaneous
- Liberation angioplasty
- Surgical administration for stroke

Follow up:

The Staff at Stem Cell Medicare will call you after one month, two months and six months to see the progress of the treatment. This helps us refine our protocols to improve further. You can also call for any other help.