**RECOGNIZING ADVANCED HEART FAILURE AND KNOWING YOUR OPTIONS**

**Understanding your medical situation**

Having advanced heart failure doesn’t mean you’ve run out of treatment options. In fact, the increasing number of therapies and state-of-the-art technologies for advanced heart failure provide more choices than ever.

This is why shared decision-making helps. Your doctor knows your medical situation best and can narrow treatment possibilities to the most appropriate options for you. Together, you sort through the options and consider how each treatment fits into your priorities and life goals.

Take [implantable cardioverter defibrillators](https://www.heart.org/en/health-topics/arrhythmia/prevention--treatment-of-arrhythmia/implantable-cardioverter-defibrillator-icd) (ICDs), for example. For a patient who wants to live as long as possible, a defibrillator may reduce the risk of sudden cardiac death by shocking a fluttering heart (also known as [ventricular fibrillation](https://www.heart.org/en/health-topics/arrhythmia/about-arrhythmia/ventricular-fibrillation)) back to its normal heartbeat. But for patients who have expressed the desire to die in their sleep, a defibrillator may not be the best option.

So your life goals and end-of-life preferences help determine what’s best for you.

**Knowing the treatment options**

Advanced heart failure can’t be cured, but it can be treated. Treatments can reduce your symptoms and help your heart pump as best it can. But treatments involve risks as well as benefits, so discuss your options in detail with your doctor.

Sometimes, patients don’t fully understand the possible side effects or trade-offs of a treatment. A mechanical heart pump, for example, can help the heart pump better and relieve congestion-related symptoms such as shortness of breath. Patients may live longer and have a better quality of life as a result. But the pump, known as a [left ventricular assist device](https://www.heart.org/en/health-topics/heart-failure/treatment-options-for-heart-failure/devices-and-surgical-procedures-to-treat-heart-failure) (LVAD), also increases the risk of infection, [stroke](http://www.strokeassociation.org/STROKEORG/) and bleeding in the gastrointestinal tract. An electrical cord (which connects the pump to a power source) must also be worn outside the body on a belt or harness.

At some hospitals, palliative care specialists are called in to help patients make big medical decisions, such as whether to receive an LVAD.

Unfolding science is suggesting that cognitive and other concerns may need to be discussed and monitored as part of the treatment plan. Explore the possible benefits and risks of each therapy with your doctor to decide what treatment you need now, and what you may need in the future.

**Treatment options for advanced heart failure**

**Major interventions**

* **Open-heart surgery:** For patients with advanced heart failure that’s somewhat stable, surgery may be an option. Open-heart surgeries require stopping the heart and using a heart-lung machine to circulate and oxygenate blood until the heart is restarted after the procedure. It’s unclear whether these major surgeries are effective in treating advanced heart failure
* **High-risk surgeries for advanced heart failure include:**
  + **Coronary artery bypass graft:** If heart failure is caused by [coronary artery disease](https://www.heart.org/en/health-topics/consumer-healthcare/what-is-cardiovascular-disease/coronary-artery-disease), [bypass surgery](https://www.heart.org/en/health-topics/heart-attack/treatment-of-a-heart-attack/cardiac-procedures-and-surgeries) may be an option. Using arteries or veins taken from other parts of the body (called grafts), a doctor reroutes blood flow to the heart around one or more blocked heart arteries.
  + **Valve surgery:** [Heart valves](https://www.heart.org/en/health-topics/heart-valve-problems-and-disease/about-heart-valves) control the one-way flow of blood through the heart. In advanced heart failure, the [mitral valve](https://www.heart.org/en/health-topics/heart-valve-problems-and-disease/heart-valve-problems-and-causes/problem-mitral-valve-prolapse) may leak if the muscles around the valve become too weak to allow the valve to close tightly. In other cases, heart failure may be caused by stiffness, or [stenosis](https://www.heart.org/en/health-topics/congenital-heart-defects/about-congenital-heart-defects/aortic-valve-stenosis-avs), of the aortic valve. When the aortic valve doesn’t open completely, less blood is pumped from the heart to the body. Surgeons can repair a damaged valve or replace it with a new, artificial valve.
  + **Pericardiectomy:** The pericardium is the thin sac that surrounds and protects the heart. Long-term inflammation of the pericardium causes it to become stiff and thick with scar tissue, a condition called constrictive pericarditis. This inflammation essentially squeezes the heart and prevents it from beating normally. During a pericardiectomy, also called pericardial stripping, most of the stiff sac is removed to relieve constriction of the heart.
* **Percutaneous interventions:** Percutaneous interventions are non-surgical procedures performed on a beating heart. Unlike open-heart surgery, the heart is accessed with special tools threaded through a small opening in the groin. A percutaneous procedure may be considered in advanced heart failure patients who aren’t candidates for surgery. Options include:
  + **Percutaneous valve intervention:**A narrowed valve may be repaired using a balloon to widen the valve opening. For a leaky valve, a clip device can clamp the valve flaps to reduce the leak. A faulty valve can be replaced with an artificial valve implanted through a catheter. There are different procedures for different types of valve defects.
* **Percutaneous coronary intervention (PCI), or coronary angioplasty:** An inflatable balloon can open a blocked heart artery. Artery-clogging plaque is pushed against the blood vessel wall to restore blood flow through the artery. A small mesh tube called a stent is sometimes placed in the artery to keep it open.
* **Pacemaker:** Advanced heart failure may cause delayed contractions of the right and left ventricles. (The ventricles are the heart’s main pumping chambers that normally contract at the same time.) In cardiac resynchronization therapy, or CRT,  a pacemaker coordinates the electrical signaling between the ventricles to allow them to pump together.
* **Implantable cardioverter defibrillator**

An [implantable cardioverter defibrillator](https://www.heart.org/en/health-topics/arrhythmia/prevention--treatment-of-arrhythmia/implantable-cardioverter-defibrillator-icd), or ICD, may reduce the risk of sudden cardiac death. It shocks the heart to stop a fatal irregular heartbeat called [arrhythmia](https://www.heart.org/en/health-topics/arrhythmia/about-arrhythmia) and restore a normal rhythm. An ICD does not improve heart function or relieve symptoms of advanced heart failure.

**Temporary therapies**

Short-term treatments are sometimes needed to help a patient recover from a reversible condition, such as acute kidney failure. Temporary therapies can also be a transition to a permanent therapy, such as a heart transplant.

Still, these temporary interventions may be needed indefinitely if a patient’s health worsens. Doctors and patients should discuss the possibility of long-term use before choosing one of the following treatments:

* **Temporary mechanical support devices:**A heart attack, severe inflammation of the heart muscle (myocarditis) or another heart emergency can prevent the heart from pumping enough blood. Quick intervention may support a failing heart temporarily, until it has time to recover. Temporary mechanical support devices for advanced heart failure include:
  + **Intra-aortic balloon pump:** A small balloon is placed inside the aorta, the major artery connected to the heart that sends blood to the body. The balloon is connected to a machine outside the body that inflates the balloon when the heart relaxes between beats, and deflates the balloon before the heart pumps. This lessens the heart’s workload and increases blood flow from the heart. This balloon pump is often only needed for a few days.
  + **Percutaneous ventricular assist device:** A left ventricular assist device, or LVAD, helps the heart heal by taking over the workload of the left ventricle, the heart chamber that pumps blood to the body. Normally, blood is sent from the left atrium to the left ventricle, where it’s pumped out to the body. With an LVAD, a tube placed in the left atrium pulls oxygen-rich blood out of the heart and circulates it throughout the body.  
    The device may be inserted through a small opening in the skin. The pump and its controller remain outside the body. The device is typically used for up to two weeks.
  + **Extracorporeal membrane oxygenation:** Blood is sent through an extracorporeal membrane oxygenation (ECMO) machine to increase the amount of oxygen in the blood. The oxygen-rich blood is then returned to the body. ECMO is typically only needed for days or weeks.
* **Positive inotropic drugs:** A positive inotropic drug is a therapy given intravenously to make the heart beat more forcefully.
* **Renal replacement therapy:** Advanced heart failure can put significant strain on the kidneys, making them less able to dispose of sodium and water. If the kidneys fail, renal replacement therapy, such as dialysis, can remove waste and extra fluid from the blood.

**Implantable Left Ventricular Assist Device**

An implanted [left ventricular assist device](https://www.heart.org/en/health-topics/heart-failure/treatment-options-for-heart-failure/devices-and-surgical-procedures-to-treat-heart-failure), or LVAD, may be a temporary “bridge to transplant” for patients awaiting a heart donor. When heart transplantation isn’t an option, an LVAD can help the patient’s heart pump blood permanently.

The pump is implanted in the upper part of the abdomen and functions as a mechanical heart, pulling blood from the left ventricle and sending it to the aorta for delivery to the rest of the body. A tube attaches the pump to a battery and control system, worn outside the body.

**Other Health Problems**

Health problems not related to the heart may develop in patients with advanced heart failure. Deciding whether to undergo a non-heart procedure requires careful consideration of whether the potential benefits outweigh the risks.

For example, hip surgery risks may be acceptable, while the possible complications of knee replacement surgery are not. In addition, routine screening tests, such as colonoscopy, mammography and prostate-specific antigen, are often not appropriate for people with advanced heart failure.