

Advanced Infusion Therapy

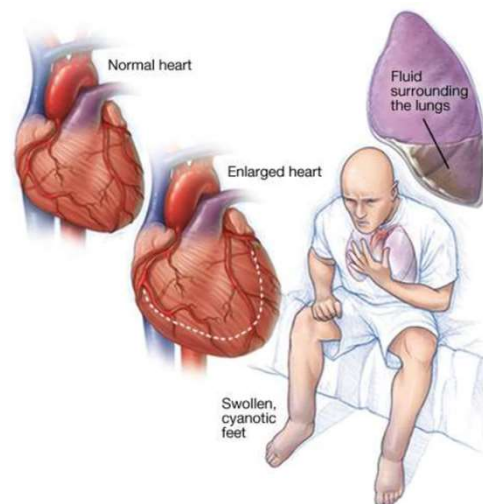
Understanding Congestive Heart Failure (CHF)

1

WHAT IS CONGESTIVE HEART FAILURE

Heart failure, sometimes known as congestive heart failure (CHF), occurs when the 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 stiff to fill and pump efficiently.

When your heart doesn't pump enough blood to meet your needs, blood often backs up and causes fluid to build up in your lungs (congest) and in your legs, causing your legs to swell and turn blue from lack of oxygenated blood flow (cyanosis). This fluid in your lungs can make you short of breath. Some types of heart failure can lead to an enlarged heart.



2

THE SCOPE OF COGESTIVE HEART FAILURE

According to a 2009 study published in the New England Journal of Medicine, about 20% of hospitalized Medicare patients are readmitted within 30 days of discharge and 34% go back into the hospital within 90 days. Congestive heart failure is one of the leading causes of hospitalization in this Medicare population.

In fact, in 2006, 1.1 million patients were admitted to U.S. hospitals for acute decompensated heart failure, almost double the number seen 15 years prior.

Provisions of The Affordable Care Act (U.S. healthcare reform legislation) levy financial penalties on acute care facilities for “failed discharges”, patients readmitted within 30 days of discharge for the same or a related diagnosis. Not only does this have a negative financial effect on acute care hospitals but has a trickle-down effect on sub-acute care facilities and home health care agencies that are unsuccessful in managing CHF patients as hospitals decrease referrals to those organizations that cannot successfully manage this patient population.

3

THE SCOPE OF COGESTIVE HEART FAILURE

Conversely, those non-acute care organizations that are adept at managing these patients are positioned to thrive in the new healthcare environment as hospitals partner with these providers to reduce their financial liability.

There are a myriad of treatments, both pharmacological and non-pharmacological, used to manage CHF. Although healthcare personnel tend to be familiar with some of these modalities, particularly dietary modifications and oral medications, it is imperative, in the new healthcare environment, that clinicians be capable of administering and managing all the interventions required to successfully manage these patients in non-acute care settings to the extent medically possible.

This may include the use of diuretic or inotropic agents, often administered by the intravenous route, with which many clinicians are currently less familiar. The focus of this course is the role of intravenous diuretic and inotropic therapy in the management of chronic congestive heart failure.

4

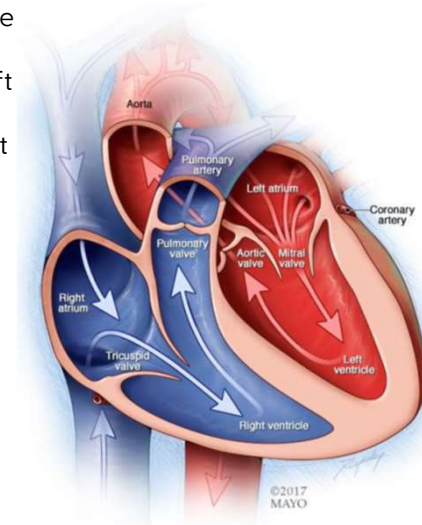
THE SCOPE OF CONGESTIVE HEART FAILURE

Chambers and valves of the heart

A normal heart has two upper and two lower chambers. The upper chambers, the right and left atria, receive incoming blood. The lower chambers, the more muscular right and left ventricles, pump blood out of your heart. The heart valves, which keep blood flowing in the right direction, are gates at the chamber openings.

Heart failure often develops after other conditions have damaged or weakened your heart. However, the heart doesn't need to be weakened to cause heart failure. It can also occur if the heart becomes too stiff.

In heart failure, the main pumping chambers of your heart (the ventricles) may become stiff and not fill properly between beats. In some cases of heart failure, your heart muscle may become damaged and weakened, and the ventricles stretch (dilate) to the point that the heart can't pump blood efficiently throughout your body.



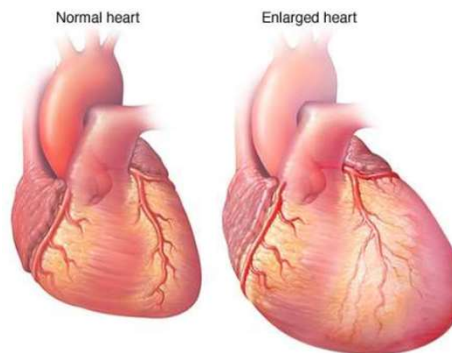
5

WHAT CAUSES CONGESTIVE HEART FAILURE

Over time, the heart can no longer keep up with the normal demands placed on it to pump blood to the rest of your body.

Enlarged heart in heart failure

As your heart weakens, such as in heart failure, it begins to enlarge, forcing your heart to work harder to pump blood to the rest of your body.



6

WHAT CAUSES CONGESTIVE HEART FAILURE

Heart failure can involve the left side (left ventricle), right side (right ventricle) or both sides of your heart. Generally, heart failure begins with the left side, specifically the left ventricle – your heart's main pumping chamber.

TYPE OF HEART FAILURE	DESCRIPTION
Left-sided heart failure	Fluid may back up in your lungs, causing shortness of breath.
Right-sided heart failure	Fluid may back up into your abdomen, legs and feet, causing swelling.
Systolic heart failure	The left ventricle can't contract vigorously, indicating a pumping problem.
Diastolic heart failure	The left ventricle can't relax or fill fully, indicating a filling problem.

7

CONGESTIVE HEART FAILURE COMPLICATIONS

If you have heart failure, your outlook depends on the cause and the severity, your overall health, and other factors such as your age. Complications can include:

Kidney damage or failure.

Heart failure can reduce the blood flow to your kidneys, which can eventually cause kidney failure if left untreated. Kidney damage from heart failure can require dialysis for treatment.

Heart valve problems.

The valves of your heart, which keep blood flowing in the proper direction through your heart, may not function properly if your heart is enlarged or if the pressure in your heart is very high due to heart failure.

8

CONGESTIVE HEART FAILURE COMPLICATIONS

Heart rhythm problems.

Heart rhythm problems (arrhythmias) can be a potential complication of heart failure.

Liver damage.

Heart failure can lead to a buildup of fluid that puts too much pressure on the liver. This fluid backup can lead to scarring, which makes it more difficult for your liver to function properly.

Some people's symptoms and heart function will improve with proper treatment. However, heart failure can be life-threatening. People with heart failure may have severe symptoms, and some may require heart transplantation or support with a ventricular assist device.

9

MANAGEMENT OF CONGESTIVE HEART FAILURE

Non-pharmacologic management of CHF - LIFESTYLE

Not all conditions that lead to heart failure can be reversed, but lifestyle changes can improve your quality of life.

Lifestyle changes that can help manage congestive heart failure include:

- Not smoking
- Controlling certain conditions, such as high blood pressure and diabetes
- Staying physically active
- Eating healthy foods
- Maintaining a healthy weight
- Reducing and managing stress

10

MANAGEMENT OF CONGESTIVE HEART FAILURE

Surgical management of CHF

Surgery may be an indicated treatment if the underlying cause of CHF is amenable to such intervention. Surgical options for heart failure include:

- Coronary artery bypass grafting (CABG)
- Valve replacement or repair
- Ventricular restoration
- Cardiac resynchronization therapy
- Implantable cardioverter-defibrillator
- Insertion of a left ventricular assist device (LVAD)
- Heart transplantation
- It is important to remember, however, that not all patients are surgical candidates.

11

MANAGEMENT OF CONGESTIVE HEART FAILURE

Pharmacologic management of CHF - ORAL MEDICATIONS

Oral medication like Beta-blockers, ACE inhibitors, glycosides, and diuretics are the key medications used for managing congestive heart failure through regulating renal function and the sympathetic nervous system.

The goals of pharmacologic therapy for CHF include improving symptoms, increasing functional capacity, improving quality of life, slowing disease progression, decreasing need for hospitalization, and prolonging survival.

The first pharmacologic line of defense for patients with CHF are oral medications such as:

- Ace inhibitors
- Beta blockers
- Aldosterone antagonists
- direct-acting vasodilators
- Diuretics
- Angiotensin receptor blockers
- Digoxin

12

MANAGEMENT OF CONGESTIVE HEART FAILURE

Pharmacologic management of CHF - INTRAVENOUS MEDICATIONS

In the treatment of acute decompensated congestive heart failure (ADHF) it becomes necessary to use iv medication like loop diuretics and inotropic drugs. The following modules will cover in detail the use of IV inotropic medication administration in the treatment of congestive heart failure.

Intravenous inotropic therapy is usually employed as temporary treatment of diuretic-refractory acute heart failure, decompensated congestive heart failure as palliative care in end-stage heart failure when definitive treatment is not possible. The most recommended inotropic therapies for refractory CHF are dobutamine, dopamine, and milrinone.

We will explain their mechanism of action, their primary effect, how to care for a patient receiving inotropic medication and how to perform ongoing monitoring. For the licensed clinician involved in providing this valuable therapy, this course contains current practices for best patient outcomes.