

# Heart failure

## What is the normal function of the heart?

The heart acts as a pump. For the pump to work well, it must be able to *fill easily with blood*, and it must *pump the blood effectively forward*. Abnormalities in both the filling phase (abnormal relaxation of the muscle and therefore high filling pressures), as well as in the contraction phase (ejecting/pumping blood) can lead to abnormalities in the function of the heart.

## What is heart failure?

Heart failure refers to the inability of the heart to pump enough blood forward (poor pump function), or when the pressures required to fill the heart is elevated. When the heart is unable to pump blood forward effectively, it is known as *heart failure with reduced ejection fraction* (referring to the reduced ejection of blood). The severity of the 'impairment in pump function' can be classified as follow:

- *Normal* left ventricular ejection fraction: > 50-55%
- *Mild* impairment in left ventricular ejection fraction: 40-50%
- *Moderate* impairment in left ventricular ejection fraction: 30-40%
- *Severe* impairment in left ventricular ejection fraction: 20-30%
- *Very severe* impairment in left ventricular ejection fraction: < 20%

Conversely, when the contraction phase of the heart is normal (ejection fraction 50-70%), but the relaxation/filling phase is abnormal, it referred to as *heart failure with preserved ejection fraction*.



Similar to bellows, the heart must fill effectively, and subsequently eject effectively. Abnormalities in both the filling and the ejecting phase of the heart constitutes heart failure.

## What are the symptoms of heart failure?

The cardinal symptom of heart failure is breathlessness, (known as *dyspnoea*). Patients may also experience inability to sleep flat (using more pillows than previously in order to breath better), and waking up at night with shortness of breath seeking fresh air. Patients may also experience swelling of the feet and legs as well as palpitations.

## What are the causes of heart failure?

There is a long list of causes of heart failure. These causes will need careful consideration by your cardiologist to determine which is the most likely reason for heart failure in your particular case. Some additional investigations may be required to find the cause.

The most common causes are ischemic heart disease (heart failure due to coronary artery disease), longstanding uncontrolled high blood pressure, abnormalities with the valves in the heart. Rarer causes includes familial/ inheritable heart failure, following viral infections, heart failure due to arrhythmia's such as atrial fibrillation. Some chemotherapeutic drugs used to treat cancers may lead to heart failure. Often, no cause can be found – this is referred to as *idiopathic* heart failure.

## How is heart failure managed?

The management of heart failure depends on the underlying cause, which needs to be identified and treated accordingly. For example, restoring a normal heart rhythm in patients with heart failure due to atrial fibrillation, will be addressing the underlying cause for the patient's heart failure. Another common example, is performing coronary bypass surgery or stenting, if the heart failure is caused by coronary artery disease, or replacing a severely diseased heart valve that has caused heart failure.

Irrespective of the underlying cause, you will be started on *antifailure therapy* which consists of 4 - 5 different types of medication (This is particularly true for patients with *heart failure with reduced ejection fraction*). All of these agents have been proven to reduce your risk of dying or requiring admissions to hospital. This will also improve your symptoms and ability to perform exercise without experiencing breathlessness. These medications include:

- Beta-blockers
- ACE – inhibitors, ARBs or ARNIs
- Mineralocorticoid receptor antagonists
- SGLT-2 inhibitors
- Diuretics

## Are there any other treatment options for my heart failure?

Treating the underlying cause for your heart failure, and establishing good antifailure medication (see the medication listed above) form the corner stone of heart failure therapy. In selected patients, a special type of pacemaker may add additional benefit (so-called *cardiac resynchronization therapy*). Your doctor will evaluate you to see if you could benefit from this.

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## What can YOU do about your heart failure?

Here are some important tips for living with heart failure:

- Always remain on your medication, and only stop on the recommendation of a health care professional.
- Engage in a healthy active lifestyle: Exercise is good for patients with heart failure. Becoming fit and losing weight are important components of heart failure management. Speak to your cardiologist about suggested levels of exercise in accordance with your age and degree of heart failure.
- Most importantly, maintain a relatively constant daily fluid/liquid intake. Large fluctuations in liquid intake will most certainly aggravate heart failure (too much liquids), or put stress on your kidneys (too little liquid intake). Your doctor should advise you on this one.
- Restrict salt intake: Salt retains water and can worsen heart failure symptoms.
- Weigh yourself daily: A sudden increase of weight may herald worsening of your heart failure and if this is addressed early, it may avoid requiring hospitalisation for heart failure.
- Become knowledgeable about heart failure. The more insight you have, the better you will manage this condition.

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