



All About  
**Heart Failure**



Changi  
General Hospital  

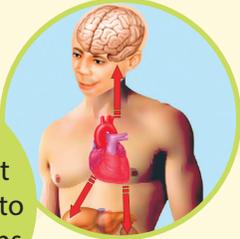
---

SingHealth

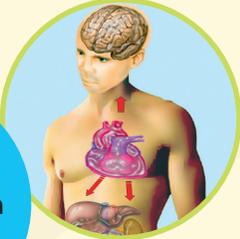
# What is heart failure?

Heart failure is a common heart disorder where the heart is not able to pump enough blood to the body's working tissues, resulting in the occurrence of water retention. This imbalance of supply and demand displays significant rapid weight gain (more than 1.5 kg over 1-2 days), breathlessness (especially when lying flat), unusual tiredness, dizziness and leg and abdominal swelling. These symptoms can greatly affect your normal daily activities.

There are many causes of heart failure. The common causes include progressive coronary artery disease, prolonged uncontrolled hypertension, heart valve disorders, viral or bacterial infections, chronic lung disease, heart damage from excessive alcohol, or heart damage from an unknown (idiopathic) cause.



A normal heart supplies blood to the major organs



A failing heart is unable to supply enough blood to the major organs



Tiredness and dizziness

Breathlessness

Swollen abdomen

Swollen legs

## What are the treatment options?

Our care team consists of cardiologists, nurses, physiotherapists, occupational therapists, pharmacists and dietitians. We will also work closely with your family physician. The proven treatment and management of heart failure include lifestyle changes, medications, medical devices, and surgery.

Commitment from the patient, his family, and friends is also very important in the treatment process.

The goal of these treatments is to improve heart function, remove or reduce symptoms (by controlling excess water and salt retention), and reduce further heart damage.

## What are the lifestyle modifications?

### Lifestyle changes

You will have to take charge of your life. You will be required to undergo lifestyle changes that will make you feel better and potentially life-saving. Being aware of your heart failure condition and actively committing yourself in self-care such as having a healthy diet, physical activities, stress management, work, and sexual activity will help you dispel feelings of hopelessness and improve your overall well-being.

### Health education

It has been proven that an increased awareness of one's health and knowledge of self-care skills will lead to lesser hospital admissions and better quality of life. Therefore, it is important that you and your caregivers be actively involved in managing your heart condition. Health education will be provided by your doctor, nurses, dietitians, pharmacists and therapists.

## Diet

Making changes in your diet can help to relieve your symptoms of heart failure. People with heart failure are required to eat less sodium-containing food as too much sodium causes your body to retain water. The excess body fluid build-up increases blood volume and blood pressure, which makes your heart work harder. Hence, you should reduce your sodium intake, which comes mainly from the addition of salt and sauces to meals and the intake of processed food. In addition, remember to monitor and limit your daily fluid intake as prescribed by your doctor. As part of a “heart-healthy” diet, it will also be beneficial to your health to adopt a diet that is low in fat, cholesterol and sugar, but high in fibre.



## Alcohol and cigarettes

Excessive alcohol weakens the heart and can lead to abnormal heart rhythms, which worsens a failing heart. Smoking damages the blood vessels, reduces the amount of oxygen in the blood and makes the heart beat faster. All of these problems can cause and aggravate heart failure.



## Exercise

Increased physical activity is encouraged. Regular exercise helps to control cholesterol, blood pressure, diabetes and weight as well as managing stress and anxiety. It also helps to improve your level of physical fitness, thus improving your ability to perform daily tasks. Your physiotherapist will prescribe an individualised exercise programme so that you can exercise safely.



## Managing stress, anxiety, anger and depression

Stress, anxiety, anger and depression are commonly found in patients suffering from heart disease. These negative emotions, if not managed appropriately, can worsen your physical condition. Hence it is important to **recognise such emotions** and take steps to reduce them.

Here are some tips to help you cope with negative emotions:

1. **Acknowledge** your negative feelings and emotions.
2. **Accept reality** (e.g. you have heart disease and that life is not going to be the same).
3. **Adjust** to the limitations of your heart condition.
4. **Adopt a positive attitude.** A positive attitude is a good defence against stress and depression. Tell yourself that your present heart condition is a wake up call. It gives you a chance to review your priorities and live differently.

Expect to keep on living and initiate your own healing process by:

- Finding out more about your heart disease.
  - Stop doing things that may have contributed to your illness (e.g. smoking and overeating).
  - Start doing things that will contribute to your health (e.g. regular exercise and good diet).
  - Staying connected to people and accept emotional support from your family and friends. Joining a support group will help.
  - Filling your mind with optimism, hope and peace.
5. **Learn to relax.** Relaxation is an active process involving techniques and activities that calm your body and mind. Some of the techniques include:
    - Meditation.
    - Listening to music.
    - Deep breathing.
    - Progressive muscle relaxation and guided imagery.

Use and practise one technique that suits you. Relaxation is a learnt skill, so set aside time to practise it.

6. **Do not be afraid to ask for help.**
7. **Seek professional help** if you feel depressed or experience any of the following symptoms for more than two (2) weeks:
  - Feeling sad, anxious, irritable and nervous.
  - Loss of interest in activities you used to enjoy.
  - Loss of energy and feeling tired all the time.
  - Difficulty concentrating, remembering things or making decisions.
  - Feelings of worthlessness, hopelessness and guilt.
  - Thoughts of suicide or death.

## Work

People with heart failure are strongly encouraged to live life as normal as possible. Under appropriate care, most patients with heart failure are able to return to doing many types of tasks except heavy and physical work.

Work stress will have to be recognised and managed accordingly. You must make time for a healthier lifestyle, especially time for a healthier diet exercise.



### ***Energy conservation tips***

Energy conservation in the course of daily activities is very important. Your occupational therapist will teach and offer you customised advice on how to do this. Here is a very brief summary and some tips to follow below:

#### **1. Rearrange the environment**

- Keep frequently used items in places that can be reached easily.
- Replace existing heavy items with lighter ones (e.g. use plastic plates and cups rather than glass or porcelain).
- Install long handles on taps and doorknobs.
- Adjust workspaces, such as raising the tabletop to eliminate awkward positions.
- Consider moving your bed to the first floor to eliminate stair climbing.

#### **2. Eliminate unnecessary effort**

- Sit rather than stand whenever possible (e.g. while washing your face, showering etc.).
- Use adaptive equipment to make tasks easier (e.g. electric toothbrush).
- Push a cart rather than carry items.
- Use disposables.
- Avoid bending, reaching, twisting or squatting.

#### **3. Plan ahead**

- Gather all the things you need for a task before starting.
- Plan rest breaks into activities as often as possible. Take a break even when you are not tired.
- Schedule enough time for activities as rushing takes up more energy.
- Try keeping a daily activity journal for a few weeks to identify tasks that result in fatigue.

## Sexual activity

People with heart failure can have sex.

Sexual activity is safe when you have no symptoms and precautions are taken.

Some safety tips for sexual activity:

- Wait until 1 to 2 hours after a meal.
- Do not smoke or drink alcohol before and after sex.
- Be with a partner whom you are familiar and comfortable with.
- Have your partner assume the more physically demanding role.

Stop if there are symptoms during sexual activity and explore other ways of showing affection.

## What are the important things?

### Important things you must do in heart failure management

1. Accept the condition for what it is.
2. Realise that this is part of your life.
3. Listen to your healthcare professionals.
4. Control your salt, cholesterol and water intake. Avoid cigarettes and excess alcohol.
5. Take your medications as prescribed.
6. Stay as active as possible and exercise safely.
7. Manage your stress.
8. Recognise feelings of hopelessness and depression. Get psychological support if needed.



## Medications – what and why?

A person with heart failure has to take different kinds of medications that are proven to improve the quality of life and/or outcomes.

Your pharmacist will educate you on your medications. It is important to know the name of your medications, what they are used for, how often they should be taken and at what time of the day should you take them.

Your pharmacist will counsel you on the side effects of the medications so that you will be able to know what to expect and look out for if you are not tolerating the medications well.

The table on the next page provides a list of commonly used medications to treat heart failure.

These medications are very important in relieving and preventing the symptoms of heart failure and improving its outcomes.

Take your medications as prescribed. Even if you have no symptoms, your medications will decrease the load on your heart so that it can pump more effectively.

Keep a list of your medications and bring them with you for your visits to the doctor.

Never stop taking your medications without first discussing it with your doctor(s).

Please inform your doctor(s) of any new medications that you wish to start or have started, including supplements or medications that you purchased off the shelves.

If you have any doubts regarding your medications or have developed new symptoms, you must consult your pharmacist, heart failure programme nurse or doctor(s).



## Medications used to treat heart failure

Class of Medications	Members of Class	Uses of Medication	Common Side Effects	Precautions and Advice
<b>Angiotensin Converting Enzyme (ACE) Inhibitors</b>	Captopril Enalapril Lisinopril Perindopril Ramipril	Prevents heart from further weakening. Prevents narrowing of blood vessels. Reduces blood	Dry cough Dizziness Changes in sense of taste	Do not take additional potassium supplements unless
<b>Angiotensin Receptor Blockers (ARBs)</b>	Candesartan Losartan Valsartan	pressure to reduce risks of heart attack, stroke and kidney failure.	Dizziness Changes in sense of taste	prescribed. Avoid using salt substitutes.
<b>Beta - blockers</b>	Bisoprolol Carvedilol Nebivolol Metoprolol Succinate Extended Release (CR/XL)	Reduces blood pressure and heart rate. Thus, reducing workload and oxygen demands of the heart. Prevents angina chest pains, reduces worsening of heart function, risk of heart attack, and abnormal heart rhythms.	Tiredness Dizziness Cold hands and feet Excessive slow heartbeat Breathlessness Erectile dysfunction	Inform doctor if you have a history of fainting or fainting spells.
<b>Mineralocorticoid Receptor Antagonist (MRA)</b>	Eplerenone Spironolactone	Prevents heart from further weakening. Removes excess water in the body.	Dizziness Nausea Breast tenderness	Do not take additional potassium supplements unless prescribed. Avoid using salt substitutes
<b>I(f) Current Inhibitor</b>	Ivabradine	Reduces heart rate. Thus, reducing workload and oxygen demands of the heart.	Headache Dizziness Excessive slow heartbeat Flashes of light (Phosphenes)	Inform doctor if you have a history of fainting or fainting spells.

Class of Medications	Members of Class	Uses of Medication	Common Side Effects	Precautions and Advice
<b>n-3 Polyunsaturated Fatty Acids</b>	Omega-3 fatty Acids, containing Eicosapentaenoic Acid [EPA] and Docosahexaenoic Acid [DHA]; 1g daily	Provides beneficial effects on cardiovascular system by possibly having anti-arrhythmic, anti-inflammatory and anti-atherogenic effects.	Halitosis (bad breath) Diarrhoea Nausea and other minor gastrointestinal disturbances	Rinse the mouth more frequently to counter halitosis.
<b>Dihydropyridine Calcium Channel Blockers</b>	Amlodipine Nifedipine LA	Relaxes blood vessels. Reduces blood pressure. Prevents angina chest pains.	Headache Flushing Dizziness Palpitations Swelling of the feet	
<b>Vasodilators</b>	Isosorbide Dinitrate (ISDN), Isosorbide Mononitrate (ISMN)	Relaxes blood vessels. Increases blood and oxygen supply to the heart. Nitrates reduce the incidence of chest pain.	Headache Flushing Dizziness	You may take paracetamol (Panadol) to relieve the headaches.
	Hydralazine		Flushing Palpitations	
<b>Cardiac Glycosides</b>	Digoxin	Improves the strength and pumping action of the heart, resulting in better circulation.	Nausea and vomiting Diarrhoea Headache Dizziness Blurry vision	Contact a doctor if any side effect occurs.
<b>Diuretics</b>	Bumetanide Frusemide Metolazone	Removes excess water in the body by increasing urine flow.	Nausea Muscle cramp Muscle weakness Dizziness	Do not take medication later than 7 pm to avoid waking up late at night to go to the toilet.
<b>Potassium Supplements</b>	Potassium Chloride	Supplements the loss of potassium (due to the effects of diuretics).	Gastric pain Nausea or vomiting Diarrhoea	Do not take additional potassium supplements unless prescribed. Avoid using salt substitutes.

# Medicines - what to avoid?

The following medications should be avoided if possible, or used with caution. If you are seeing a doctor for other medical condition(s), please inform them about your heart condition so that they can avoid prescribing drugs that can potentially worsen your heart.

- Certain painkillers: Non-steroidal anti-inflammatory drugs (NSAIDs) (e.g. Mefenamic acid (Ponstan®), Naproxen sodium (Synflex®), Celecoxib (Celebrex®)).
- Most anti-arrhythmic agents (e.g. Sotalol, Ibutilide, Dronedaron).
- Rate slowing calcium channel blockers (e.g. Verapamil, Diltiazem).
- Certain diabetes medications: Thiazolidinediones (e.g. Rosiglitazone (Avandia®), Pioglitazone (Actos®)).
- Some growth hormone therapies.
- Antacids that contain sodium (salt).
- Decongestants such as pseudoephedrine (Sudafed®) as they can make your heart work harder.
- Traditional medicine or steroids which impair your heart's ability to work.

# Which medical devices and surgery?

## Medical devices and surgery

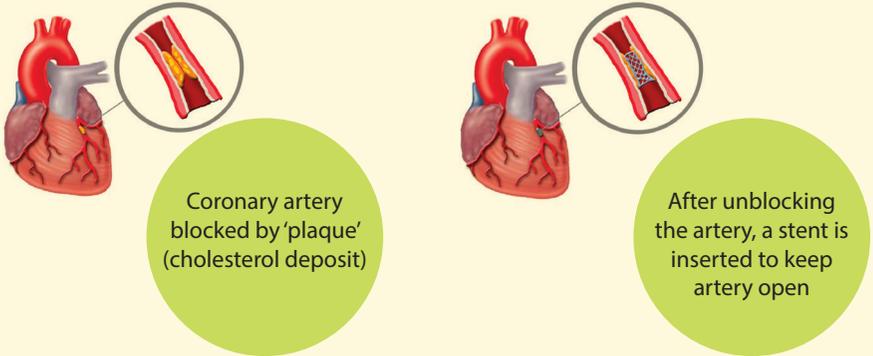
### 1. Revascularisation procedures

Coronary artery disease is the cause of about two out of three cases of heart failure. If suspected, diagnostic cardiac catheterisation can be done. Two revascularisation treatment options are available if significant blockages of coronary arteries are found. These may improve quality and length of life. They are percutaneous coronary intervention (PCI) and coronary artery bypass surgery (CABG).

#### 1.1 Percutaneous coronary intervention (PCI)

This involves inserting a balloon-tipped catheter into the blocked coronary artery, and inflating it to unblock the diseased coronary arteries. This is usually followed by the insertion of a stent to keep the newly unblocked arteries open. This procedure is done under local anaesthesia.

## Percutaneous Coronary Intervention



### 1.2 Coronary artery bypass surgery (CABG)

This involves surgical re-routing of the blood supply to a blocked section of the artery. Patients' own arteries or veins in the chest or limbs are taken and used as bypass grafts to supply to a blocked section of the artery. This procedure is done under general anaesthesia.



One end of the graft connects to the aorta



The other end of the graft connects to the coronary artery below the point of blockage



Bypass graft re-routes blood flow and brings blood to the coronary artery, bypassing the point of blockage

### 2. Infarct exclusion surgery (modified Dor or Dor procedure)

When a heart attack occurs, a scar may form in the heart muscle. The scarred area is thin and can bulge out with each beat. The bulging thin area is called an aneurysm. When heart failure occurs after a heart attack, the surgeon may choose to combine bypass surgery and/or valve repair, with removal of the infarcted scarred (dead) area of heart tissue or the aneurysm. Infarct exclusion surgery allows the surgeon to return the left ventricle to a more normal shape and to improve function. After this surgery, most patients' hearts pump better and they have less heart failure symptoms.

### 3. Heart valve surgery

Damaged heart valves may be the cause of heart failure. If this is so, valve surgery, either repair or replacement may be curative. As heart failure progresses, the mitral valve apparatus is stretched out of shape, causing the valve to leak. Repair of the mitral valve may be useful. It usually involves reshaping the leaflets and providing support to the mitral valve with a ring.

### 4. Permanent pacemakers including biventricular pacemakers (cardiac resynchronisation therapy)

Heart rhythm disorders are common in patients with heart failure (heart beats too slow, too fast, or irregularly). They may require a permanent pacemaker for the heart to work or relieve symptoms that come with these rhythm disorders.



Despite optimal medical therapy, a small proportion of heart failure patients are still very affected by the symptoms. They have the option of cardiac resynchronisation therapy in the form of biventricular pacing. This type of pacemaker sends carefully timed electrical impulses to the heart's lower chambers to improve the heart pump coordination and its ability to pump blood more effectively.

### 5. Ventricular assist device (VAD)

VAD is a treatment option for heart failure patients who have not responded to other treatments and have very severe reduced ejection fraction. This is a device that helps the heart pump blood throughout the body. It can be done temporarily as a bridge to transplant, bridge to recovery or permanently as a destination therapy.

### 6. Heart transplant

A heart transplant is a major operation involving the transplant of a donor heart (from a deceased donor) to the recipient heart failure patient. It requires diligent, lifelong care on the part of the recipient and the doctors.

In some cases, where the heart is damaged beyond recovery despite maximum medical and lifestyle treatment, a heart transplant is necessary. However, as there is a shortage of heart donors, currently there is a list of strict criteria for receiving a donor heart.

## What to do when things get worse?

The nurse and doctor from the heart failure programme will advise you on self-care and self-management. This information may reduce re-admissions, and improve quality of life.

You will be taught to keep a look out for early signs of fluid retention. They are:

- Increase in weight of  $\geq 1.5$  kg over 1 to 2 days.
- Abdominal distension.
- Lower limb swelling.

Any one of the above symptoms, especially weight gain (thus the importance of regular weighing), is an early sign that the heart is not coping well, and is beginning to fail (incipient decompensation). When this happens, please visit your primary care doctor.

Subsequent symptoms of heart failure include:

- Worsening breathlessness, initially on exertion, subsequently even at rest.
- Breathlessness when lying flat.
- Increased unusual tiredness.
- Unusually feeling cold and clammy.
- Decreased alertness or confusion (observation by caregivers).

When these symptoms of heart failure occur, you will need to call and make an appointment immediately or go to the Accident and Emergency department for further management.



# Heart failure treatment summary



Excessive fluid, sodium and fat intake add burden to the heart. Your dietitian will advise you on a suitable diet.

Muscles need extra blood and oxygen when you are stressed or anxious, thus increasing the demands on your weak heart. Your occupational therapist will teach you stress management techniques.

Exercise helps to improve your cardiovascular fitness and strengthens your muscles, thus reducing the demand on the heart. Your physiotherapist will prescribe a suitable exercise programme so that you can exercise safely.

Your doctor will treat the existing heart disease with medication and/or surgery.

Engaging in daily activities may make you feel tired. However, it is necessary to do so as they may help in strengthening heart muscles. Engaging in purposeful activities also improve your well-being as well as increase your quality of life. Your occupational therapist will teach you energy conservation tips to decrease energy demands of the heart.

Your nurses will advise you on a follow-up plan to maintain your health and address any problems you may have.

## IMPORTANT TO NOTE!

1. Accept the condition for what it is.
2. Realise that this is part of your life.
3. Listen to your healthcare professionals.
4. Control your fluid, sodium and fat intake.
5. Avoid cigarettes and excess alcohol.
6. Take your medications as prescribed.
7. Stay as active as possible and exercise safely.
8. Manage stress.
9. Recognise feelings of hopelessness and depression. Get psychological support if needed.



Singapore  
General Hospital



Changi  
General Hospital



Sengkang  
General Hospital



KK Women's and  
Children's Hospital



National Cancer  
Centre Singapore



National Dental  
Centre Singapore



National Heart  
Centre Singapore



National  
Neuroscience Institute



Singapore National  
Eye Centre



SingHealth  
Community Hospitals



Polyclinics  
SingHealth

**PATIENTS. AT THE HEART OF ALL WE DO.®**

2 Simei Street 3 Singapore 529889  
Tel: 6788 8833 Fax: 6788 0933  
Reg No 198904226R

### **CGH Appointment Centre**

For appointments and enquiries,  
please call: (65) 6850 3333

Operating hours:  
8.30 am to 8.00 pm (Monday to Friday)  
8.30 am to 12.30 pm (Saturday & Sunday)  
Closed on Public Holidays

For more information, please visit [www.cgh.com.sg](http://www.cgh.com.sg)



Information is correct at the time of printing (July 2019) and subject to revision without prior notice.

All information provided within this publication is intended for general information and is provided on the understanding that no surgical and medical advice or recommendation is being rendered. Please do not disregard the professional advice of your doctor.