Heart Failure and You

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1. Why read this booklet?

You have been diagnosed with 'heart failure' by your doctor. No doubt, there are numerous questions in your mind regarding what this means for you and your family, and what your life is going to be like in the future. This booklet aims to clarify a number of issues relating to your health and heart failure, especially concentrating on what it means and what you could expect in the future. In summary, below are a few points that we will discuss:

- What is 'heart failure'?
- Why have I got heart failure?
- How is it diagnosed and treated?
- Can I lead a normal life with this condition?

We will keep the discussions in all the forthcoming chapters in very simple terms so that by the time you finish reading this booklet you will have a reasonably good understanding of this condition. If you have any further questions, consult your physician for any clarification.

We hope you find the information in this booklet useful. For more information, visit our website at www.baligadiagnostics.com.

2. What is 'heart failure'?

Heart failure, in simple terms, is failure of the heart to function in its full capacity. Normally, the heart receives blood from the entire body which includes the brain and other vital organs, following which it pumps it to the lungs where it gets enriched with oxygen. From there it returns to the heart and is then

pumped back to the rest of the body, supplying oxygen and important nutrients that are necessary for the normal functioning of all organs. There can be a number of reasons as to why the heart cannot pump blood to its full capacity and efficiency, and it is such a state that is termed 'heart failure'.

There are two types of heart failure: Acute heart failure and chronic heart failure. These have been described briefly below.

- **Acute heart failure** is when the symptoms of heart failure come on suddenly. This form of heart failure requires emergency hospitalisation and management to reduce the stress on the heart in order to promote better function. The term 'acute' is used to refer to either a first episode or worsening of heart failure in someone who has been suffering from heart failure for years (chronic).
- **Chronic heart failure** is when the patient has symptoms of heart failure for a longer period, and usually for more than 6 months.

In order to understand heart failure in a bit more detail, it is important to know how the heart works. Below is a diagram showing how the heart receives and pumps blood to the lungs and other important organs.

INSERT DIAGRAM HERE

In simple terms, the heart's main function is to provide oxygen and nutrient-enriched blood to all organs. It is divided into 4 chambers, but for the purposes of this booklet and for easier understanding, one can consider it to have two sides – a left, and a right side.

The right side of the heart receives impure blood from various organs and peripheral parts of the body which includes the limbs. From here, the blood is pumped through large vessels into the lungs, where it is enriched with oxygen. The blood then returns to the left side of the heart, from where it is pumped back to the vital organs, thus completing the cardiac cycle. Proper functioning of the heart in this manner is essential for a healthy body.

When the heart is not adequately working as it should do, and failing to do the job it is assigned, it is termed as a 'failing heart'.

3. What causes heart failure?

There a numbers of causes of heart failure. The common causes include

- High blood pressure (hypertension)
- Heart attacks (Ischemic heart disease)
- Heart valve disorders (Valvular heart disease)
- Low haemoglobin (Anaemia)
- Diabetes

Rarer causes that can also lead to heart failure include

- High alcohol intake
- Fluid overload (kidney disease)
- Heart muscle disease (cardiomyopathy)
- Abnormal heart rhythms (arrhythmias)
- Congenital heart disorders (present from birth)
- Chronic lung disease
- Thyroid disease
- Drugs with direct toxic effects on the heart like certain cancer treatment drugs

In a lot of cases however, no clear cause can be identified, especially in younger patients.

4. Symptoms and signs of heart failure

Patients suffering from heart failure can experience a variety of symptoms. The common symptoms that one might experience are

- *Shortness of breath*, especially on effort or exertion. Patients may find that they are short of breath when performing certain activities that in normal circumstances would not lead to breathlessness. For e.g. mopping the floor, climbing a flight of stairs, washing dishes. In advanced cases, patients can experience breathlessness even at rest or when laid flat in bed. Some patients experience a cough at night, and wake up in the middle of the night attempting to get a breath of fresh air. These symptoms occur because the inefficient heart does not pump blood effectively through the lungs, resulting in 'congestion' and accumulation of fluid there.

- *Tiredness* (fatigue) is a common symptom, and can occur out of the ordinary while performing normal daily activities. The more severe the heart failure, the more the tiredness, though this is not necessarily true in every patient. Tiredness occurs mainly due to lack of oxygen and vital nutrients to the muscles.

- *Swelling* of feet and ankles:. Edema, or fluid in the soft tissues, is a common symptom in heart failure. The fluid accumulates around the ankle and in the feet due to gravity, and sometimes over the abdomen. On occasions the fluid can extend up to the thigh and the lower back. The fluid

accumulation is because the failing heart is inefficiently circulating blood around the body, resulting in fluid leaking out of blood vessels to a space under the skin.

Rarer symptoms can include chest pain, abdominal bloating, dry cough, mental irritability and failure to concentrate.

5. Investigating heart failure

More often than not, your doctor will make a provisional diagnosis of heart failure following your first clinic visit and will order a number of tests to confirm the diagnosis. He/she will also check your heart rate and blood pressure, along with a blood sugar, and will listen to your heart and lungs for a full assessment.

Amongst the tests your doctor will arrange, some of them include the following:

- *Electrocardiogram* (ECG): This is a tracing of the heart onto paper which gives your doctor a lot of information regarding the size of your heart, how fast your heart is beating, and whether there are any issues with blood circulation to the heart muscle. In other words, it reflects the electrical activity of the heart.

- *Chest X-ray*: This helps identify the size of your heart and whether there is fluid on your lung tissue.

- *Echocardiogram*: It is an ultrasound scan that studies the structure and function of the heart muscle. This is a very useful tool in assessing the exact size of the heart, its pumping capacity and evaluating the damage to the heart muscle and valves. By performing this test, your doctor can

estimate the functional capacity of the heart and take necessary measures to improve it further through medication.

There are other tests that can be performed including a special blood test called BNP (B-type natriuretic peptide), which is a hormone that is abnormally elevated in heart failure. Not every patient will require this test. These tests have been discussed in details in our booklet titled 'Tests for heart disease'.

Once a diagnosis of heart failure has been reached, your doctor will attempt to classify this into a degree of severity. This classification, also called the New York Heart Association (NYHA) classification, is a useful tool in guiding your doctor in providing the best treatment possible for you.

There are 4 classes of heart failure

Class I: Absence of symptoms

Here your heart, though not working to its full capacity, does not produce any symptoms. You will be able to perform your daily activities without any hindrance.

Class II – Symptoms on moderate exertion (Mild heart failure)

You may find that you are unable to do what you could normally do effortlessly before. For e.g. walking up a flight of stairs, brisk walking on a flat surface etc.

Class III – Symptoms on mild exertion (Moderate heart failure)

Some patients find difficulty in performing easy and effortless tasks. Symptoms can limit the patient from performing daily activities like walking around the house, taking a bath or sometimes brushing their teeth.

Class IV – Symptoms at rest (Severe heart failure)

Patients can feel breathless with the slightest effort or even at rest. Some may also find it difficult to lie down flat especially after a meal.

6. Drugs for heart failure

Once a diagnosis of heart failure is made by your doctor, a decision on the best way to treat it will be discussed with you. Drug therapy forms the first line of treatment; however, combinations of different drugs are required rather than just one drug. Drug doses are tailored to the individual patient's needs. This means that depending on the severity of heart failure and individual response to treatment, the dosage of the medication may vary.

There are a number of important points to keep in mind when taking drugs for heart failure. Some of these include:

- Always read the information (if provided) with the drug.
- Keep a list of medicines you are taking (doctor's prescription), and always bring this list when you see your doctor.
- Do not stop taking a drug without your doctor's advice.
- Do not change the dose of your tablets without asking your doctor first.
- Avoid taking ayurvedic or homeopathic medicines.
- Always inform any doctors you see if you are taking blood thinners (anticoagulation tablets – Acitrom).
- Inform your doctor of any side effects from medication.

The commonly used drugs in heart failure are listed below

1. Diuretics (tablets that help to pass urine)

These are tablets that help get rid of extra fluid from the body by pushing the kidneys to work harder. By doing so, it helps reduce edema around the ankle and in the lungs, thus helping reduce breathlessness. There are various kinds of diuretics available, and the commonly used ones are **frusemide**, **bumetanide** and **metolazone**.

Because diuretics place a lot of stress on the kidneys, your doctor will keep an eye on your kidney function by performing blood tests as and when required. In the event of the kidney function deteriorating, a change in the drug may be considered. It is also important to remember that excess salt intake can adversely affect the function of diuretics, so make sure you eat food with low salt.

Following taking the diuretic, patients tend to urinate usually within an hour, so it is important take your tablets at a specified time every day, ideally first thing in the morning and occasionally in the evening. Your doctor will advise you accordingly.

2. Beta blockers

This group of drugs are being increasingly used in the treatment of heart failure with significant benefits. They reduce the heart rate and thus help it beat a lot more effectively, without placing too much stress on it. The commonly used beta blockers include **Metoprolol**, **Bisoprolol** and **Carvedilol**.

Your doctor will start you on a small dose, and increase it gradually according to how you respond. It may take a few days to a few weeks to see a significant improvement in some patients.

Beta blockers are avoided in patients with chronic lung diseases like asthma, bronchitis etc as it can make the symptoms worse.

3. ACE (Angiotensin converting enzyme) inhibitors

These are a class of drugs that help to relax the heart muscle and thus improve its pumping. It does so by relaxing and dilating the blood vessels and thus reduces the stress on the heart. The commonly used drugs are **Ramipril**, **Lisinopril** and **Perindopril**.

In addition to this, ACE inhibitors also reduce the blood pressure. Following the first dose of ACE inhibitor that you take, a drop in blood pressure can sometimes make you feel dizzy or lightheaded. You need to take extra precautions for a day or two while getting out of bed or getting up from a sitting posture etc. It is for this reason that a number of times, ACE inhibitors are given to patients when they are in hospital so that they can be closely observed, but this is not essential as it can be taken at home as well, as long as there is a family member or friend around should you have problems.

There have been a number of studies looking at the long term effects of ACE inhibitors in heart failure, and it has been consistently shown that these drugs improve the outlook of patients in the long run. However, there are a few side effects associated with these drugs, which include a dry cough and an effect on the kidney function. Should either of these occur, your doctor may change you to a drug called ARB's (Angiotensin II

receptor blockers), which act in a similar way but have less side effects.

ACE inhibitors can also increase potassium levels in the blood, so it is essential that you watch your salt intake. It is important to remember that though these are very efficient drugs, not everyone who is on it will benefit from it.

4. Digoxin

Historically, digoxin was extracted from a plant called 'foxglove', and used centuries ago in patients with dropsy. This drug is useful in correcting heart beat irregularities and also improves the pumping function of the heart.

While you are on this drug, you doctor will keep an eye on its levels in your blood and the function of your kidneys. It is important that for the drug to work effectively, an adequate blood level of digoxin should be achieved, along with a normal potassium level. Your doctor will advise you best as to how to achieve this.

5. Anti-platelet drugs

This group of drugs include those that thin the blood and prevent clots formation in the heart arteries, in the larger blood vessels and also the heart valves. The common drugs used are **Aspirin** and **Clopidogrel**. Newer drugs include **Prasugrel** and **Ticagrelor**. There is no strong evidence supporting the use of these drugs in heart failure unless the patient has had a heart attack in the past or suffering from ischemic heart disease.

As these drugs thin the blood, there is always a chance that if you were to cut or injure yourself, you will bleed a lot more than you would have had you not been on the drug. Though rare, there is a small risk of bleeding in the stomach or around the brain, which often requires emergency treatment. Your doctor will either not prescribe it or stop the drug if he/she thinks you may suffer from these side effects.

Aspirin is always best taken after meals, as when taken on an empty stomach it can cause stomach irritation. The best time would be during or just after a full meal.

6. Anticoagulation

These are also a group of drugs that thin the blood, but work in a different way to anti-platelet drugs. They are used to prevent the formation of blood clots in patients who have an abnormality in the heart rhythm associated with heart failure. The commonly used drugs are **Warfarin** and **Acetrom**, though newer drugs such as **Dabigatran** are now emerging in the market.

Your doctor will keep a close watch on the levels of these drugs in your blood, though this is usually only required with warfarin and acetrom. High levels of warfarin or acetrom can make one prone to bleeding, with the more serious ones being in the stomach or around the brain (causing a stroke). In the event of this happening, you will require admission to hospital to monitor you and provide you with the treatment you need.

While on warfarin it is important you do not consume large amounts of alcohol, as this can affect the levels of warfarin in your blood and make it difficult for your doctor to treat you effectively.

7. Special treatments for heart failure

Special treatments that are available are aimed at treating the cause of the heart failure and improving the quality of life.

Surgery

In patients who have problems with the heart valves as a reason for developing heart failure, this will be assessed further, and sometimes a surgical operation may be recommended.

In patients who develop heart failure following a heart attack, your doctor may recommend a test called a coronary angiogram, where some dye is injected into your heart arteries and some pictures are taken with an X-ray machine. This gives the doctor an idea as to where the problem lies, and it can be treated with both a small inflatable balloon and stent (angioplasty) or with a surgical procedure called coronary artery bypass graft (CABG) surgery.

Pacemakers

Implantable cardioverter defibrillators (ICD)

In case you have an abnormal heart rhythm, your doctor will recommend a special pacemaker called an implantable cardioverter defibrillator (ICD). It involves a small operation that is performed under local anaesthesia, and is not painful. A device that is smaller than the palm of your hand is placed in a small pocket under the skin over your chest. Two wires from this are fed into the heart. ICD helps to control a sudden onset of

abnormal fast heart rhythms by delivering a tiny electric shock that changes the rhythm back to normal. For further details, refer to our booklet on 'Pacemakers for heart conditions'.

Cardiac Resynchronisation Therapy (CRT)

In certain cases, a special treatment called 'Cardiac Resynchronisation Therapy', or CRT will be offered. The aim of this treatment is to ensure that both the left and right side of the heart pump in perfect harmony with each other. This device is similar to a pacemaker but functions differently. It is called a 'biventricular pacemaker', which basically means that that there are 2 wires in the ventricles (one in the right and the other in the left), or lower chambers of the heart. There is an additional wire in the right atrium at the top of the heart.

Left ventricular assist devices (LVAD)

These are devices that assist the heart in pumping blood should it become very weak. This device is reserved for patients with severe heart failure, who are not progressing adequately with medical treatment, and would not benefit from a heart transplant or any other surgery. This procedure is rarely performed these days as it is very expensive.

Heart transplant

This is reserved for patients with severe heart failure who do not respond to maximal medical therapy. Whether or not this will be offered to patients depends on a number of other factors, including illnesses such as previous stroke, kidney disease or long

term illnesses. This is a major surgical operation, and has to be considered carefully by expert surgeons prior to it being offered.

8. Looking after yourself

It is important to look after yourself when living with heart failure. While soaking in the actual fact that you are suffering from heart failure and accepting the diagnosis, it is not uncommon to neglect yourself. However with proper guidance, a little determination and help and support from family and friends, you can lead a normal life.

Some of the key points to remember when looking after yourself are highlighted in table 1.

- Watch your weight
- Control your fluid intake
- Watch your salt intake and eat healthy
- Keep alcohol intake low
- Exercise regularly
- Stop smoking
- Control your blood pressure

Table 1: Key points in caring for yourself

Watch your weight

An increase in body weight can result in worsening of symptoms. Hence, it is important to keep an eye your weight as an increase in weight usually indicates a build up of fluid in your body. We recommend weighing yourself every morning at the same time

and making a note of it in a diary. Do carry your diary with you every time you visit your doctor, as it will be a good guide to treating you.
An increase in weight of around 2 to 2.5 kg may be associated with increased shortness of breath and is an indication for modifying treatment. If it does happen, seek medical advice from your doctor.

Control your fluid intake

Keep a record of how much fluid you consume in a day, be it water, tea, coffee or juice. Your doctor will advise you as to how much you can drink in a day, and whether you need to restrict it to a limit. The total fluid intake recommended is between 800ml to 1200ml per day, which could be more in summer.

Watch your salt intake and eat healthy

'More salt means more water'. The problem with salt is that it retains water in the body, and hence it is essential that you limit your salt intake. We recommend that you use less than 2.5g salt per day, but no added salt to your food and avoid consuming foods preserved in salt (like pickles). Avoid using rock salt (potassium salt) as well. Yes, the food would probably taste a bit bland, but using a good combination of spices can make Indian food extremely flavoursome.

Cut down on high carbohydrate foods and foods high in saturated fats. Keep portions small. Avoid fried foods and eat plenty of healthy salads, pulses and fruit. Non vegetarians should stick to lean meat like chicken and fish.

Exercise regularly

Mild to moderate exercise like walking and light aerobic exercises will improve blood flow to the heart muscle and overall physical fitness. When combined with a calorie controlled diet, it helps maintain a healthy weight.

9. Looking after a loved one with heart failure

Finding out that a loved one is suffering from an illness like heart failure can be very upsetting to the entire family. Caring for someone with heart failure can be physically and emotionally stressful on family members. This section aims to give relatives a better understanding of how to care for the patient.

Independence of the patient is key. A lot of patients who were previously fit and well who have been diagnosed with heart failure are always worried about how they can manage daily activities. Many of them may prefer to remain independent, which should be accepted and respected. It is a good idea to ask them if there is anything in particular that they need help and tell them how you can help them.

Some of the ways family members can care for a patient with heart failure include

- Providing moral support
- Ensuring patients take their tablets regularly and on time
- Ensuring patients abide by dietary restrictions as advised by your doctor

- Regular mild to moderate exercise – again it is important to consult your doctor regarding what physical activities and other do's and don'ts.

It is however important for family members to look after their own health as well, do ask a willing friend for help once in a while.

10. What the future holds

There are no doubt umpteen numbers of questions in a patients mind once a diagnosis of heart failure is made. This section answers a few of the frequently asked questions.

Is there a cure for heart failure?

Unfortunately, despite numerous advances in field of medicine, there is no cure for heart failure. However, with good treatment and lifestyle management, patients can live a full and fruitful life.

There is a lot of ongoing work in the field of research looking for ways to cure heart failure. Some research groups are looking at certain special cells that can be injected into heart arteries to help with heart muscle healing after heart attacks, thus preventing heart failure. Other research groups are working on certain cells that can help regenerate heart muscle but changing their form to heart cells. These projects are still in the early stages, but in the next 10 years or so we are sure there will be some exciting results.

Will heart failure shorten my lifespan?

It is difficult to predict the lifespan of a patient with heart failure. This mostly depends on the underlying cause, the age of the patient, severity of heart failure and response to treatment. Nevertheless, with modern treatment, one can expect to lead a reasonably useful life.

Is there a chance I might die suddenly?

In some patients suffering from heart failure, there is a chance of dying suddenly due to the development of an abnormal heart rhythm (arrhythmia). This occurs due to a change in the structure and function of the heart muscle. This can eventually lead to the heart stopping (cardiac arrest).

When your doctor sees you, he/she will make an assessment as to your risk of developing these abnormal heart rhythms, and will prescribe you certain medicines or will recommend a small pacemaker that will prevent or treat these abnormal rhythms. This special pacemaker is called an ICD (implantable cardioverter defibrillator).

Can I live a normal life with heart failure?

Yes, you can. A majority of patients find optimum relief of symptoms after taking medicines, and are able to perform daily activities with minimal problems. In advanced stages of heart failure however, patients need to modify their lifestyle as they may find it difficult to perform activities they enjoy, like brisk walks or running. Newer treatments are being developed aimed at controlling symptoms and improving quality of life.

Will my heart failure get worse over time?

Unfortunately it will. How long it will take for heart failure to worsen is different between patients, and is also dependent on the cause of the heart failure. Furthermore, recent advances in the treatment and management of heart failure aim to improve quality of life and lifespan.

11. Conclusion

Heart failure is a serious ailment with a high morbidity and mortality. It is important to recognise that advances in the investigation and management and compliance to therapy have resulted in a significant number of patients leading a fairly normal and fruitful life. Continuing developments in medical management and technology (like ICD, ventricular assist device and stem cell therapy) will further improve patient outcomes and quality of life.

12. Further reading

For more information, visit our website at www.baligadiagnostics.com.