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Chronic Heart Failure

The purpose of this leaflet is to provide information on the symptoms, diagnosis and treatment of chronic heart failure, along with recommendations regarding diet and physical activity.

Heart failure is a condition in which the heart is unable to pump blood efficiently enough to meet the body's oxygen and nutrient needs. Heart function is impaired when the heart muscle is unable to contract with sufficient strength (the ability to pump is impaired) or relax enough to fill with blood (the ability to relax is impaired). The result is a decrease in the volume of blood sent from the heart to the bloodstream.

Heart failure itself is not a disease, but rather a condition that arises as a result of other diseases and factors affecting the heart. Chronic heart failure develops slowly, occurs more frequently with age, and progresses over time. Heart failure is the most common cause of hospitalisation in people over 65 years of age.

When to suspect heart failure?

- The activities of everyday life are disrupted by fatigue and a loss of strength.
- Weight gain of 2 kg in three days or 5 kg per week.
- There is chest pain or cardiac arrhythmia.
- Visible swelling of the legs, thighs, increases the circumference of the waist.
- Shortness of breath develops or worsens.
- There is a cough that worsens at night and while lying down; additional pillows should be used in the case of breathing difficulties.
- Heart palpitations have occurred, and the pulse is accelerated in a state of rest.

Diseases and conditions that contribute to heart failure

1. High blood pressure, or hypertension. Years of elevated blood pressure place an increased burden on the heart.

2. Ischaemic heart disease. Due to the calcification of the coronary arteries that supply blood to the heart muscle, the normal supply of oxygen to the heart muscle is impaired, which reduces the ability of the heart muscle to contract. A heart attack results in part of the heart muscle dying and not working, which reduces the heart's ability to pump blood.

3. Cardiac arrhythmias. The effectiveness of the heart rate can decrease with a heart rate that is either too slow or accelerated. A normal cardiac rhythm at rest is usually between 60 and 90 beats per minute. The most common arrhythmia that causes heart failure is atrial fibrillation or atrial flutter.

4. Heart valve failures. Heart valves ensure that blood flows in the right direction within the heart. In the case of valve failures, the normal movement of blood is disrupted, which places an excessive strain on the heart and reduces its ability to function as a pump.

5. Diabetes. Diabetes damages coronary artery walls and increases the risk of heart failure, particularly when accompanied by hypertension and coronary heart disease. In people with diabetes mellitus, the energy balance of heart muscle cells is disturbed, which reduces the ability of the muscle to contract and relax. Proper treatment of diabetes mellitus is one of the prerequisites for preventing heart failure from worsening.

6. Sleep apnoea. Long pauses in breathing during sleep cause oxygen levels in the blood to decrease, which interferes with the ability of the heart to function properly. Sleep apnoea is more common in people who are overweight, and is accompanied by snoring and daytime drowsiness.

7. Toxic damage to the heart muscle.Prolonged excessive use of alcohol and drugs directly damage the heart muscle and lead to heart failure. The heart muscle can also be damaged by cancer medicines, which is why the hearts of cancer patients are checked regularly.

8. Cardiomyopathies. This may be due to genetic mutations.

Signs of heart failure

Shortness of breath is caused by fluid retention (oedema) in the lungs when the heart is unable to receive blood from the lungs or pump it out, impairing the exchange of oxygen in the lungs. Shortness of breath first manifests during physical exertion, but as heart failure worsens, it occurs with less and less exertion and eventually during rest. Shortness of breath can also worsen when lying down in patients with heart failure, as it is uncomfortable to lie down and difficult to breathe with the head placed in a low position. In more severe cases of heart failure, sudden episodes of shortness of breath may occur at night while lying down, which can be alleviated by sitting or standing up and opening a window. Shortness of breath can be accompanied by a cough.

Shortness of breath can be alleviated by:

- sleeping in a semi-seated position and leaning on pillows,
- using the appropriate device in the case of sleep apnoea,
- taking medication regularly to prevent pulmonary oedema.

Fatigue and weakness occur due to a decrease in the pumping function of the heart and an insufficient supply of blood to the body, particularly during exertion. Fatigue can lead to a reduced ability to work and perform physical activities. Use your strength and stamina wisely.

- Avoid heavy physical exertion, do not lift heavy objects; instead, drag them. When shopping, use a trolley.
- Try to spread the load evenly throughout the day.
- If you are tired, take time to rest.
- Avoid physical work in conditions that are too warm, cold, or humid.
- Try to sleep for at least 7–8 hours each night.

Swelling occurs when fluids build up in the tissues. Initially, swelling occurs in the area of the ankle joints, but it can then spread to the lower legs and thighs or even throughout the body. Swelling disrupts the blood supply to the skin, causing ulcers to form on the lower legs, from which excess fluid is excreted. The circumference of the waist increases as fluid accumulates in the abdominal cavity. Indigestion and abdominal pain may indicate excess fluid or swelling in the digestive tract.

Mild to moderate swelling can often go unnoticed. Excessive fluid accumulation is indicated by weight gain in excess of 2 kg over three (3) days. Weigh yourself each morning (after using the toilet) and keep a body weight diary.

- A low-salt diet can help to prevent fluid build-up.
- Ask your doctor or nurse for advice on whether you should increase the dose of your diuretic, a medicine that promotes fluid excretion, if swelling worsens.

Diagnosis and treatment of heart failure

Cardiac failure is diagnosed by a doctor, taking into account the patient's complaints and symptoms of the disease, their medical history, and the results of tests. The primary tests are an electrocardiogram (ECG), a cardiac ultrasound scan or echocardiography, and blood tests.

Echocardiography makes it possible to accurately assess the condition of the heart valves, the size of the heart cavity, the thickness of the heart muscle, ventricular pumping function, and the ability to relax.

Echocardiography is used to assess the left ventricular ejection fraction(EF), which is expressed as a percentage. A normal EF is in the range of 50–70%.

The EF can be normal or impaired in a patient with heart failure; the symptoms are the same regardless. The ejection fraction value is very important when preparing a treatment plan for patients with heart failure, and treatment is prescribed depending on the value.

Treatment of patients with significantly reduced pump function (EF < 40%)has been extensively studied worldwide, with four treatment groups recommended as first-line treatments. These drugs are often referred to as the primary drugs for heart failure, and their regular use improves the prognosis of the disease.

The main medicines are:

1. Angiotensin-converting enzyme (ACE) inhibitors: ramipril, enalapril, captopril, lisinopril, and trandolapril. ACE inhibitors reduce the workload of the heart and lower blood pressure. In case of intolerance, angiotensin II receptor blockers (ARBs) are used: candesartan, losartan, valsartan.

An angiotensin receptor neprilysin inhibitor (ARNI), a combination of sacubitril/valsartan, may be used instead of an ACE inhibitor and ARB. This combination is preferred to ACE inhibitors or ARBs in patients with symptomatic heart failure. Sacubitril/valsartan reduces heart strain and improves survival. Patients taking sacubitril/valsartan should not take ACE inhibitors or ARBs at the same time. If a patient has previously taken ACE inhibitors, they should wait for at least 36 hours before using an ARNI.

1. Beta-blockers (metoprolol succinate, bisoprolol, carvedolol, and nebivolol) lower both blood pressure and heart rate. They improve pumping function, allowing the heart to rest and perform better. Beta-blockers are also used to treat various cardiac arrhythmias, which often occur in heart failure. The most common arrhythmias are premature heart beat (extrasystole) and atrial fibrillation.
2. Mineralocorticoid receptor antagonist, or MRA (spironolactone, eplerenone), is a diuretic, a medicine that promotes fluid excretion (a water pill).

In patients with heart failure, it is used for two purposes:

1. in combination treatment as a single diuretic in those who have been prescribed a more powerful water excretion agent (e.g. furosemide or torasemide) – the purpose being to prevent potassium loss by the body,
2. to reduce the load on the heart and improve its efficiency, thereby improving the prognosis of patients.
3. Sodium-glucose co-transporter 2 inhibitors (SGLT2-inhibitors) are a newer class of medicines recommended for use in patients with heart failure. Two preparations, dapagliflozin and empagliflozin, are used. Both improve the symptoms of heart failure, reduce hospitalisation, and increase survival.

When organising treatment, the doctor may prescribe different blood tests to assess the effectiveness and safety of treatment.

You should always inform the doctor or nurse monitoring your treatment if you have experienced side effects while taking medications.

In the absence of side effects, it is important to use all four treatment groups at once. An important part of the treatment is an increase in the dosages of medications, which is carried out by a doctor or nurse with the aim of reaching your maximum tolerated dose. This process, known as titration' aims to increase the daily dose of the primary medication to achieve a better final result.

The main medications for heart failure should be taken regularly, usually for life, and at a sufficiently high dose to prevent the worsening of heart failure.

Keep a close eye on the treatment regimen – different medications are taken differently: some once a day, while others are taken two or more times a day. Treatment may result in a drop in blood pressure – this is usually not dangerous. Do not change the dose or stop treatment without talking to your doctor or nurse. Treatment of the disease that caused heart failure and comorbidities should certainly be continued.

Diuretics or 'water pills', such as torasemide and furosemide, are very important for relieving symptoms of heart failure. They are often combined with spironolactone to reduce potassium loss in urine. Diuretics are only used when symptoms of heart failure, such as swelling and shortness of breath, are present. They work by removing excess water from the body, thereby reducing swelling and body weight, and alleviating or eliminating shortness of breath. Diuretics also lower blood pressure.

Although diuretics can relieve symptoms of heart failure, they do not affect the progression of the disease. Diuretics are not recommended for preventing heart failure.

Diuretics are the only cardiac insufficiency medications for which patients are permitted to adjust the dosage themselves, provided that they understand the rationale behind the use of the medication. The dosage of the diuretic should be increased if shortness of breath or swelling worsen, and rapid weight gain (more than 2 kg in three days) occurs. Ask your doctor or nurse if you can take more diuretics than usual.

Once body weight has normalised and symptoms have decreased, the dose of the diuretic can be reduced.

Diuretics increase the need to urinate. Therefore, the drug should be taken in the morning on an empty stomach or during the day, rather than in the evening. Diuretics are normally taken once a day, with doses not generally distributed throughout the day. Do not consume excessive amounts of fluids, as this may negate the benefits of diuretics! Treatment with a diuretic may worsen urinary incontinence; if this happens, tell your doctor or nurse.

It is worth knowing that in a situation where fluid loss increases, the dose of the diuretic should be reduced (e.g. in case of diarrhoea, vomiting, febrile illness or in hot climates).

In many patients with heart failure, the pumping function of the heart is either maintained (EF > 50%) or only slightly decreased (EF between 41% and 49%).

Key medications for heart failure with maintained or slightly reduced pumping function to improve the prognosis and reduce the number of hospitalisations:

1. Sodium-glucose co-transporter 2 inhibitors (SGLT2-inhibitors) – dapagliflozin and empagliflozin.
2. Diuretics. The main treatment for relieving fluid retention and swelling. They are added to the treatment regimen in cases of excess water build-up in the body. Diuretics help to control symptoms, but do not directly affect the progression of the disease.
3. Treating the underlying disease that led to heart failure is very important. For example, if hypertension occurs, blood pressure lowering drugs are prescribed; if atrial fibrillation occurs, heart rate and rhythm control is an important part of treatment.

A doctor will prescribe the combinations and doses of medications, including the primary medications, for heart failure and any additional medicines. They will also arrange for the patient to be monitored. As patients with heart failure differ in terms of age, comorbidities and other indicators, there is no universal regimen. Some combinations may require more frequent tests (e.g. kidney tests, blood potassium levels).

If heart failure continues to worsen despite regular medication, some patients may benefit from heart support devices (such as a resynchronising pacemaker, left ventricle-assisting device). These devices are not suitable for everyone; the patient's heart failure must meet certain criteria, and it is up to the doctor to decide whether the devices are suitable. In more severe cases, heart transplantation is the recommended treatment for heart failure.

What else should a patient with heart failure know?

1. Heart failure is a disease of a chronic nature, the treatment of which is lifelong.
2. Learn to recognise the symptoms that indicate worsening heart failure.
3. Keep a 'cardiac failure diary' in which you record your weight, blood pressure and heart rate values and symptoms every day.

4. Check with your doctor or nurse regularly. In cases of mild and moderate heart failure, the patient is monitored by a family doctor and a family nurse, while those with severe heart failure are often monitored by a heart doctor or a nurse in the heart failure clinic.
5. Know the names of your medicines, your daily doses, and how you use them. Always carry your treatment plan with you.
6. If necessary, use medication boxes or other aids to remember to take your medication.
7. Do not leave the purchasing of medications to the last minute! If you are about to run out of a medication, ask your doctor to renew your prescription in good time.
8. Do not miss taking your medication! If you have any questions about your medication (e.g. how to take it, the occurrence of side effects, the price or availability of the medication), do not stop taking it, but consult your doctor or nurse.
9. When travelling abroad, do not forget to bring along your treatment regimen and a sufficient quantity of medication. Keep medications in your hand luggage when boarding a plane. If you are travelling to an area with a warm climate, you may need to adjust your fluid intake and diuretic use. Avoid too much exposure to the sun.
10. Maintaining a healthy lifestyle is an important part of treatment. Review your lifestyle and make it healthier, if necessary.
11. Learn to monitor your fluid intake and limit it if necessary. Patients with mild heart failure should not consume more than 1.5–2 litres of fluid per day (including, for example, soup). In case of severe heart failure, the intake of fluid should be reduced further, and should definitely not exceed one (1) litre per day. The need for fluids increases with diarrhoea and increased sweating (e.g. due to fever, disease, or hot weather).
12. To keep track of your daily fluid intake, measure the recommended amount in a container of the correct volume in the morning. Divide this amount evenly throughout the day.
13. The best drink is pure water. If you are thirsty, try sucking on ice cubes or frozen berries and fruit, rinsing your mouth with cool water, chewing sugar-free chewing gum, or frequently brushing your teeth.
14. Sexual activity is permitted if there are no symptoms of heart failure. Potency-enhancing medicinal products are not recommended for patients with severe heart failure.
15. Get vaccinated against the flu every year, and against pneumococcal disease.
16. Heart failure is often accompanied by depression and anxiety. If you experience persistent low mood, lack of pleasure or become irritated easily, be sure to tell your doctor or nurse.
17. Be aware that various painkillers and anti-inflammatory drugs (ibuprofen, naproxen, celecoxib, etc.) can cause kidney damage and worsen heart failure. Consult your doctor if you are taking these medications.
18. If you are a smoker, try to quit. If necessary, you can get help by contacting the smoking cessation counselling office.

19. If you drink alcohol, do so in moderation. Excessive alcohol consumption increases your risk of heart failure. You should have at least 3 alcohol-free days per week. For women, moderate alcohol consumption is defined as no more than one (1) unit of alcohol per day and the maximum amount of alcohol is two (2) units of alcohol per day. For men, moderate daily alcohol consumption is considered to be two (2) units of alcohol and a maximum of three (3) units. When calculating quantities, assume that one (1) unit of alcohol equals 10 ml of pure ethanol (approximately 30 ml of strong alcohol, 100 ml of wine, or 240 ml of beer).

If you have already been diagnosed with heart failure,a consultation with your family physician is necessary if your general condition has worsened over the last 3–6 days, even though you have been taking all your heart medications as prescribed (swelling and shortness of breath get worse, you feel like you are suffocating at times, you can only sleep in a sitting position).

Summon an ambulance by dialling 112 if:

- severe chest pain occurs, which does not pass after half an hour of rest or after taking nitro-glycerine,
- severe, persistent shortness of breath occurs which does not decrease when sitting.

Nutrition and heart failure

- A patient with heart failure may experience a loss of appetite and a feeling of fullness due to the accumulation of excess fluid in the digestive tract. It is therefore recommended that they eat smaller meals more often (after 3–4 hours).
- Foods with high levels of minerals such as potassium and magnesium are recommended.
- The use of table salt promotes fluid build-up in the body, which in turn causes swelling. The daily amount of salt for a patient with heart failure is calculated at 2–5 grams per day (0.5–1 teaspoon). Table salt can be replaced with salt-free herbs or spices when cooking. Opt for so-called heart-friendly salts, where a portion of the sodium has been replaced with magnesium and potassium.
- When buying food, read the nutritional information on the packaging and choose foods with a lower salt content.
- Avoid salty foods such as ready-to-eat foods and semi-finished products, ham, smoked sausage, pate, sausages, tinned fish, cheese, salted butter, salad dressings, mayonnaise, and tinned soups.
- Avoid juices that may have a high salt content (e.g. vegetable juices).
- Note that if you are taking diuretics or water pills as part of your ongoing treatment, you will lose salt (sodium) along with water. A lack of sodium resulting from high doses of diuretics is also not good for the body. Consult a doctor, nurse or nutritionist when preparing an optimal diet.
- Eat at least five portions of fruits and vegetables a day. Limit your consumption of dried fruits and raisins to one tablespoon per day.
- Foodstuffs of animal origin are beneficial because they contain the protein needed by the body. Patients who are overweight or suffer from impaired cholesterol metabolism should monitor the fat content of their food.
- Fish is particularly well-suited for patients with heart failure, as it is a good source of omega-3 fatty acids.

Decreases in potassium levels in the body may be related to the use of diuretic medications. Carrots, cabbages, potatoes, bananas and soy products are all potassium-rich. Whole grains, cocoa, pumpkin and sunflower seeds, and nuts are all magnesium-rich.

Information on heart-healthy dietary recommendations can be found on the websites of the National Institute for Health Development (www.toitmine.ee, www.Tervisinfo.ee).

Physical activity and heart failure

Regular and appropriately chosen exercise forms part of the treatment for heart failure. As well as having a positive effect on the cardiovascular system, it increases muscle strength, endurance and physical performance. Exercise helps control body weight and has a beneficial effect on blood pressure, cholesterol, and blood sugar levels. In addition, exercise has a positive effect on sleep and reduces the symptoms of heart failure.

Make regular moderate physical activity part of your lifestyle.

- Daily exercise and training improve the quality of life, making you feel good and helping you cope better with the disease.
- It is recommended that you engage in both aerobic activities (walking, jogging, cycling, swimming, dancing) and weight training, in which case exercises using body weight are preferable to the use of additional weights.
- To start with, a smaller physical load is suitable, which can then be gradually increased. The starting point could be 5–10 minutes per day, with the aim of reaching at least 30 minutes of aerobic training per day and two (2) gym training sessions of the same duration per week.
- The intensity of the training could be light to moderate. A good indication of the appropriate intensity is whether you are able to speak in full sentences during training.
- Try to exercise regularly, for a minimum of 20 minutes, three (3) times per week. Choose the most suitable form of exercise for you. Find a training partner.
- Avoid physical exercise immediately after meals and during exceptional weather conditions.
- Exercise at a time of the day when you feel refreshed.
- If you want to exercise more intensively, talk to your doctor or nurse or see a rehabilitation doctor, or physiotherapist.
- Divide your training into three stages: a 5-minute slow walk to warm up, a 20-minute fast walk for the main part, and a 5-minute slower walk and stretching exercises to relax.
- During training, keep track of your progress. Stop exercising if you experience chest pain, sudden shortness of breath, weakness, or dizziness.
- Don’t overwhelm yourself with too much effort. Remember that regular daily activities are also count as physical activity. Distribute your daily physical activity evenly, for example by taking the stairs instead of the lift, walking your dog, and shopping on foot.
- If you have a pacemaker or a ventricle-assist device, you can still perform physical activity. If you are in any doubt as to whether the chosen type of sport is compatible with your installed device, consult your doctor or nurse.

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