# Heart failure in adults

## *Executive summary*

## Introduction

Heart failure is a syndrome resulting from poor cardiac function. In the Gambia, the most common cause of this in adults is dilated cardiomyopathy secondary to long-standing untreated hypertension. Other causes include rheumatic heart disease, post-partum cardiomyopathy and, less commonly, ischaemic heart disease. Cardiac dysfunction might also be a consequence of chronic respiratory disease.

Heart failure may present acutely or more chronically. There may be signs of both poor perfusion of end organs and fluid overload. Left heart failure presents primarily with breathlessness. Right heart failure presents primarily with peripheral oedema. Congestive cardiac failure is the combination of both types. Acute left heart failure is a medical emergency and the patient should be sent to the ward (or to see the doctor in Keneba) as soon as possible.

It is important to consider and treat both the underlying cause and possible exacerbating factors.

## Target users

* Nurses
* Doctors

## Target area of use

* Outpatient department
* Ward

## Key areas of focus / New additions / Changes

This guideline outlines pragmatic management of acute and chronic heart failure in our setting.

## Limitations

We lack access to HDU level care and cannot give inotropes.

## Presenting symptoms and signs

* Shortness of breath on exertion, at rest, or during the night.
* Swelling of ankles / body.

Grade the severity of symptoms using the New York Heart Association (NYHA) classification:

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| **NYHA class** | **Symptoms** | **One-year mortality** |
| I | No limitations | 5-10% |
| II | Slight limitation of activity – comfortable at rest and on mild exertion | 15% |
| III | Marked limitation of activity – only comfortable at rest | 30% |
| IV | Any activity brings on discomfort – symptoms present at rest | 50-60% |

## Examination findings

* Fast HR, Fast RR, Displaced apex beat, gallop rhythm, basal lung crackles, pleural effusions – all consistent with left heart failure.
* Oedema, raised JVP, hepatomegaly – all consistent with right heart failure.
* Hypotension, confusion, cold peripheries are all suggestive of severe hypoperfusion.
* Hypertension – if this is the underlying cause.
* Murmurs suggest underlying rheumatic or congenital heart disease.
* Arrhythmia – might be cause of an acute exacerbation.

### Important things to look for

* Recent acute viral illness, TB, known HIV, known COPD, recent pregnancy, alcohol ingestion, smoking history – can all help to identify a possible cause.
* Check adherence to medications.
* Rule out intercurrent illness as cause of exacerbation.
* Review medication history – for instance NSAIDs, aspirin and calcium channel blockers may worsen heart failure.

## Investigations

* FBC – as anaemia may exacerbate heart failure.
* U&Es – renal failure can be a complication of heart failure or of its treatment.
* HIV – if there is no obvious cause or if there is any other suggestive features.
* CXR – if there is evidence of left heart failure.
* ECG – if there is arrhythmia or any reason to consider ischaemic heart disease.
* ECHO – to confirm diagnosis and identify cause. It is usually not necessary to do this at initial diagnosis, unless there is a reason to suspect valvular heart disease. It is usually only necessary to confirm the cause of the heart failure and then does not need to be repeated unless there is a specific reason (passage of time from previous ECHO is not a good reason).

It is not usually necessary to do LFTs – they are likely to be abnormal if there is right heart failure, but do not need specific treatment or monitoring.

## Management

The underlying problem should be treated once identified – however, in many cases, initial treatment will be determined by the presentation.

### Acute left heart failure

*This is an emergency – transfer the patient to the ward as soon as possible!*

* Sit the patient up. Give high flow O2.
* Give iv furosemide 40-80 mg.
* Give morphine 5-10 mg iv only if the patient is in severe respiratory distress.
* Reassess the patient – furosemide can be repeated to a maximum of 160 mg. Sublingual nitrates may be helpful if available.

If a patient fails to respond to iv furosemide, consider the use of a continuous furosemide infusion. There are theoretical reasons why this might be more effective and some study evidence to support its use. Give the same total dose of furosemide over 24 hours via syringe driver up to a maximum dose of 720 mg per day.

If there are is still no improvement and you have no other options, you can consider the use of a loading dose of iv aminophylline (5 mg/kg over 20 minutes via syringe driver) – it has diuretic, positive chronotropic and inotropic actions.

Add other treatments as tolerated during admission and whilst keeping a close eye on the renal function.

### Left heart failure

Use this guidance for a newly diagnosed patient who is not acutely ill or once a patient with acute left heart failure is stabilized. Treatment should be stepped up gradually in the order listed below as the patient’s blood pressure and renal function allow. Check BP at every appointment. Check renal function at least once after any major change in treatment or if there is a change in the patient’s condition.

Begin treatment with oral **furosemide** 40-160 mg per day to reduce oedema and congestion of the lungs.

Add an **ACE inhibitor** next. This improves prognosis. Do not use if there is hypotension, hyperkalaemia, renal artery stenosis or stenotic cardiac valvular disease. Ramipril is our first line option. Use 1.25 mg OD and increase to maximum dose of 10 mg OD as tolerated. Captopril is available if the patient will be transferred back to government care in the near future.

**Beta-blockers** should be used only in stable patients. Again they improve prognosis. First line choice for control of HR in atrial fibrillation. Avoid in asthma or COPD. Do not give if HR is below 50 bpm or there is 2nd or 3rd degree heart block. If the patient presented with acute heart failure, do not start until they return for follow-up or until they have been managed or oral diuretics for 1-2 days. Give bisoprolol 1.25 mg OD and increase as tolerated to a maximum dose of 10 mg OD.

**Spironolactone** improves prognosis in patients with moderate or severe heart failure who are already on an ACE inhibitor. It can cause severe hyperkalaemia. Give 25-50 mg OD.

**Digoxin** may improve symptoms and reduce hospital admission. No evidence of improved prognosis. High risk of toxicity, especially in elderly patients or those with renal failure. Toxicity presents with bradycardia, nausea and vomiting, altered vision. Give 2 doses of 0.5 mg 12 hours apart then continue maintenance treatment with 0.12-0.25 mg OD.

**Isosorbide dinitrate** and **hydralazine** in combination have been shown to help black patients who have NYHA class III-IV heart failure unresponsive to standard treatment. Contraindicated in mitral or aortic stenosis, pericardial effusion and constrictive pericarditis. Give 20-80 mg isosorbide dinitrate TDS (to maximum dose of 240 mg daily) and hydralazine 25-100 mg QDS.

If the patient is hypertensive and standard heart failure treatment has not brought the blood pressure down, amlodipine can be added to achieve this.

Where there is evidence of ischaemic heart disease, aspirin, clopidogrel and statins should be considered.

### Right heart failure

* Exclude pericardial effusion by echocardiography.
* Treat primary pulmonary condition (for instance giving salbutamol inhaler or nebulisers to patients with COPD).
* Add furosemide and spironolactone to treat oedema. ACE inhibitors and other treatment for left heart failure are not indicated.

## Key Issues for Nursing care

* Heart failure should not be managed in Gate clinic, but must be referred to the doctors in OPD.
* Patients admitted with severe heart failure should be nursed in an upright position, with their legs slightly raised above their hips.
* Any dose of furosemide above 60 mg iv should be given over at least 20 minutes using a syringe driver.
* Patients on iv diuretics should have close monitoring of weight (daily) and urine output (in/out chart).

## References

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National Institute for Health and Care Excellence (2010). Chronic heart failure: diagnosis and management. NICE guideline (CG108).

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| **Written by:** | Name: Karen Forrest | Date: 22 May 2018 |
| **Reviewed by:** | Name: Fatai Akemokwe | Date: 17 June 2018 |
| **Version:** | **Change history:** | **Review due date:** |
| 1.0 | New document | 15 August 2020 |
| 1.1 | Executive summary added | 15 August 2020 |
| Review Comments (*if applicable)* |  |  |