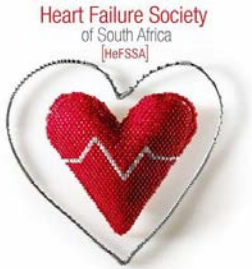
HeFSSA Practitioners Program 2013

08:00 – 08:30	Registration
08:30 – 09:15	Clinical Case Presentation 1
09:15 – 10:00	Clinical Case Presentation 2
10:00 – 10:30	Tea Break
10:30 – 11:15	Clinical Case Presentation 3
11:15 – 11:45	ESC Guidelines on Chronic Heart Failure
11:45 – 12:00	Questionnaire
12:00 – 14:00	Lunch

Heart Failure Society of South Africa [HeFSSA]

Update On Chronic Heart Failure

- **ESC Guidelines on chronic heart failure 2012**
- **Adaptation of the ESC guidelines by South Africa Heart Association**



* ESC Guideline for the diagnosis and treatment of acute and chronic heart failure 2012, European Heart Journal 2012:33;1787-1847

The principal changes from the ESC Chronic Heart Failure 2008

- New definition of Heart Failure with Reduced Ejection Fraction (HF-REF);
- Expanded indication for mineralocorticoid receptor antagonists (MRAs);
- Indication for the sinus node inhibitor, ivabradine;
- Expanded indication for cardiac resynchronization therapy (CRT);
- New information on the role of coronary revascularisation;
- Role of ventricular assist devices.

Definition

“Left ventricular (LV) systolic dysfunction”

is replaced with the term HF-REF.

New cut-off ejection fraction for HF-REF is a LV ejection fraction (EF) ≤ 50%.

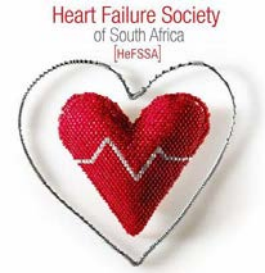


Table 1 Diagnosis of heart failure

The diagnosis of HF-REF requires three conditions to be satisfied:
1. Symptoms typical of HF
2. Signs typical of HF[a]
3. Reduced LVEF
The diagnosis of HF-PEF requires four conditions to be satisfied:
1. Symptoms typical of HF
2. Signs typical of HF[a]
3. Normal or only mildly reduced LVEF and LV not dilated
4. Relevant structural heart disease (LV hypertrophy/LA enlargement) and/or diastolic dysfunction (see Section 4.1.2)

HF = heart failure; HF-PEF = heart failure with 'preserved' ejection fraction; HF-REF = heart failure and a reduced ejection fraction; LA = left atrial; LV = left ventricular; LVEF = left ventricular ejection fraction.

[a]Signs may not be present in the early stages of HF (especially in HF-PEF) and in patients treated with diuretics (see Section 3.6).

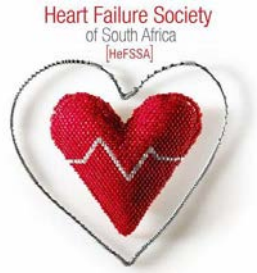


Table 2 New York Heart Association functional classification based on severity of symptoms and physical activity

Class I	No limitation of physical activity. Ordinary physical activity does not cause undue breathlessness, fatigue, or palpitations.
Class II	Slight limitation of physical activity. Comfortable at rest, but ordinary physical activity results in undue breathlessness, fatigue, or palpitations.
Class III	Marked limitation of physical activity. Comfortable at rest, but less than ordinary physical activity results in undue breathlessness, fatigue, or palpitations.
Class IV	Unable to carry on any physical activity without discomfort. Symptoms at rest can be present. If any physical activity is undertaken, discomfort is increased.

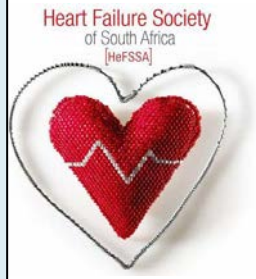
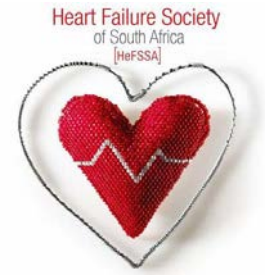


Table 4 Symptoms and signs typical of heart failure

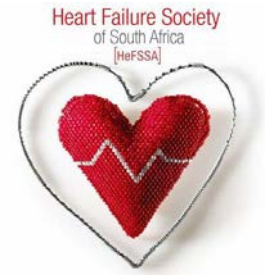
Symptoms	Signs
Typical	*More specific*
Breathlessness	Elevated jugular venous pressure
Orthopnoea	Hepatojugular reflux
Paroxysmal nocturnal dyspnoea	Third heart sound (gallop rhythm)
Reduced exercise tolerance	Laterally displaced apical impulse
Fatigue, tiredness, increased time to recover after exercise	Cardiac murmur
Ankle swelling	
Less typical	*Less specific*
Nocturnal cough	Peripheral oedema (ankle, sacral, scrotal)
Wheezing	Pulmonary crepitations
Weight gain (>2 kg/week)	Reduced air entry and dullness to percussion at lung bases (pleural effusion)
Weight loss (in advanced heart failure)	Tachycardia
Bloated feeling	Irregular pulse
Loss of appetite	Tachypnoea (>16 breaths/min)
Confusion (especially in the elderly)	Hepatomegaly
Depression	Ascites
Palpitations	Tissue wasting (cachexia)
Syncope	

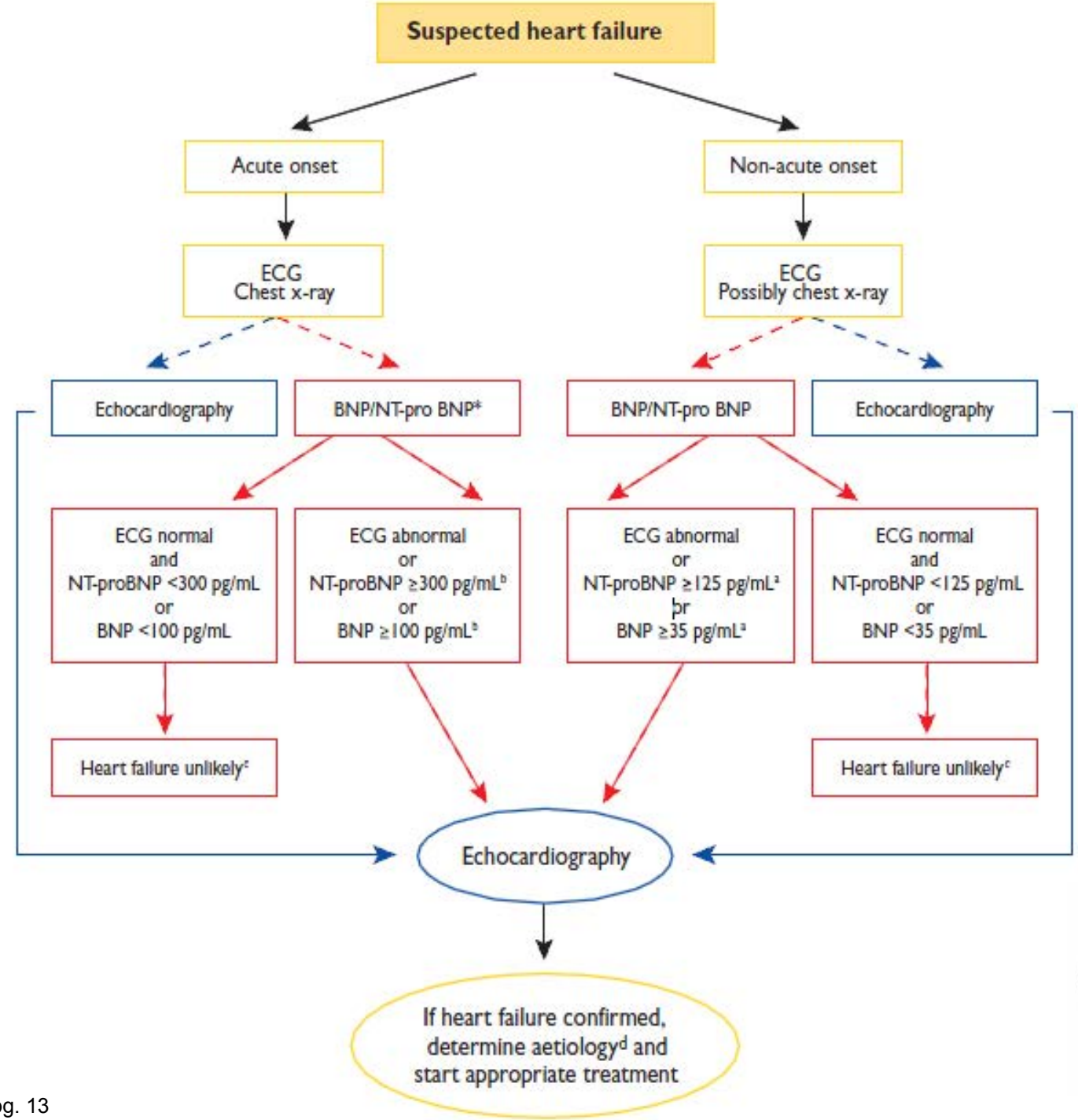


Recommendations for the diagnostic investigations in ambulatory patients suspected of having heart failure[c]

Recommendations	Class[a]	Level[b]
Investigations to consider in all patients		
Transthoracic echocardiography is recommended to evaluate cardiac structure and function, including diastolic function (Section 4.1.2), and to measure LVEF to make the diagnosis of HF, assist in planning and monitoring of treatment, and to obtain prognostic information.	I	C
A 12-lead ECG is recommended to determine heart rhythm, heart rate, QRS morphology, and QRS duration, and to detect other relevant abnormalities (*Table 5*). This information also assists in planning treatment and is of prognostic importance. A completely normal ECG makes systolic HF unlikely.	I	C
Measurement of blood chemistry (including sodium, potassium, calcium, urea/blood urea nitrogen, creatinine/estimated glomerular filtration rate, liver enzymes and bilirubin, ferritin/TIBC) and thyroid function is recommended to: (i) Evaluate patient suitability for diuretic, renin–angiotensin–aldosterone antagonist, and anticoagulant therapy (and monitor treatment) (ii) Detect reversible/treatable causes of HF (e.g. hypocalcaemia, thyroid dysfunction) and co-morbidities (e.g. iron deficiency) (iii) Obtain prognostic information.	I	C
A complete blood count is recommended to: (i) Detect anaemia, which may be an alternative cause of the patient's symptoms and signs and may cause worsening of HF (ii) Obtain prognostic information.	I	C
Measurement of natriuretic peptide (BNP, NT-proBNP, or MR-proANP) should be considered to: (i) Exclude alternative causes of dyspnoea (if the level is below the exclusion cut-point–*see Figure 1*–HF is very unlikely) (ii) Obtain prognostic information.	IIa	C
A chest radiograph (X-ray) should be considered to detect/exclude certain types of lung disease, e.g. cancer (does not exclude asthma/COPD). It may also identify pulmonary congestion/oedema and is more useful in patients with suspected HF in the acute setting.	IIa	C

Investigations to consider in selected patients		
CMR imaging is recommended to evaluate cardiac structure and function, to measure LVEF, and to characterize cardiac tissue, especially in subjects with inadequate echocardiographic images or where the echocardiographic findings are inconclusive or incomplete (but taking account of cautions/contraindications to CMR).	I	C
Coronary angiography is recommended in patients with angina pectoris, who are considered suitable for coronary revascularization, to evaluate the coronary anatomy.	I	C
Myocardial perfusion/ischaemia imaging (echocardiography, CMR, SPECT, or PET) should be considered in patients thought to have CAD, and who are considered suitable for coronary revascularization, to determine whether there is reversible myocardial ischaemia and viable myocardium.	IIa	C
Left and right heart catheterization is recommended in patients being evaluated for heart transplantation or mechanical circulatory support, to evaluate right and left heart function and pulmonary arterial resistance.	I	C
Exercise testing should be considered: (i) To detect reversible myocardial ischaemia (ii) As part of the evaluation of patients for heart transplantation and mechanical circulatory support (iii) To aid in the prescription of exercise training (iv) To obtain prognostic information.	IIa	C





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Esc Guidelines 2012, pg. 13

Management Objectives

- **To make patients feel better**
- **To reduce hospitalisations (new and recurrent)**
- **To prolong survival**
- **(Preventing HF hospitalisation is important for patients and healthcare systems.)**

At All Times Treat Important Precipitating Factors

These change a compensated condition to frank heart failure. (Can occur in up to 93% of patients) ***Ghali et al. Arch Int Med 1986***

- **Inappropriate reduction in therapy**
- **Arrhythmias (including abnormal intra-ventricular conduction)**
- **Myocardial infarction/ ischaemia**
- **Systemic infection**
- **Pulmonary embolism**
- **Drugs causing myocardial depression**
- **Oestrogens, corticosteroids, NSAIDS**
- **Development of another form of heart disease**

Pharmacological Therapy of HF-REF

Symptomatic relief

- Diuretics
- Digoxin

Symptomatic relief and mortality benefit

- Angiotensin-Converting Enzyme Inhibitors
- Beta-Blockers
- Mineralocorticoid/Aldosterone Receptor Antagonists

Symptom relief and uncertain mortality benefit

- Angiotensin receptor blocker
- Ivabradine
- Combination of hydralazine and nitrates

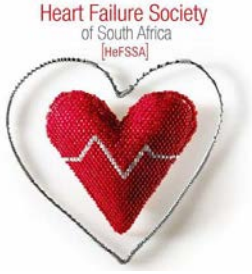
Diuretics

With the exception of spironolactone (an aldosterone antagonist) diuretics do not influence the natural history of chronic heart failure.

Bristow MR et al. Heart Disease. P562. Ed Braunwald, Zipes, Lippy, WB Saunders 2001

However….

Diuretics potentially improve congestive symptoms and may slow down ventricular remodelling.



Problems Encountered with Diuretics

1. **Metabolic Side Effects**
   Hyperglycaemia, hyperuricaemia

2. **Electrolyte Imbalance**

3. **Volume Depletion**
   Hypertension, interference with other medications (Ace I, ARB, beta blockade)

4. **Diuretic Resistance (Na=sodium)**
   - Net gain of Na with a high Na diet
   - Compensatory hypertrophy of tubular epithelial cells distal to their site of action
   Other drugs NSAIDS
   Renal perfusion

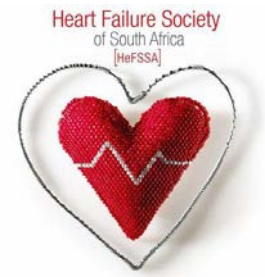


Table 16 Doses of diuretics commonly used to treat heart failure (with and without a preserved ejection fraction, chronic and acute)

Diuretics	Initial dose (mg)		Usual daily dose (mg)	
Loop diuretics[a]				
Furosemide	20–40		40–240	
Bumetanide	0.5–1.0		1–5	
Torasemide	5–10		10–20	
Thiazides[b]				
Bendroflumethiazide	2.5		2.5–10	
Hydrochlorothiazide	25		12.5–100	
Metolazone	2.5		2.5–10	
Indapamide[c]	2.5		2.5–5	
Potassium-sparing diuretics[d]				
	+ACEi/ ARB	−ACEi/ ARB	+ACEi/ ARB	−ACEi/ ARB
Spironolactone/ eplerenone	12.5–25	50	50	100–200
Amiloride	2.5	5	5–10	10–20
Triamterene	25	50	100	200

ACEi = angiontensin-converting enzyme inhibitor; ARB = angiotensin receptor blocker.
[a]Oral or intravenous; dose might need to be adjusted according to volume status/ weight; excessive doses may cause renal impairment and ototoxicity.
[b]Do not use thiazides if estimated glomerular filtration rate <30 mL/min, except when prescribed synergistically with loop diuretics.
[c]Indapamide is a non-thiazide sulfonamide.
[d]A mineralocorticoid antagonist (MRA) i.e. spironolactone/eplerenone is always preferred. Amiloride and triamterene should not be combined with an MRA.

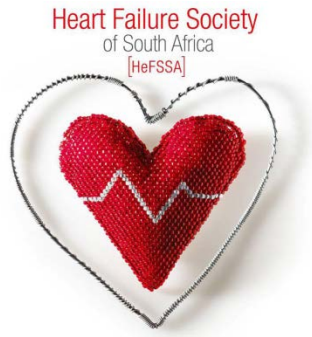
Esc Guidelines 2012, pg. 26

Pharmacologic Management

Cardiac Glycosides

(Have a definite inotropic effect)

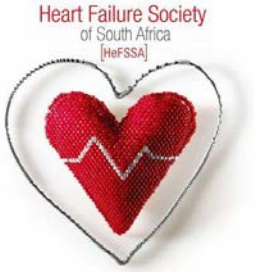
- Does not decrease mortality
- Beneficial effects in mild to moderate failure in sinus rhythm
- Requires vigilance regarding toxic accumulation
- Measurement of serum levels advisable



Pharmacologic Management

ACE Inhibitors

- Blocks the conversion of angiotensin I to angiotensin II; prevents functional deterioration
- Recommended for all heart failure patients
- Relieves symptoms and improves exercise tolerance
- Reduces risk of death and decreases disease progression
- Benefits may not be apparent for 1-2 months after initiation



Pharmacologic Management

Beta-Blockers

- Cardioprotective effects due to blockade of excessive SNS stimulation.
- In the short-term, beta blocker decreases myocardial contractility; increase in EF after 1-3 months of use.
- Long-term, placebo-controlled trials have shown symptomatic improvement in patients treated with certain beta-blockers.[1]
- When combined with conventional HF therapy, beta-blockers reduce the combined risk of morbidity and mortality, or disease progression.[1]

1 *Hunt, SA, et al ACC/AHA Guidelines for the Evaluation and Management of Chronic Heart Failure in the Adult, 2001 p. 20.*

Pharmacologic Management

Mineralocorticoid/Aldosterone Receptor Antagonists

- Generally well-tolerated
- Shown to reduce heart failure-related morbidity and mortality
- Generally reserved for patients with NYHA Class III-IV HF
- Side effects include hyperkalemia and gynaecomastia
- Potassium and creatinine levels should be closely monitored

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Table 14 Evidence-based doses of disease-modifying drugs used in key randomized trials in heart failure (or after myocardial infarction)

	Starting dose (mg)	Target dose (mg)
ACE inhibitor		
Captopril[a]	6.25 t.i.d.	50 t.i.d.
Enalapril	2.5 b.i.d.	10–20 b.i.d.
Lisinopril[b]	2.5–5.0 o.d.	20–35 o.d.
Ramipril	2.5 o.d.	5 b.i.d.
Trandolapril[a]	0.5 o.d.	4 o.d.
Beta-blocker		
Bisoprolol	1.25 o.d.	10 o.d.
Carvedilol	3.125 b.i.d.	25–50 b.i.d.
Metoprolol succinate (CR/XL)	12.5/25 o.d.	200 o.d.
Nebivolol[c]	1.25 o.d.	10 o.d.
ARB		
Candesartan	4 or 8 o.d.	32 o.d.
Valsartan	40 b.i.d.	160 b.i.d.
Losartan[b,c]	50 o.d.	150 o.d.
MRA		
Eplerenone	25 o.d.	50 o.d.
Spironolactone	25 o.d.	25–50 o.d.

ACE = angiotensin-converting enzyme; ARB = angiotensin receptor blocker; b.i.d. = bis in die (twice daily); MRA = mineralocorticoid receptor antagonist; o.d. = omni die (once every day); t.i.d. = ter in die (three times daily).
[a]Indicates an ACE inhibitor where the dosing target is derived from post-myocardial infarction trials.
[b]Indicates drugs where a higher dose has been shown to reduce morbidity–mortality compared with a lower dose of the same drug, but there is no substantive placebo-controlled randomized controlled trial and the optimum dose is uncertain.
[c]Indicates a treatment not shown to reduce cardiovascular or all-cause mortality in patients with heart failure or after acute mycocardial infarction (or shown to be non-inferior to a treatment that does).

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Esc Guidelines 2012, pg. 21

Pharmacologic Management

Angiotensin Receptor Blockers (ARBs)

- Block AT_1 receptors, which bind circulating angiotensin II
- Examples: valsartan, candesartan, losartan
- Should not be considered equivalent or superior to ACE inhibitors
- In clinical practice, ARBs should be used to treat patients who are ACE intolerant due to intractable cough or who develop angioedema

Other treatments with less-certain benefits in patients with symptomatic (NYHA class II–IV) systolic heart failure

Esc Guidelines 2012, pg. 22

Recommendations	Class[a]	Level[b]	Ref[c]
ARB			
Recommended to reduce the risk of HF hospitalization and the risk of premature death in patients with an EF ≤40% and unable to tolerate an ACE inhibitor because of cough (patients should also receive a beta-blocker and an MRA).	I	A	108, 109
Recommended to reduce the risk of HF hospitalization in patients with an EF ≤40% and persisting symptoms (NYHA class II–IV) despite treatment with an ACE inhibitor and a beta-blocker who are unable to tolerate an MRA.[d]	I	A	110, 111
Ivabradine			
Should be considered to reduce the risk of HF hospitalization in patients in sinus rhythm with an EF ≤35%, a heart rate remaining ≥70 b.p.m., and persisting symptoms (NYHA class II–IV) despite treatment with an evidence-based dose of beta-blocker (or maximum tolerated dose below that), ACE inhibitor (or ARB), and an MRA (or ARB).[e]	IIa	B	112
May be considered to reduce the risk of HF hospitalization in patients in sinus rhythm with an EF ≤35% and a heart rate ≥70 b.p.m. who are unable to tolerate a beta-blocker. Patients should also receive an ACE inhibitor (or ARB) and an MRA (or ARB).[e]	IIb	C	–
Digoxin			
May be considered to reduce the risk of HF hospitalization in patients in sinus rhythm with an EF ≤45% who are unable to tolerate a beta-blocker (ivabradine is an alternative in patients with a heart rate ≥70 b.p.m.). Patients should also receive an ACE inhibitor (or ARB) and an MRA (or ARB).	IIb	B	113
May be considered to reduce the risk of HF hospitalization in patients with an EF ≤45% and persisting symptoms (NYHA class II–IV) despite treatment with a beta-blocker, ACE inhibitor (or ARB), and an MRA (or ARB).	IIb	B	113
H-ISDN			
May be considered as an alternative to an ACE inhibitor or ARB, if neither is tolerated, to reduce the risk of HF hospitalization and risk of premature death in patients with an EF ≤45% and dilated LV (or EF ≤35%). Patients should also receive a beta-blocker and an MRA.	IIb	B	114, 115
May be considered to reduce the risk of HF hospitalization and risk of premature death in patients in patients with an EF ≤45% and dilated LV (or EF ≤35%) and persisting symptoms (NYHA class II–IV) despite treatment with a beta-blocker, ACE inhibitor (or ARB), and an MRA (or ARB).	IIb	B	116
An *n*-3 PUFA[f] preparation may be considered to reduce the risk of death and the risk of cardiovascular hospitalization in patients treated with an ACE inhibitor (or ARB), beta-blocker, and an MRA (or ARB).	IIb	B	117

ACE = angiotensin-converting enzyme; ARB = angiotensin receptor blocker; CHARM-Added = Candesartan in Heart Failure: Assessment of Reduction in Mortality and Morbidity-Added; EF = ejection fraction; HF = heart failure; H-ISDN = hydralazine and isosorbide dinitrate; MRA = mineralocorticoid receptor antagonist; NYHA = New York Heart Association; PUFA = polyunsaturated fatty acid.

[a]Class of recommendation.

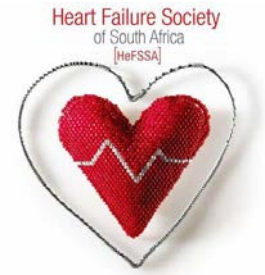
[b]Level of evidence.

[c]References.

[d]In the CHARM-Added trial, candesartan also reduced cardiovascular mortality.

[e]European Medecines Agency has approved ivabradine for use in patients with a heart rate ≥75 b.p.m.

[f]Preparation studied in cited trial; the GISSI-HF trial had no EF limit.



Pharmacologic Management

Vasodilators

Decrease arteriolar tone ↑ CO
Decrease venous preload ↓ congestion

Oral Nitrates – Note: Avoid nitrate resistance by having a drug free time.
Hydralazine – Need for 3-4 times daily dose. (major increase in systemic and pulmonary after load).

Other treatments with less-certain benefits in patients with symptomatic (NYHA class II–IV) systolic heart failure

Recommendations	Class[a]	Level[b]	Ref[c]
H-ISDN			
May be considered as an alternative to an ACE inhibitor or ARB, if neither is tolerated, to reduce the risk of HF hospitalization and risk of premature death in patients with an EF ≤45% and dilated LV (or EF ≤35%). Patients should also receive a beta-blocker and an MRA.	IIb	B	114, 115
May be considered to reduce the risk of HF hospitalization and risk of premature death in patients in patients with an EF ≤45% and dilated LV (or EF ≤35%) and persisting symptoms (NYHA class II–IV) despite treatment with a beta-blocker, ACE inhibitor (or ARB), and an MRA (or ARB).	IIb	B	116
An *n*-3 PUFA[f] preparation may be considered to reduce the risk of death and the risk of cardiovascular hospitalization in patients treated with an ACE inhibitor (or ARB), beta-blocker, and an MRA (or ARB).	IIb	B	117

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[f]Preparation studied in cited trial; the GISSI-HF trial had no EF limit.

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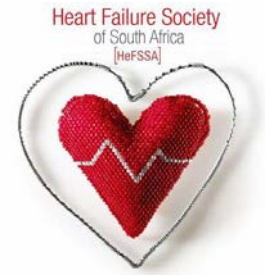
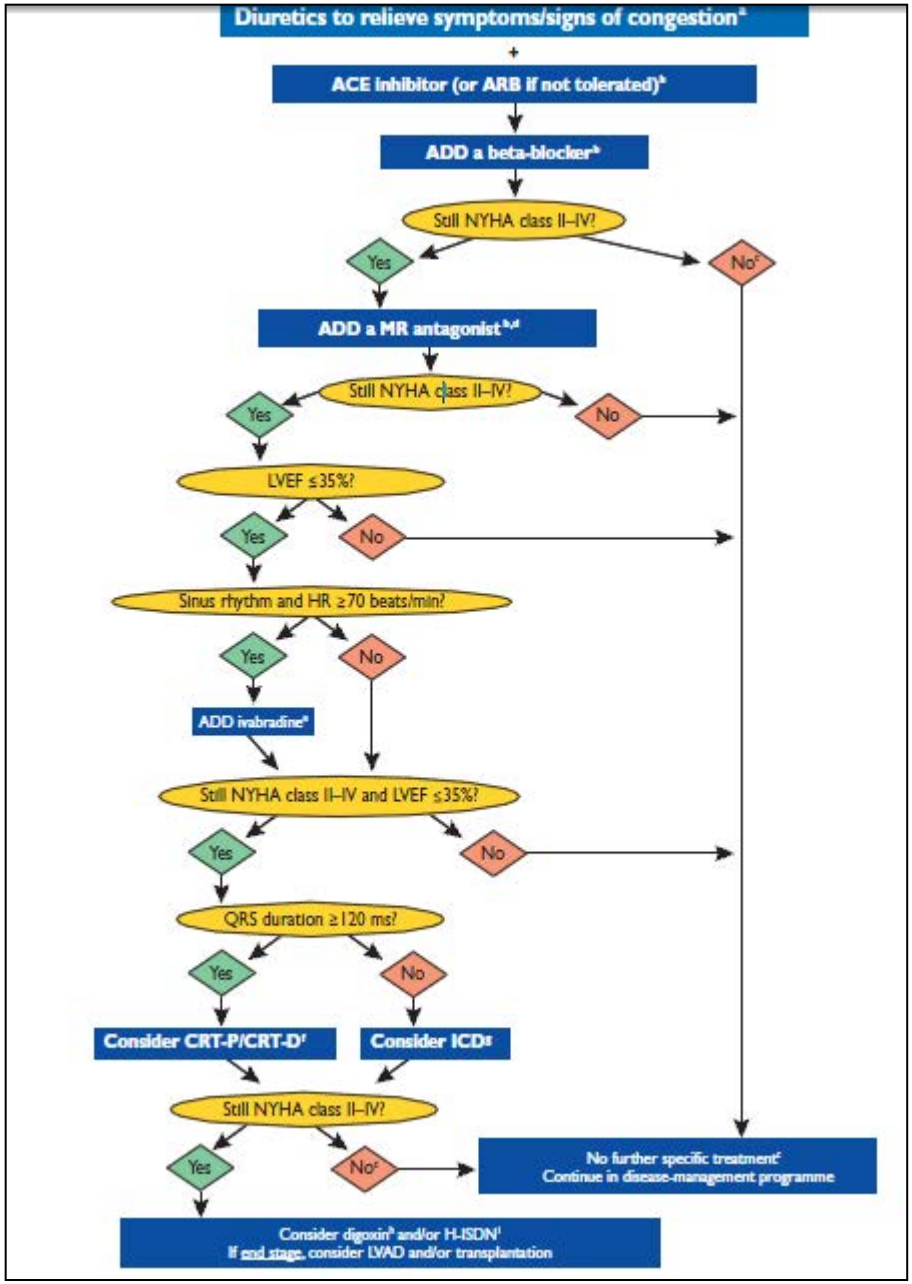
Treatments (or combinations of treatments) that may cause harm in patients with symptomatic (NYHA class II–IV) systolic heart failure

Recommendations	Class[a]	Level[b]	Ref[c]
Thiazolidinediones (glitazones) should not be used as they cause worsening HF and increase the risk of HF hospitalization.	III	A	131–133
Most CCBs (with the exception of amlodipine and felodipine) should not be used as they have a negative inotropic effect and can cause worsening HF.	III	B	134
NSAIDs and COX-2 inhibitors should be avoided if possible as they may cause sodium and water retention, worsening renal function and worsening HF.	III	B	135, 136
The addition of an ARB (or renin inhibitor) to the combination of an ACE inhibitor AND a mineralocorticoid antagonist is NOT recommended because of the risk of renal dysfunction and hyperkalaemia.	III	C	–

ACE = angiotensin-converting enzyme; ARB = angiotensin receptor blocker; CCB = calcium-channel blocker; COX = cyclo-oxygenase; EF = ejection fraction; HF = heart failure; NSAID = non-steroidal anti-inflammatory drug; NYHA = New York Heart Association.
[a]Class of recommendation.
[b]Level of evidence.
[c]References.



Treatment Options For Patients With Chronic Symptomatic Systolic Heart Failure (NYHA Functional Class II–IV) (ESC Guidelines 2012)



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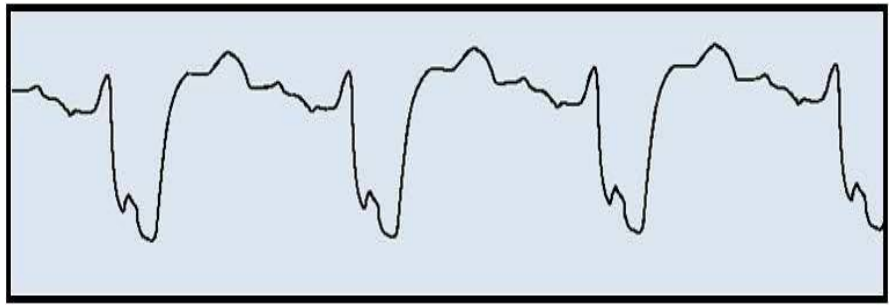
Esc Guidelines 2012, pg. 19

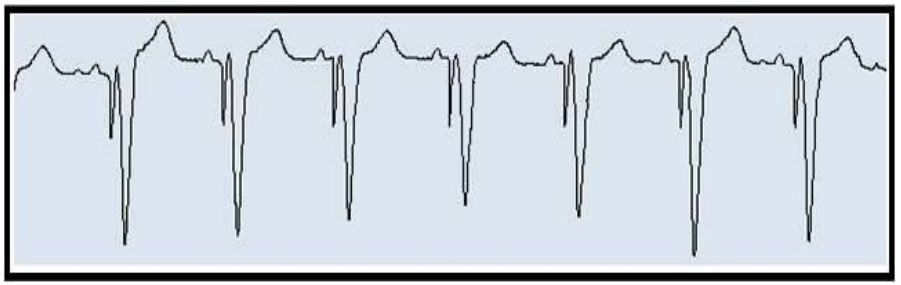
Ventricular Dysynchrony and Cardiac Resynchronization

Ventricular Dysynchrony[1]

Inter- or
Intra-ventricular conduction delays typically manifested as left bundle branch block
Structural: disruption of myocardial collagen matrix impairing electrical conduction and mechanical efficiency
Mechanical: Regional wall motion abnormalities with increased workload and stress—compromising ventricular mechanics

Electrical:



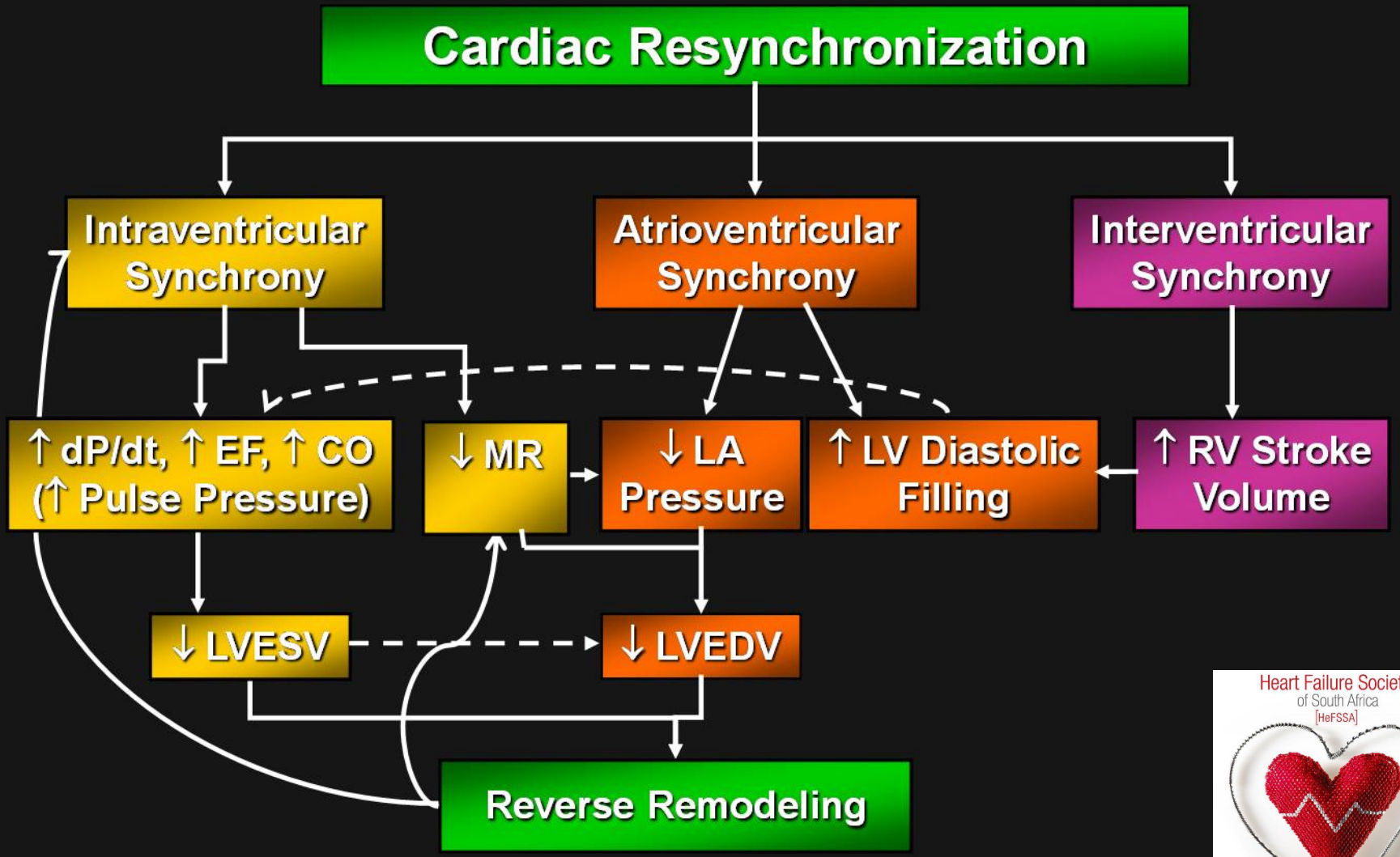


Cardiac Resynchronization

Therapeutic intent of atrial synchronized biventricular pacing
- Modification of interventricular, intra-ventricular and atrial-ventricular activation sequences in patients with ventricular dysynchrony.
- Complement to optimal medical therapy

[1] *Tavazzi L. Eur Heart J 2000;21:1211-1214*

Summary of Proposed Mechanisms Therapy



Yu C-M, Chau E, Sanderson J, et al. *Circulation* 2002;105:438-445

Non-surgical device treatment of HF (CRT)

Recommendations for the use of CRT where the evidence is strong—patients in sinus rhythm with NYHA functional class III and ambulatory class IV heart failure and a persistently reduced ejection fraction, despite optimal pharmacological therapy

Recommendations	Class[a]	Level[b]	Ref[c]
LBBB QRS morphology CRT-P/CRT-D is recommended in patients in sinus rhythm with a QRS duration of ≥120 ms, LBBB QRS morphology, and an EF ≤35%, who are expected to survive with good functional status for >1 year, to reduce the risk of HF hospitalization and the risk of premature death.	I	A	156, 157
Non-LBBB QRS morphology CRT-P/CRT-D should be considered in patients in sinus rhythm with a QRS duration of ≥150 ms, irrespective of QRS morphology, and an EF ≤35%, who are expected to survive with good functional status for >1 year, to reduce the risk of HF hospitalization and the risk of premature death.	IIa	A	156, 157

CRT-D = cardiac resynchronization therapy defibrillator; CRT-P = cardiac resynchronization therapy pacemaker; EF = ejection fraction; HF = heart failure; LBBB = left bundle branch block; NYHA = New York Heart Association.
[a]Class of recommendation.
[b]Level of evidence.
[c]References.

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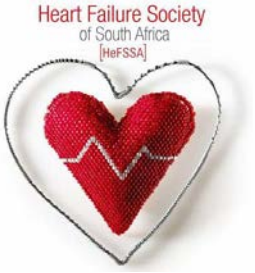

Non-surgical device treatment of HF (CRT)

Recommendations for the use of CRT where the evidence is strong—patients in sinus rhythm with NYHA functional class II heart failure and a persistently reduced ejection fraction, despite optimal pharmacological therapy

Recommendations	Class[a]	Level[b]	Ref[c]
LBBB QRS morphology CRT, preferably CRT-D is recommended in patients in sinus rhythm with a QRS duration of ≥130 ms, LBBB QRS morphology, and an EF ≤30%, who are expected to survive for >1 year with good functional status, to reduce the risk of HF hospitalization and the risk of premature death.	I	A	154, 155
Non-LBBB QRS morphology CRT, preferably CRT-D should be considered in patients in sinus rhythm with a QRS duration of ≥150 ms, irrespective of QRS morphology, and an EF ≤30%, who are expected to survive for >1 year with good functional status, to reduce the risk of HF hospitalization and the risk of premature death.	IIa	A	154, 155

CRT-D = cardiac resynchronization therapy defibrillator; EF = ejection fraction; HF = heart failure; LBBB = left bundle branch block; NYHA = New York Heart Association.
[a]Class of recommendation.
[b]Level of evidence.
[c]References.

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ESC Guidelines 2012 p.28

Non-surgical device treatment of HF
(CRT)

Recommendations for the use of CRT where the evidence is uncertain—patients with symptomatic HF (NYHA functional class II–IV) and a persistently reduced EF despite optimal pharmacological therapy and in AF or with a conventional pacing indication

Recommendations	Class[a]	Level[b]	Ref[c]
Patients in permanent AF			
CRT-P/CRT-D may be considered in patients in NYHA functional class III or ambulatory class IV with a QRS duration ≥120 ms and an EF ≤35%, who are expected to survive with good functional status for >1 year, to reduce the risk of HF worsening if:			
• The patient requires pacing because of an intrinsically slow ventricular rate	IIb	C	–
• The patient is pacemaker dependent as a result of AV nodal ablation	IIb	C	–
• The patient's ventricular rate is ≤60 b.p.m. at rest and ≤90 b.p.m. on exercise.	IIb	C	–
Patients with an indication for conventional pacing and no other indication for CRT			
In patients who are expected to survive with good functional status for >1 year:			
• CRT should be considered in those in NYHA functional class III or IV with an EF ≤35%, irrespective of QRS duration, to reduce the risk of worsening of HF	IIa	C	–
• CRT may be considered in those in NYHA functional class II with an EF ≤35%, irrespective of QRS duration, to reduce the risk of worsening of HF.	IIb	C	–

CRT-D = cardiac resynchronization therapy defibrillator; CRT-P = cardiac resynchronization therapy pacemaker; EF = ejection fraction; HF = heart failure; NYHA = New York Heart Association.
[a]Class of recommendation.
[b]Level of evidence.
[c]References.

ESC Guidelines 2012 p.30

Table 27 Essential topics that should be covered during patient education, and the skills and self-care behaviours that should be taught in relation to these topics.

Educational topic	Patient skills and self-care behaviours
Definition and aetiology	• Understand the cause of heart failure and why symptoms occur
Prognosis	• Understand important prognostic factors and make realistic decisions
Symptom monitoring and self-care	• Monitor and recognize signs and symptoms
	• Record daily weight and recognize rapid weight gain
	• Know how and when to notify healthcare provider
	• In the case of increasing dyspnoea or oedema or a sudden unexpected weight gain of >2 kg in 3 days, patients may increase their diuretic dose and/or alert their healthcare team
	• Use flexible diuretic therapy if appropriate and recommended after appropriate education and provision of detailed instructions
Pharmacological treatment	• Understand indications, dosing, and effects of drugs
	• Recognize the common side effects of each drug prescribed
Adherence	• Understand the importance of following treatment recommendations and maintaining motivation to follow treatment plan
	• Sodium restriction may help control the symptoms and signs of congestion in patients with symptomatic heart failure classes III and IV
Diet	• Avoid excessive fluid intake: fluid restriction of 1.5–2 L/day may be considered in patients with severe heart failure to relieve symptoms and congestion. Restriction of hypotonic fluids may improve hyponatraemia. Routine fluid restriction in all patients with mild to moderate symptoms is probably not of benefit. Weight-based fluid restriction (30 mL/kg body weight, 35 mL/kg if body weight >85 kg) may cause less thirst
	• Monitor and prevent malnutrition
	• Eat healthily and keep a healthy weight (see Section 11)

Essential Topics That Should Be Covered During Patient Education, And The Skills And Self-care Behaviours That Should Be Taught In Relation To These Topics cont. (ESC Guidelines 2012)

Alcohol	• Modest intake of alcohol: abstinence is recommended in patients with alcohol-induced cardiomyopathy. Otherwise, normal alcohol guidelines apply (2 units per day in men or 1 unit per day in women). 1 unit is 10 mL of pure alcohol (e.g. 1 glass of wine, 1/2 pint of beer, 1 measure of spirit)
Smoking and drugs	• Stop smoking and/or taking illicit drugs
Exercise	• Understand the benefits of exercise
	• Perform exercise training regularly
	• Be reassured and comfortable about physical activity
Travel and leisure	• Prepare travel and leisure activities according to physical capacity
	• When travelling, carry a written report of medical history and current medication regimen and carry extra medication. Monitor and adapt fluid intake particularly during flights and in hot climates. Beware adverse reactions to sun exposure with certain medications (e.g. amiodarone)
Sexual activity	• Be reassured about engaging in sex and discuss problems with healthcare professionals. Stable patients can undertake normal sexual activity that does not provoke undue symptoms. For treatment of erectile dysfunction, see Section 11.10
Immunization	• Receive immunization against influenza and pneumococcal disease according to local guidelines and practice
Sleep and breathing disorders	• Recognize preventive behaviour such as reducing weight in obese patients, smoking cessation, and abstinence from alcohol
	• Learn about treatment options if appropriate
Psychosocial aspects	• Understand that depressive symptoms and cognitive dysfunction are common in patients with heart failure and the importance of social support
	• Learn about treatment options if appropriate

ESC Guidelines 2012 p. 51

Chronic Heart Failure: Diagnosis and Treatment Algorithm

adapted from ESC HF guideline 2012[1]

Algorithm for the diagnosis of Heart Failure with Reduced Ejection Fraction (HF-REF) or LVEF<50%

General Assessment

- Risk factor profile (hypertension etc.)
- Family History
- Recent pregnancy < 1 year

Symptoms

- Shortness of breath
  - on effort
  - lying flat
  - during the night
- New cough
- Ankle swelling
- Irregular or fast palpitation
- Effort fatigue
- More frequent nocturia

Signs

Signs of congestion:
- raised JVP
- peripheral oedema
- (tender) hepatomegaly
- ascites

Chest signs:
- inspiratory crackles
- pleural effusion

Signs of heart disease:
- tachycardia
- presence of S3
- displaced apex beat
- cool peripheries
- presence of cardiac murmur

Suspected **Heart Failure / LV Dysfunction** because of signs and symptoms

↓

Assess presence of cardiac disease by ECG, CXR and/or NTproBNP / BNP

→ Normal → HF-REF unlikely

↓

Any abnormalities

↓

Imaging by Echocardiography

→ Normal → HF-REF excluded

↓

LVEF<50%

↓

Assess aetiology, precipitating factor/s and NYHA functional class

↓

*Choose **THERAPY***

→ Additional diagnostic tests in selected cases → Referral to specialist for e.g. cardiac catheterisation, MRI, endomyocardial biopsy

Holistic Care

- Salt restriction (in hypertensives only)
- Exercise (once stabilised)
- Heart failure management programme
- Avoid : NSAID, glitazones, CCB (except amlodipine, felodipine)
- Palliative care

Management of HF-REF

(Trial data applicable to EF<40%)

Therapy that reduces:

Mortality	Hospitalisation	Symptoms	Surgical
ACE-I	ARB	Diuretic	Heart transplant
B Blocker	Ivabradine		Valvular intervention
Aldosterone Antagonist (MRA)	Digoxin		LV assist device
Hydralazine + Nitrate			
Biventricular pacing ± ICD (CRT-P / CRT-D)			

Precipitating Factors

Mandatory: U & E, Glucose, TSH

Possible: LFT, Ferritin, Calcium, hsTroponin T, Trop I (Table 6 [1])

Special consideration

Digoxin (AF, resistant symptomatic heart failure)

Warfarin (AF, LV clot)

Amiodarone (sustain sinus rhythm and reduce VT in ICD patients)

Aldosterone antagonist (Early post-MI heart failure)

ACE-I + ARB if Aldosterone antagonist (MRA) cannot be used

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Reference 1: ESC Guideline for the diagnosis and treatment of acute and chronic heart failure 2012. European Heart Journal 2012;33:1787-1847

HeFSSA Practitioners Program 2013

08:00 – 08:30	Registration
08:30 – 09:15	Clinical Case Presentation 1
09:15 – 10:00	Clinical Case Presentation 2
10:00 – 10:30	Tea Break
10:30 – 11:15	Clinical Case Presentation 3
11:15 – 11:45	ESC Guidelines on Chronic Heart Failure
11:45 – 12:00	Questionnaire
12:00 – 14:00	Lunch

Questionnaire

Level 2 – 3 points

- **Please go to the HeFSSA website and complete the online questionnaire**

www.hefssa.org

- **The cases/lectures can be downloaded from the HeFSSA website**

Heart Failure Society of South Africa

Thank you
to our
Corporate supporters!

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