Heart failure in GP practice

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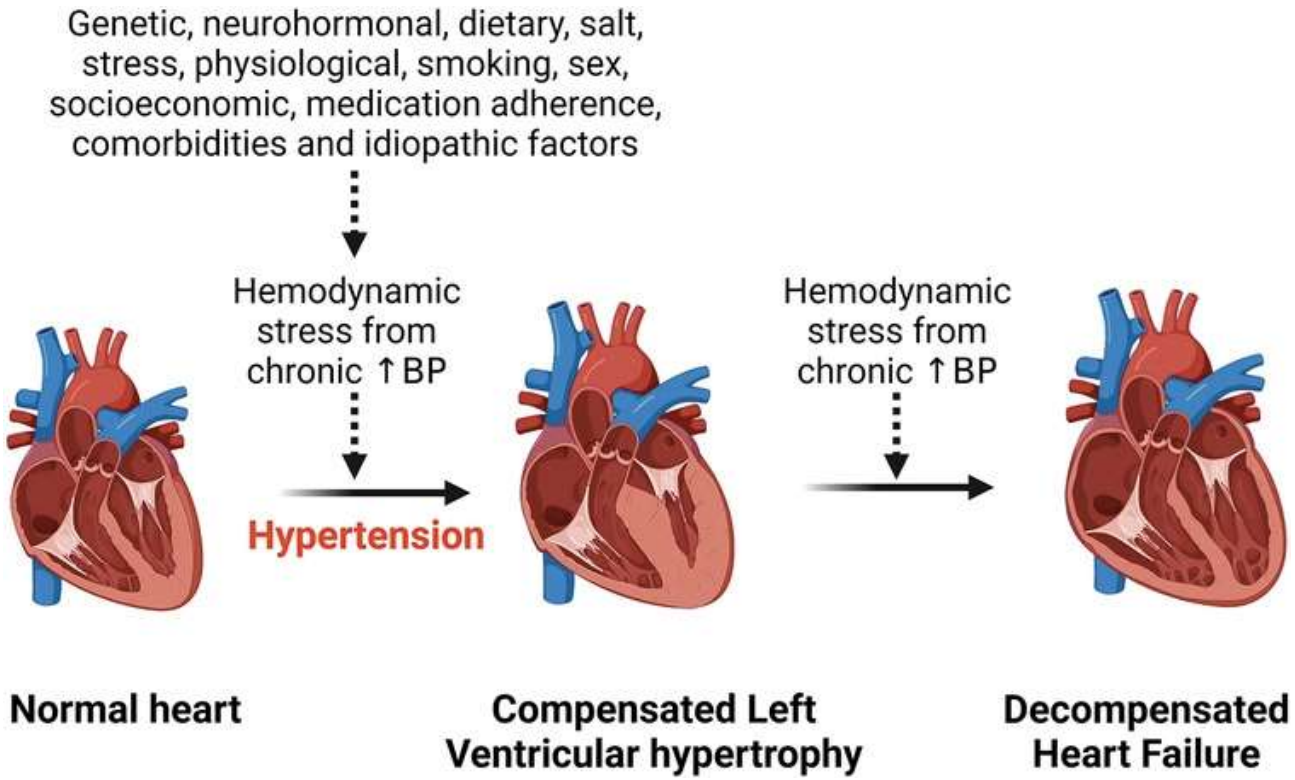
Prevention and treatment of heart failure

Overarching objective

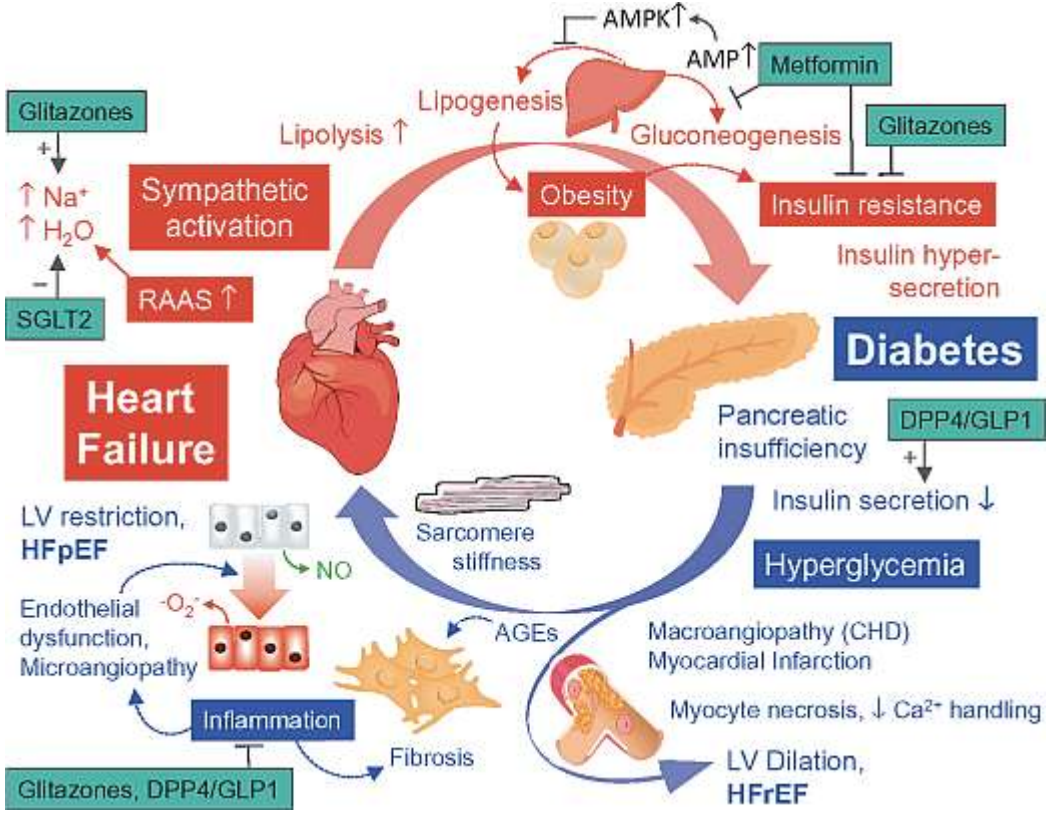
Prevention and treatment of heart failure

- **Early initiation of treatment in heart failure**
- Monitoring and modification of treatment in patients diagnosed with HF
- Early detection and prevention of diseases leading to heart failure
  - Hypertension
  - Renal failure
  - Dyslipidemia
  - Diabetes
  - Heart rhythm disorders
  - Viral infections
  - Thyroid diseases

Pathophysiology of heart failure



Pathophysiology of heart failure



Diagnosis of Heart Failure in the PCP's Office:

Typical subjective symptoms:

- Dyspnea
- orthopnoe
- paroxysmal nocturnal dyspnea
- low exertion tolerance
- fatigue and lassitude
- prolonged resting time
- swelling around the ankles

Typical physical symptoms:

- dystention of the jugular veins
- hepatorenal sign
- shift of the apical beat to the side.
- Third heart tone. Gallop rythm

Diagnosis of Heart Failure in the PCP's Office:

Less typical subjective symptoms:

- nocturnal cough
- expiratory wheezing
- a feeling of fullness in the abdominal cavity
- depression
- confusion
- palpitations
- dizziness
- fainting
- bendopnoe

Less typical physical symptoms:

- weight gain/loss (advanced HF)
- Tachycardia, tachypnoe
- **New murmur over the heart**
- pleural effusion
- irregular pulse
- liver enlargement, ascites
- coldness of distal parts of the extremities
- scanty
- **ECG abnormalities**

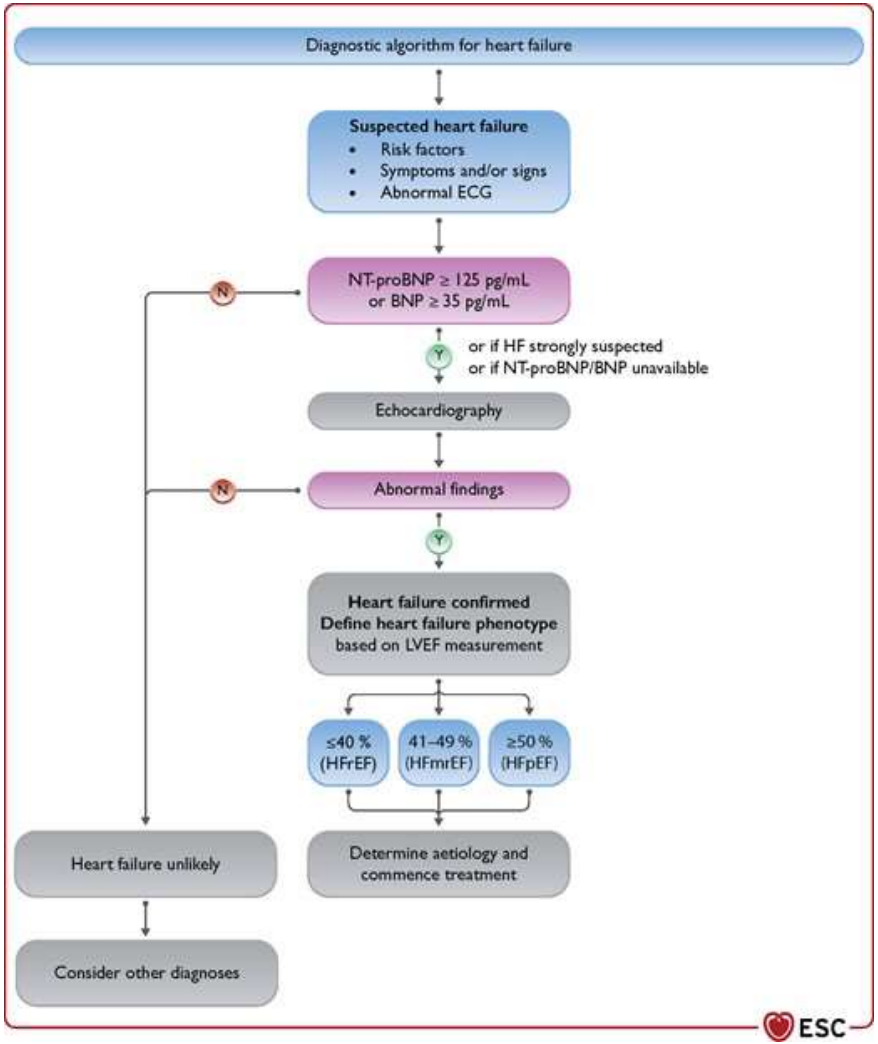
Diagnostic algorithm

Recommended diagnostic tests in all patients with suspected chronic heart failure

Recommendations	Class[a]	Level[b]
BNP/NT-proBNP[c]	I	B
12-lead ECG	I	C
Transthoracic echocardiography	I	C
Chest radiography (X-ray)	I	C
Routine blood tests for comorbidities, including full blood count, urea and electrolytes, thyroid function, fasting glucose and HbA1c, lipids, iron status (TSAT and ferritin)	I	C

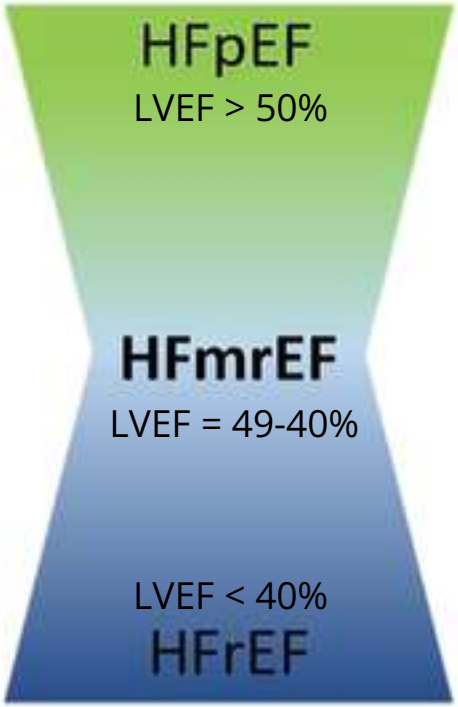
Diagnostic algorithm

the task of the primary care physician is not to select the ideal therapy, but to begin the diagnostic process and correct deviations to prevent exacerbations



Phenotyping of heart failure

A continuum of disease with some distinct features



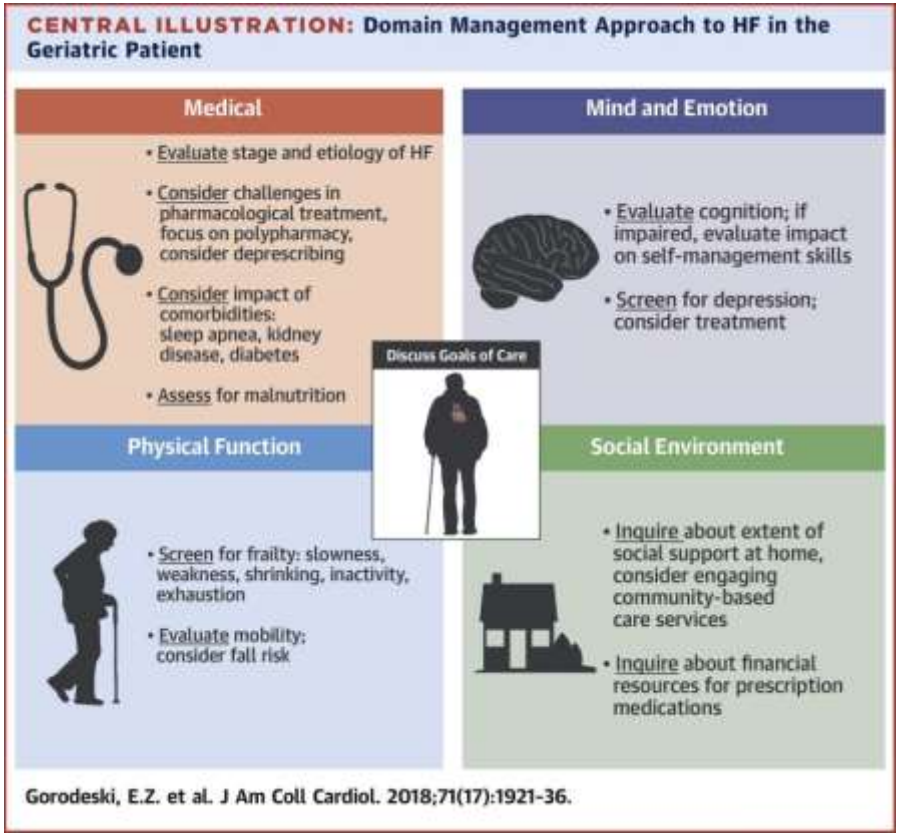
HFmrEF features resembling HFpEF

- Older age, Female sex
- Alchool use, potassium levels
- AF, Lung disease, Anemia
- HF hospitalization, deaths, combination of time to death/transplant and cardiac hospitalization, precipiting factors for in-hospital deaths

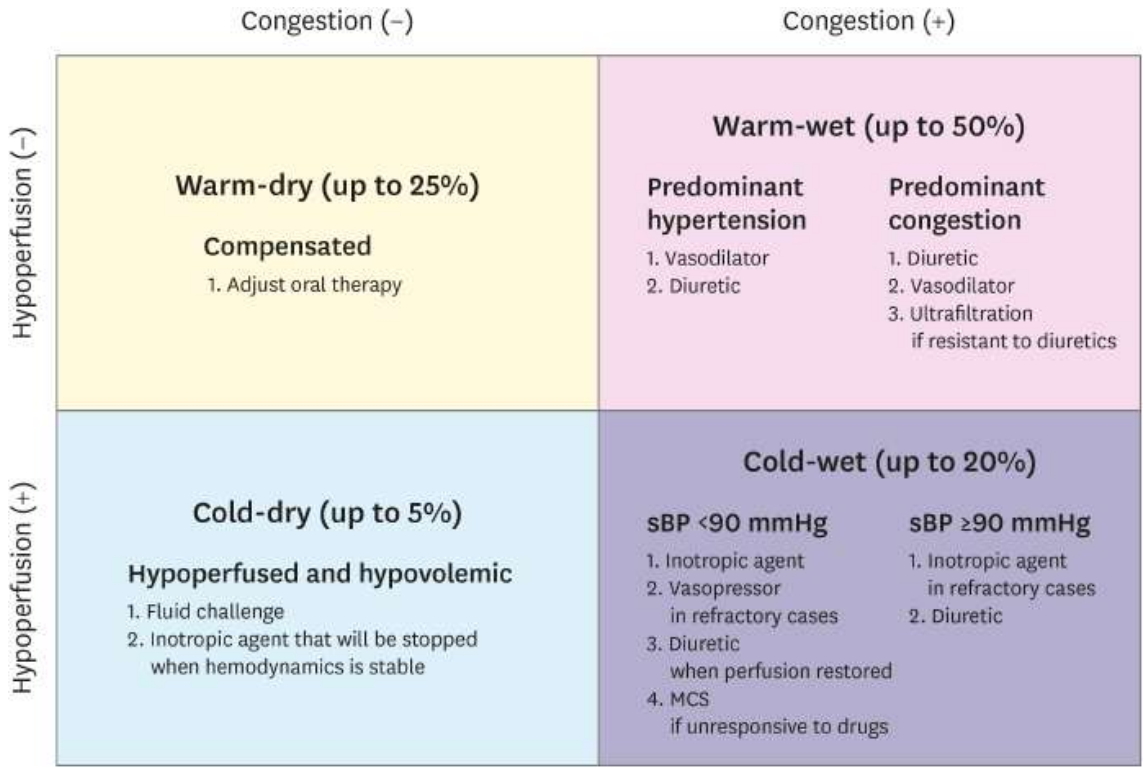
- Younger age, Male sex
- CAD, diabetes, valve disease
- Higher prognostic risk associated with CKD

HFmrEF features resembling HFrEF

Phenotyping of heart failure



Phenotyping of heart failure



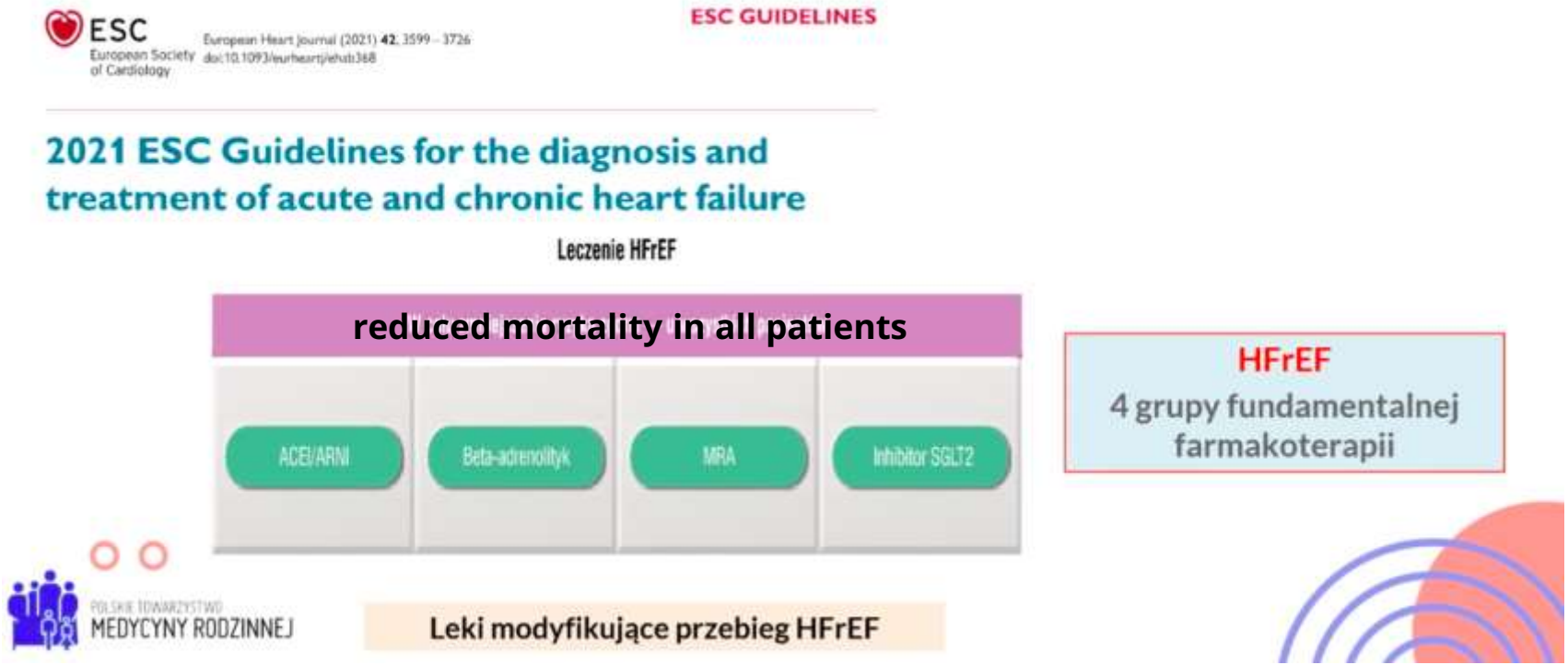
Phenotyping of heart failure

HFpEF Predisposition Phenotypes	HFpEF Clinical Presentation Phenotypes				
	Lung Congestion	+Chronotropic Incompetence	+Pulmonary Hypertension (CpcPH)	+Skeletal muscle weakness	+Atrial Fibrillation
Overweight/obesity/ metabolic syndrome/ type 2 DM	• **Diuretics (loop diuretic in DM)** • **Caloric restriction** • Statins • Inorganic nitrite/nitrate • Sacubitril • Spironolactone	+Rate adaptive atrial pacing	+Pulmonary vasodilators (e.g. PDE5I)	**+Exercise training program**	+Cardioversion + Rate Control **+Anticoagulation**
+Arterial hypertension	+ACEI/ARB	+ACEI/ARB +Rate adaptive atrial pacing	+ACEI/ARB +Pulmonary vasodilators (e.g. PDE5I)	+ACEI/ARB **+Exercise training program**	+ACEI/ARB +Cardioversion + Rate Control **+Anticoagulation**
+Renal dysfunction	+Ultrafiltration if needed	+Ultrafiltration if needed +Rate adaptive atrial pacing	+Ultrafiltration if needed +Pulmonary vasodilators (e.g. PDE5I)	+Ultrafiltration if needed **+Exercise training program**	+Ultrafiltration if needed +Cardioversion + Rate Control **+Anticoagulation**
+CAD	+ACEI +Revascularization	+ACEI +Revascularization +Rate adaptive atrial pacing	+ACEI +Revascularization +Pulmonary vasodilators (e.g. PDE5I)	+ACEI +Revascularization **+Exercise training program**	+ACEI +Revascularization +Cardioversion + Rate Control **+Anticoagulation**

NYHA scale

NYHA Class	Level of Clinical Impairment
I 	No limitation of physical activity. Ordinary physical activity does not cause undue breathlessness, fatigue, or palpitations.
II 	Slight limitation of physical activity. Comfortable at rest, but ordinary physical activity results in undue breathlessness, fatigue, or palpitations.
III 	Marked limitation of physical activity. Comfortable at rest, but less than ordinary physical activity results in undue breathlessness, fatigue, or palpitations.
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.

Drugs of primary importance in the treatment of heart failure

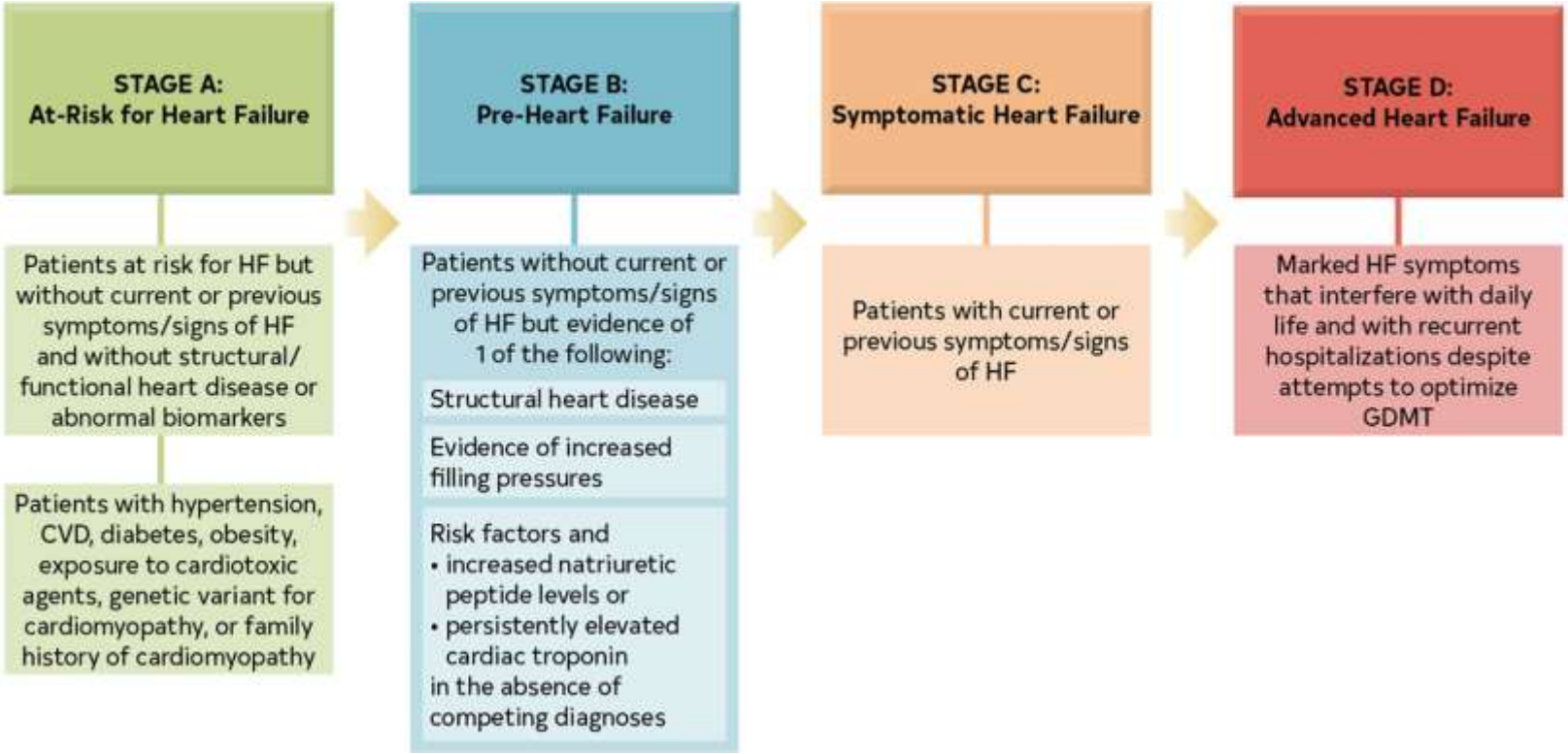


Treatment of HF in a PCP setting:

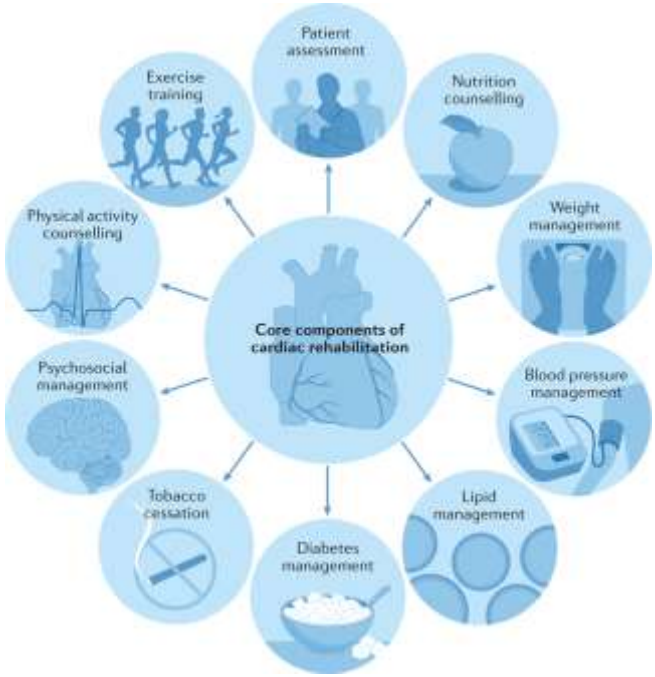
CHF Drug	Initial Dose(s)	Maximum Dose(s)
Captopril	6.25 mg TID	50 mg TID
Enalapril	2.5 mg BID	10–20 mg BID
Fosinopril	5–10 mg QD	40 mg QD
Lisinopril	2.5–5 mg QD	20–40 mg QD
Perindopril	2 mg QD	8–16 mg QD
Quinapril	5 mg BID	20 mg BID
Ramipril	1.25–2.5 mg QD	10 mg QD
Trandolapril	1 mg QD	4 mg QD
Candesartan	4–8 mg QD	32 mg QD
Losartan	25–50 mg QD	50–150 mg QD
Valsartan	20–40 mg BID	160 mg BID
Sacubitril/valsartan	24/26 mg BID	97/103 mg BID
Ivabradine	5 mg BID	7.5 mg BID
Spironolactone	12.5–25 mg QD	25 mg QD or BID
Eplerenone	25 mg QD	50 mg QD
Bisoprolol	1.25 mg QD	10 mg QD
Carvedilol	3.125 mg BID	50 mg BID
Carvedilol CR	10 mg QD	80 mg QD
Metoprolol succinate	12.5–25 mg QD	200 mg QD
Isosorbide dinitrate Hydralazine	20–30 mg ISDN/ 25–50 mg TID or QD	40 mg ISDN TID 100 mg hydralazine TID

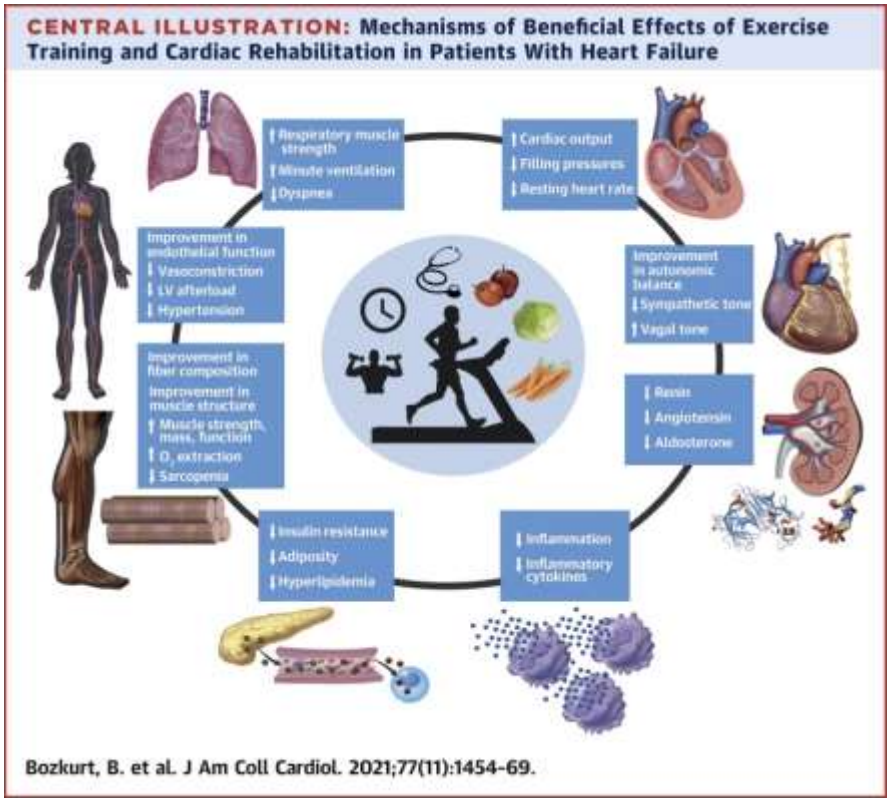
In the treatment of HF a combination of sacubitril and valsartan is used. Therapy is administered in a dose range of 49 mg/51 mg to 97 mg/103 mg. Dose modification to the target dose is carried out gradually over 2 to 4 weeks. The drug is administered twice daily.

Stages of Heart failure



The impact of cardiac rehabilitation on cardiovascular outcomes





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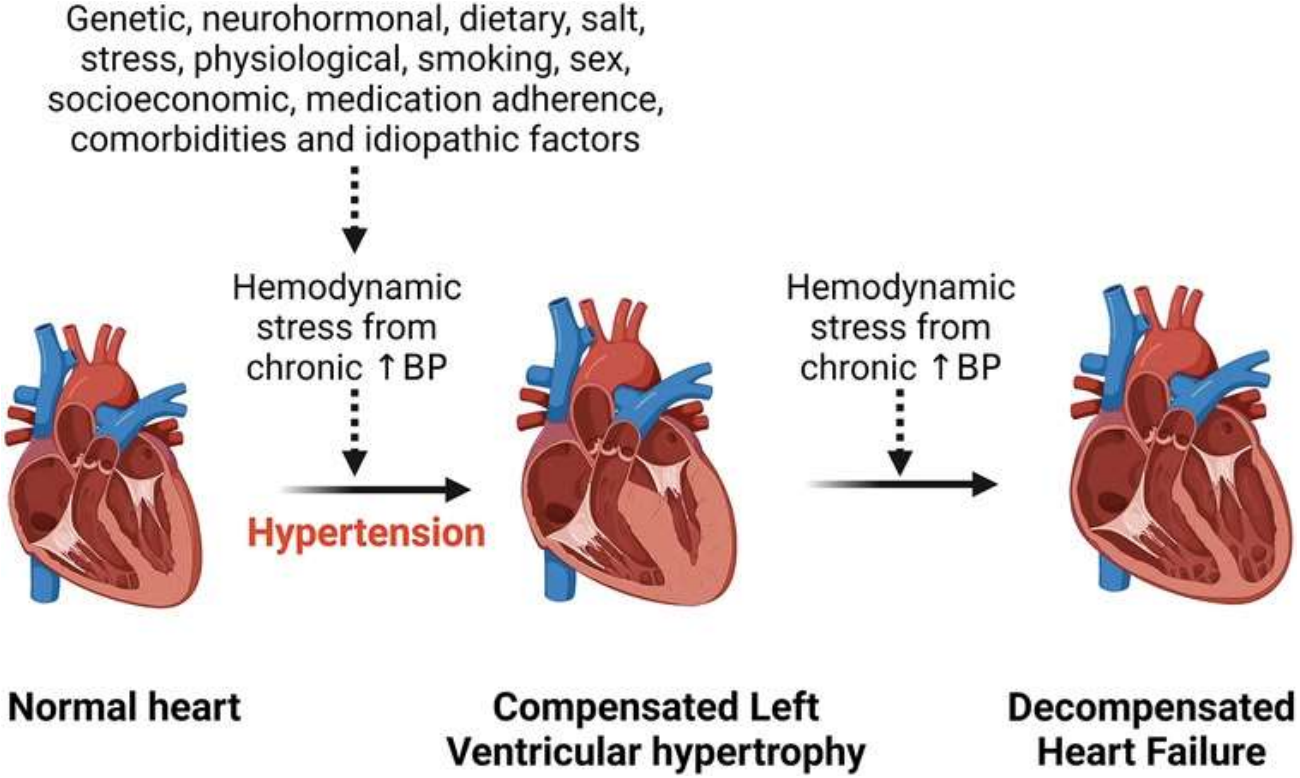

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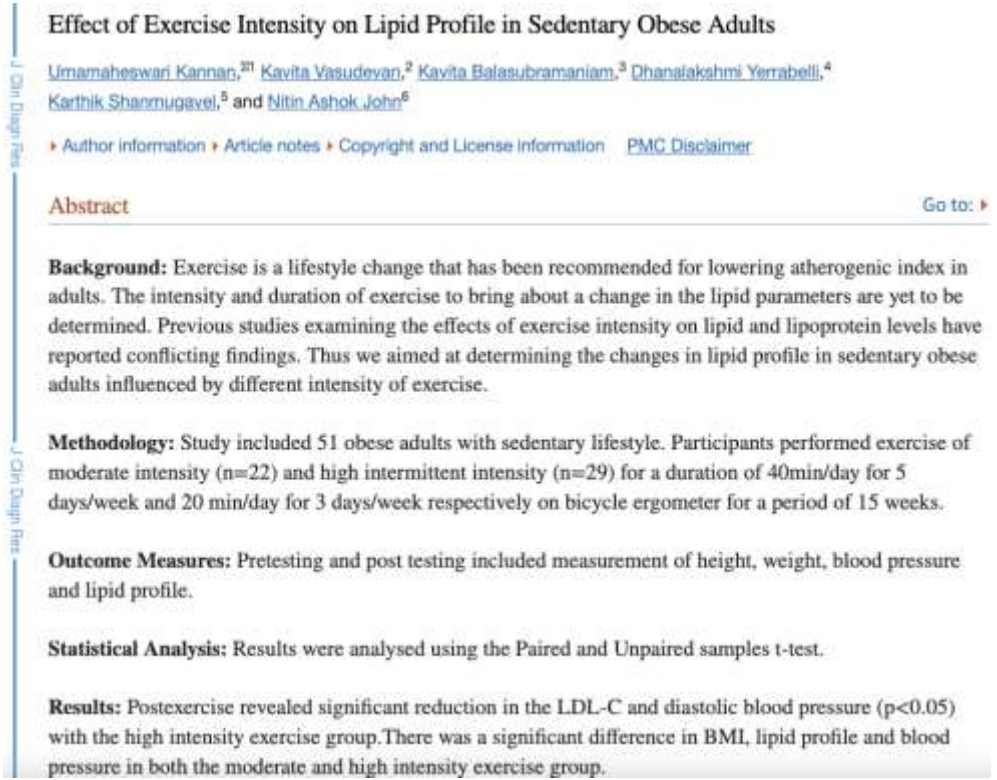


Effect of Exercise Intensity on Lipid Profile in Sedentary Obese Adults

Umamaheswari Kannan,[1] Kavita Vasudevan,[2] Kavita Balasubramaniam,[3] Dhanalakshmi Yerrabelli,[4] Karthik Shanmugavel,[5] and Nitin Ashok John[6]

Abstract Go to:

Background: Exercise is a lifestyle change that has been recommended for lowering atherogenic index in adults. The intensity and duration of exercise to bring about a change in the lipid parameters are yet to be determined. Previous studies examining the effects of exercise intensity on lipid and lipoprotein levels have reported conflicting findings. Thus we aimed at determining the changes in lipid profile in sedentary obese adults influenced by different intensity of exercise.

Methodology: Study included 51 obese adults with sedentary lifestyle. Participants performed exercise of moderate intensity (n=22) and high intermittent intensity (n=29) for a duration of 40min/day for 5 days/week and 20 min/day for 3 days/week respectively on bicycle ergometer for a period of 15 weeks.

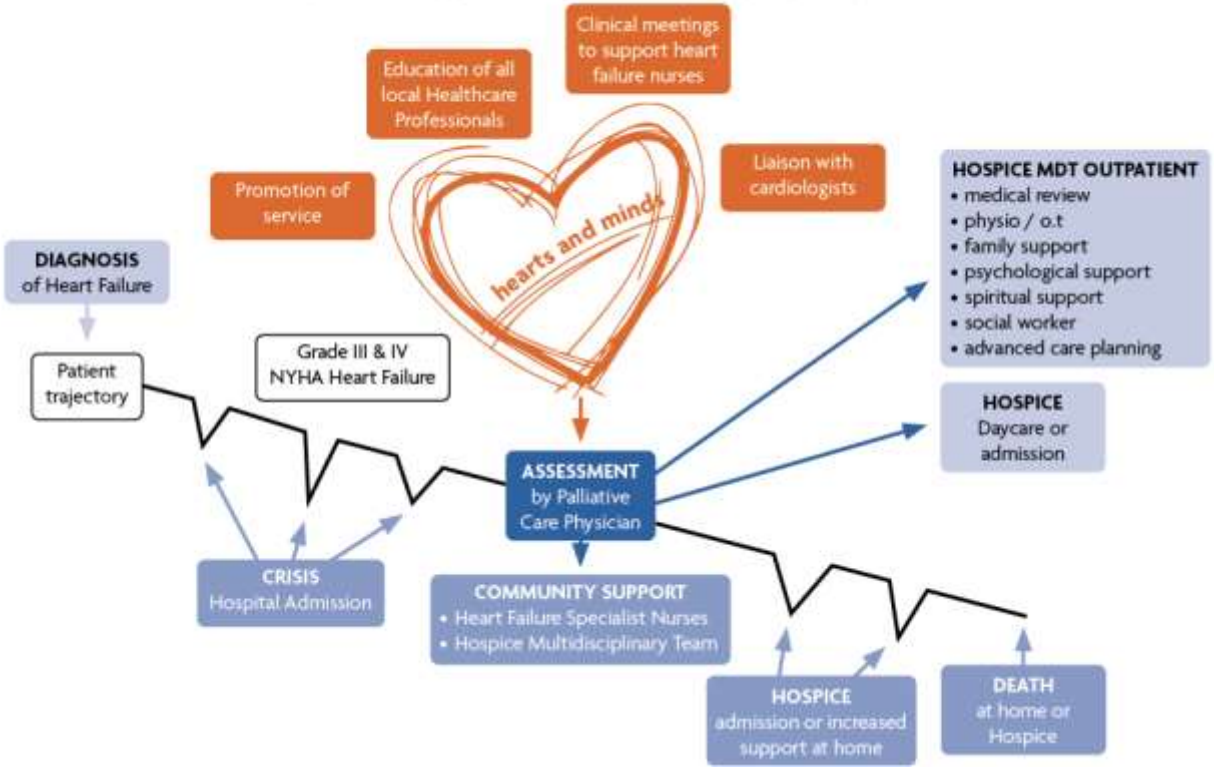
Outcome Measures: Pretesting and post testing included measurement of height, weight, blood pressure and lipid profile.

Statistical Analysis: Results were analysed using the Paired and Unpaired samples t-test.

Results: Postexercise revealed significant reduction in the LDL-C and diastolic blood pressure ($p<0.05$) with the high intensity exercise group.There was a significant difference in BMI, lipid profile and blood pressure in both the moderate and high intensity exercise group.

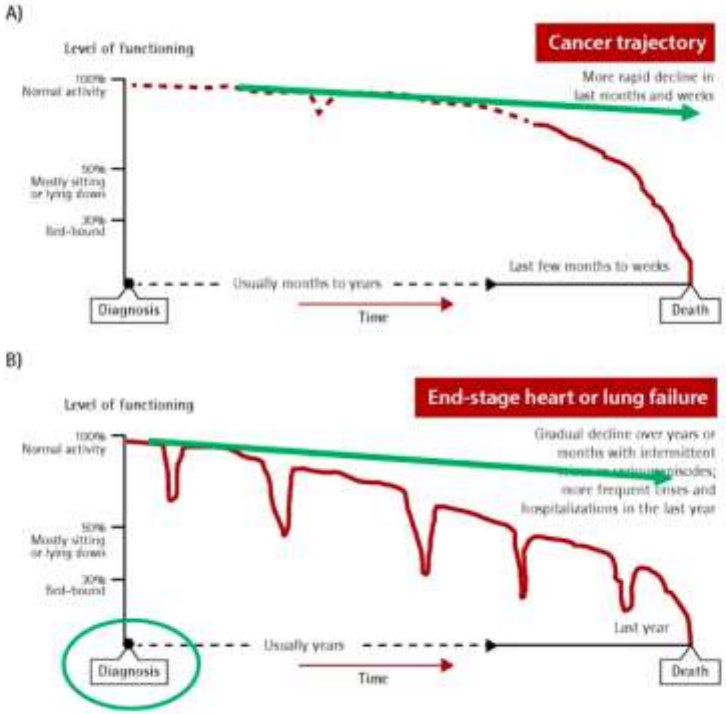
Timeline of Heart failure development

Figure 5. Role of palliative care at multiple stages of heart failure



Prognostic factors in heart failure

Figure 1. Illness trajectories: *A) Cancer trajectory vs B) end-stage heart or lung failure trajectory.*



Canadian Family Physician 2017, 63 (9) 674-680;

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Education of patients with heart failure

- Limiting the supply of fluids (1.5 liters per day)
- Dietary counseling: the LH rule (leave half)
- Physical activity (exercise to support LV)
- Limiting salt intake (max 1.5 g per day)
- Limiting fat intake (stop frying)
- NO SMOKING
- NO DRINKING (alcohol)

Q & A