

RISK ASSESSMENT AND HEART FAILURE PREVENTION

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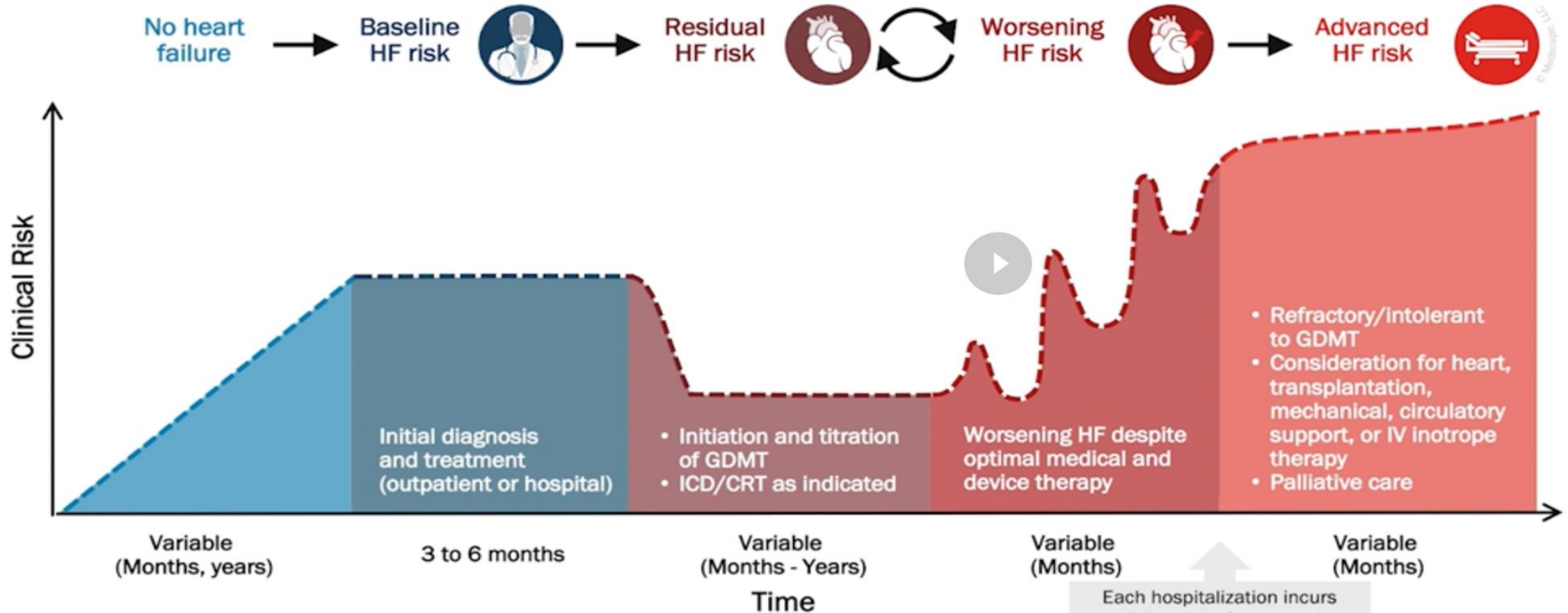
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The Landscape of Heart Failure

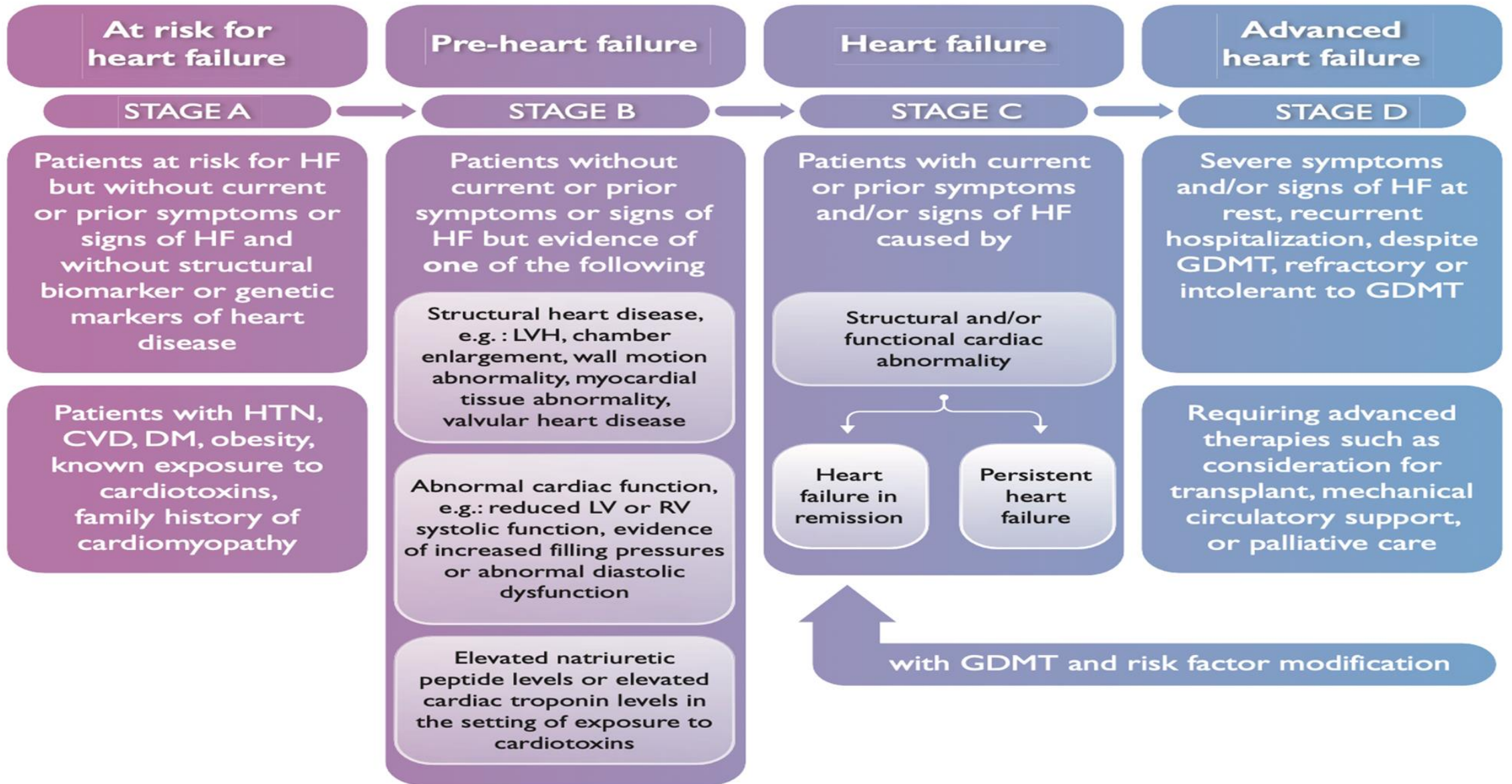


- Complex
- Hospitalizations are frequent
- Costs are high
- CMS rule penalties
- Patients are becoming more challenging
- Team effort
- Referral patterns and timing

The Journey of the Patient with HFrEF



CRT, cardiac resynchronization therapy; ICD, implantable cardioverter-defibrillator; IV, intravenous; GDMT, guideline-directed medical therapy; HF, heart failure; HFrEF, heart failure with reduced ejection fraction. Greene SJ, et al. *Circ Heart Fail*. 2020;13:e007132.



What is the importance

The rising prevalence of heart failure (HF) is a critical public health issue requiring urgent intervention



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Risk Factors

- An understanding of risk factors for HF is important for the development of interventions aimed at prevention
- Classic demographic risk factors
 - Older age
 - Male sex
 - Ethnicity
 - Low socioeconomic status.



Major risk factor in more developed societies

- Age is a major factor for both HFPEF and HFREF
- Rising age of population will undoubtedly cause rise in prevalence of heart failure
- Estimated to affect more than 8 million people in USA with cost of over \$70 billion by 2030

Direct costs

- Projections of the direct medical costs of HF were estimated by point of service. The following point-of-service categories
- Hospital (inpatient, outpatient, emergency department),
- physician (office based visits),
- prescription (prescription)
- home health (home health),
- and other (vision, medical supplies, dental).
- Nursing home costs

Indirect costs

- Two types of indirect costs were calculated:
 1. Lost productivity from morbidity
 - Loss of earnings among currently employed and those too sick to work
 - Home productivity loss (home services by those not paid)
 2. Premature mortality
 - Represent the value of lost earnings from premature death attributable to HF

Specific comorbid and disease states

- Ischemic heart disease: most important risk factor for HF in Western world
- Hypertension is associated with a smaller relative risk of development of HF apart from its greater prevalence
- Diabetes mellitus
- Insulin resistance
- Obesity are also linked to HF development
- Dm increasing the risk of HF by ≈ 2 -fold in men and up to 5-fold in women
- Smoking remains the single largest preventable cause of disease and premature death in the United States
 - Current smokers have a significantly higher risk for the development of HF than ex-smokers and non-smokers
- Although ischemic heart disease and smoking have declined, any associated reduction in future HF may be offset by the growing rates of diabetes mellitus and obesity

Goals of the clinical approach to HF

- The goals of the clinical approach to HF include:
- correctly diagnosing the clinical syndrome of HF;
- identifying the underlying cause; and
- implementing an effective management strategy for symptom control, prolonging survival and reversing factors that predispose to precipitation of HF exacerbations.

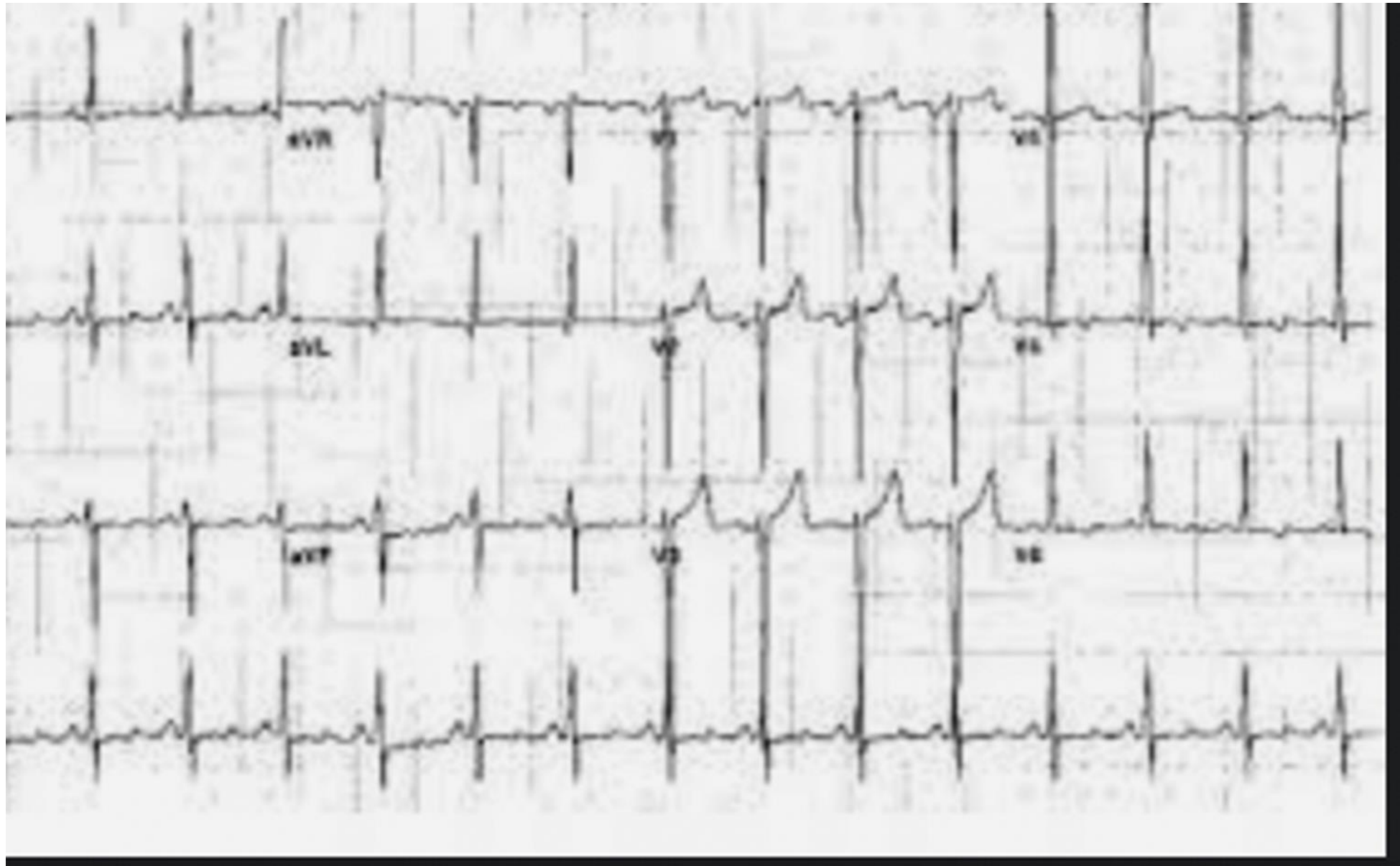
Primary prevention of Heart Failure

- A healthy lifestyle throughout life
- A team-based care approach is an effective strategy for the prevention of cardiovascular disease. Clinicians should evaluate the social determinants of health that affect individuals to inform treatment decisions
- Adults who are 40 to 75 years of age and are being evaluated for cardiovascular disease prevention should undergo 10-year atherosclerotic cardiovascular disease (ASCVD) risk estimation and have a clinician–patient risk discussion before starting on pharmacological therapy

A tale of two “villages”

- Case 1
 - ✓ More developed (Western societies- Europe and Northern America)
- Case 2
 - ✓ Sub Saharan Africa, Southern America and less developed countries

- WC is a 67-year-old man with hypertension, hyperlipidaemia, and coronary artery disease, and had triple bypass surgery 17 years ago
- His current home medications include amlodipine 10 mg once daily, atorvastatin 80 mg once daily, and aspirin 81 mg once daily.
- He presents with shortness of breath (SOB), which occurs when performing simple tasks such as sweeping the floor and orthopnea.
- Physical examination reveals elevated jugular venous pressure and 1+ pitting lower extremity oedema



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- An echocardiogram demonstrates systolic dysfunction, mild mitral regurgitation, a dilated left atrium, and an ejection fraction (EF) of 30%
- Laboratory results show a pro-B-type natriuretic peptide level of 1302 pg/mL Measurement of vital signs shows blood pressure (BP) of 156/92 mm Hg, a heart rate of 80 beats/min, an Spo2 of 94%, a temperature of 36.5 °C

A tale of two “villages”

- Case 1
 - ✓ More developed (Western societies- Europe and Northern America)
- Case 2
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- A previously healthy 29-year-old daycare worker presented to the emergency department with a 5-day history of orthopnea and swelling of the lower limbs. She denied fever, and chest or joint pain. She described a transient rash to her anterior chest.
- Two weeks prior to her presentation, she had been diagnosed with Group A Streptococcal pharyngeal infection with *Streptococcus pyogenes* confirmed by throat culture
- clinical examination mild increased work of breathing at a rate of 20 respirations per minute. oral temperature of 36.9 °C, hypertensive, with a blood pressure of 166/117 mm Hg.
- JVP measured at 5 cm above the sternal angle.
- Cardiac auscultation revealed a soft first heart sound and a grade 3/6 holosystolic murmur with radiation to the apex. There was also a grade 1/6 mid-diastolic rumble. The second heart sound was normal. Breath sounds were diminished in the lung bases, with crackles and expiratory wheeze present bilaterally. She had bilateral pitting oedema to the knees

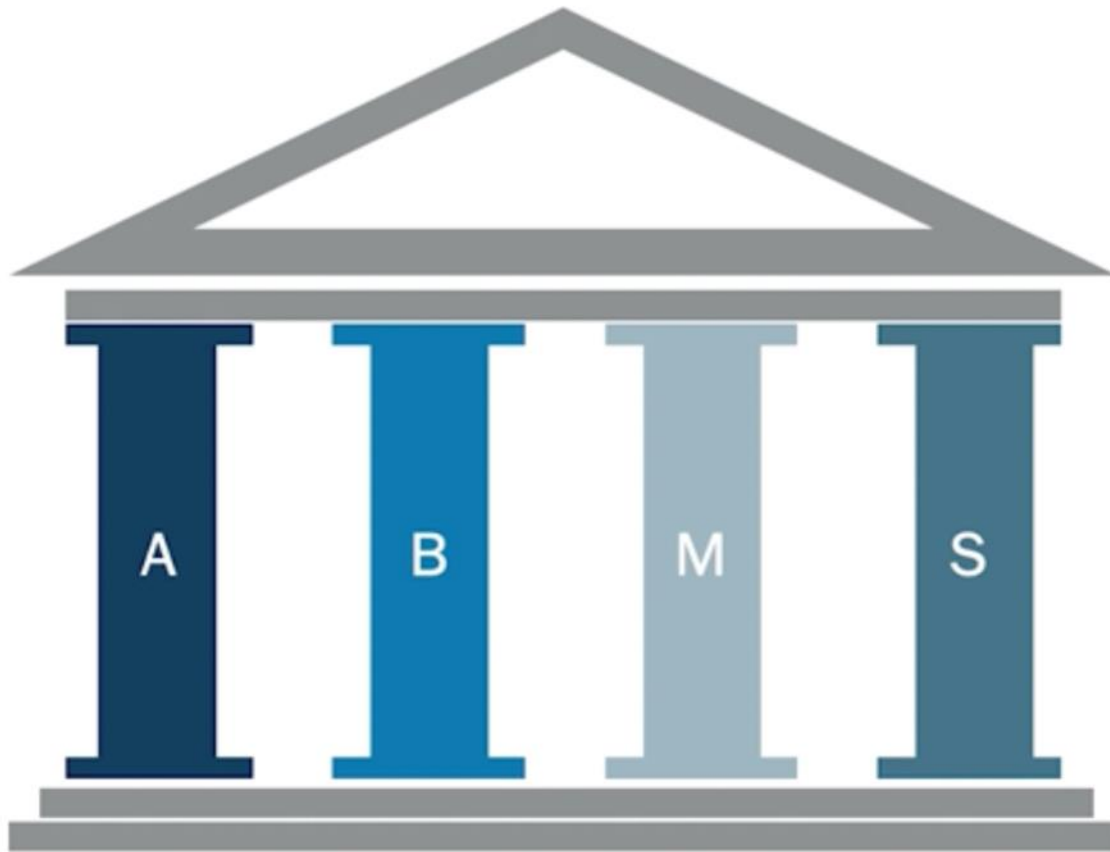
- Clinical presentation and diagnostic tests confirm the diagnosis of Heart Failure with Reduced Ejection Fraction (HFREF)
- Treatment with appropriate medical therapy was instituted (TTT)
- What else is essential?

What would you do next?

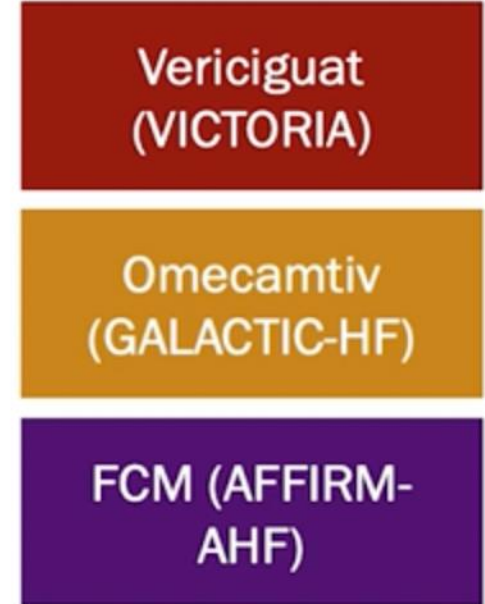
What is appropriate medical therapy?

- 4 pillars of medical therapy

The 4 Pillars of HFrEF Therapy



Where will new agents fit in?



Personal communication, Piotr Ponikowski, MD, PhD, FESC.

- Quadruple therapy of ARNi + BB + MRA + SGLT2i saves lives!
- ARNi > ACE > ARB
- Ask yourself: If not on it, why not? Can I titrate?
- 4 pillars at low doses is better than < 4 at higher doses
- Great Science + Effectiveness Implementation = Lives Saved

Definition of Risk Assessment

- Risk assessment is a term used to describe the overall process or method where you:
- Identify hazards and risk factors that have the potential to cause harm (hazard identification).
- Analyse and evaluate the risk associated with that hazard (risk analysis, and risk evaluation).
- Determine appropriate ways to eliminate the hazard, or control the risk when the hazard cannot be eliminated (risk control).

No risk score has been validated in South Africa nor, for that matter, in most populations in low- and middle-income countries, except China



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CARDIOVASCULAR DISEASE

in South Africa



Globally, **CVD** takes more lives than TB, HIV and malaria combined.

17.3 million

Globally **CVD** kills over 17.3 million people every year – that's almost the population of the Netherlands.



More South Africans die of **CVD** than of all cancers combined.

Heart disease and stroke are South Africa's biggest killers after **HIV/AIDS**.



SA has one of the highest levels of overweight and obesity in the world which is a contributing factor for heart disease.



Every hour in South Africa: **5 people** have heart attacks and **10 people** have strokes.



80% of premature deaths (before 60 years) can be prevented with a healthy diet, regular exercise & avoiding smoking.

Risk factors for heart failure

Preventive strategies

- Sedentary habit Regular physical activity
- Cigarette smoking Cigarette smoking cessation
- Obesity Physical activity and healthy diet
- Excessive alcohol intake²⁸⁶ Patients with alcohol-induced CMP abstain
- General population: no/light alcohol intake is beneficial

Risk factors continued

- Influenza
- Microbes (e.g. Trypanosoma cruzi, Strep)
- Cardiotoxic drugs (e.g., anthracyclines)
- Chest radiation
- Hypertension
- Dyslipidaemia
- Diabetes mellitus
- CAD

Influenza vaccination

Early diagnosis, specific antimicrobial therapy

Cardiac function and side effect monitoring

Cardiac function and side effect monitoring, dose adaptation

Lifestyle changes, antihypertensive therapy

Healthy diet, statins

Physical activity and healthy diet, SGLT2 inhibitors

Lifestyle changes, statin therapy

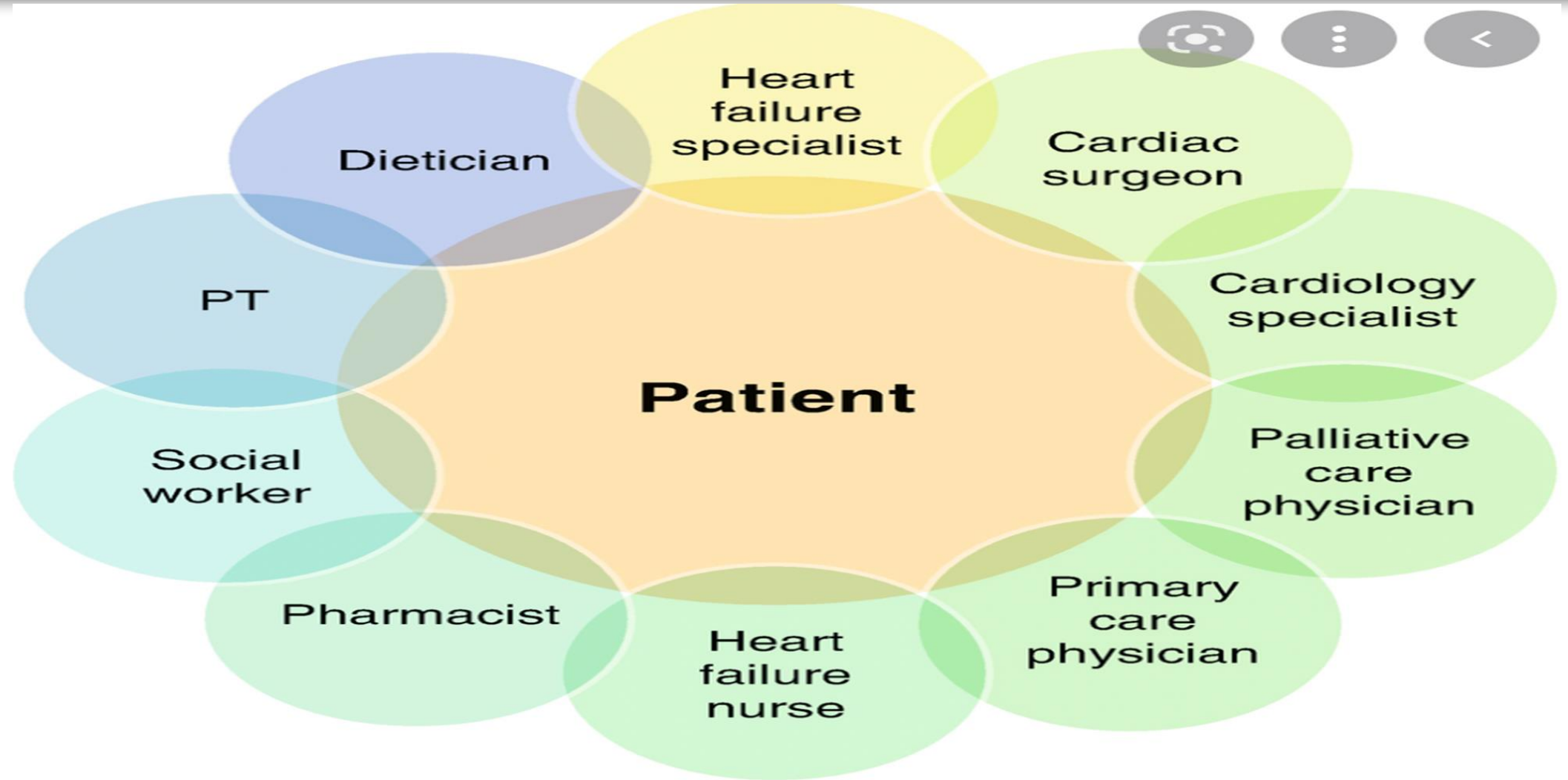
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Recommendations	Class ^a	Level ^b
It is recommended that HF patients are enrolled in a multidisciplinary HF management programme to reduce the risk of HF hospitalization and mortality. ^{309,314,315,316}	I	A
Self-management strategies are recommended to reduce the risk of HF hospitalization and mortality. ³⁰⁹	I	A
Either home-based and/or clinic-based programmes improve outcomes and are recommended to reduce the risk of HF hospitalization and mortality. ^{310,317}	I	A
Influenza and pneumococcal vaccinations should be considered in order to prevent HF hospitalizations. ^{315,316}	IIa	B



Multidisciplinary approach



Important characteristics and components in a heart failure management programme

- Patient/ person centered
- Multidisciplinary approach with competent professionally educated staff
- Focus of the program should be flexible and include prevention of disease progression
- Directed to symptom control
- Maintain patient in preferred place of care for end stage heart failure

- HF diagnosis and monitoring for progression
- Treatment prescription, titration, and monitoring
- Patient and caregiver education on disease treatments
- Lifestyle prescription (e.g. diet, exercise), education, and monitoring
- Psychologic and social support assessment, treatment, and monitoring
- Palliative and end-of-life counseling and care
- Coordination of care for concomitant comorbidities

Prevention and monitoring

Self-management strategies are recommended to reduce the risk of HF hospitalization and mortality.

I

Either home-based and/or clinic-based programmes improve outcomes and are recommended to reduce the risk of HF hospitalization and mortality.

I

Influenza and pneumococcal vaccinations should be considered in order to prevent HF hospitalizations.

IIa

A supervised, exercise-based, cardiac rehabilitation programme should be considered in patients with more severe disease, frailty, or with comorbidities.

IIa

Non-invasive HTM may be considered for patients with HF in order to reduce the risk of recurrent CV and HF hospitalizations and CV death.

IIb



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Problems incurred include

- The region is unprepared for this growing burden
- Insufficient health care infrastructure and resources
- Serious deficiencies in number of cardiac professionals to combat CVDs
- Lack of access to diagnostics is an issue with the expense and technical expertise required for echocardiography
- Lack of access to biomarkers
- Compounded by skewed and disproportional budget and resources allocations towards NCDs, where the priority is still rightly towards CMNND
- Setting up healthcare systems for management of CVDs is expensive given costly CVD diagnostics and interventions
- Need for life-long use of expensive CVD medications

- Victims of CVDs in SSA are significantly younger compared to their western world counterparts
- This poses an additional risk to regional socioeconomic development and health systems sustainability.
- Primary prevention should therefore be the key strategy to reduce morbidity and mortality from CVDs in SSA
- High-level strategic planning and partnerships are recommended involving governmental, non-governmental and international organizations, professional societies and associations, as well as local stakeholder

HF is a final common pathway for a number of conditions

- Hypertension dominant cause of HF in Africa, responsible for up to 46% of cases
- Primary myocardial disease that includes cardiomyopathies and myocarditis accounts for 20 - 30% of heart failure in Africans
- Valvular heart disease predominantly caused by rheumatic fever and infective endocarditis
- Ischaemic heart disease (accounting for only 7.7 - 9% of cases)
- Congenital heart disease (CHD is grossly underestimated)
- Pericardial disease predominantly TB related
- Pulmonary hypertension (diverse causes: idiopathic, RHD, thromboembolic, cold etc.

CVD intervention programme needs

- Community-orientated approach must be taken especially in rural areas where transportation is difficult, deterring people from seeking medical help at urban and semi-urban health facilities
- Technical expertise required for echocardiography
- Biomarker strategies may play a role here
- Access to essential medicines is also limited and requires a renewed focus by the international community to ensure that appropriate medications are readily available, similar to that which has been implemented for HIV and malaria

Heart failure in Sub Saharan Africa

- Increasing risk factors for cardiovascular disease
- life expectancy increases
- Prevalence of diseases such as Rheumatic heart disease, Endomyocardial fibrosis, HIV, Cardiomyopathy and pulmonary hypertension of a variety of causes
- Poorly controlled hypertension
- Rise in incidence of diabetes and atherosclerosis



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Thank you for attending!

Please complete the online confirmation of attendance emailed to you post meeting to receive a CPD certificate.

HF ACADEMY COURSE OVERVIEW

This **free CPD accredited educational program** was developed by cardiologists who are members of the Heart Failure Society of South Africa and is aimed at those who are interested in improving services for people with heart failure, including **not only doctors, but also nurses and pharmacists**. The course comprises 5 modules that provide a basic review of heart failure care and each module is individually **CPD accredited for 5 CPD points** with the HPCSA. Following the completion of all 5 modules, a **Certificate of Competency** in basic heart failure management will be awarded by HeFSSA.

COURSE LEARNING OBJECTIVES

- ✓ Raise the awareness of heart failure among health care professionals
- ✓ Improve the prevention, diagnosis, treatment and long – term management of heart failure
- ✓ Ensure equity of care for all patients with heart failure
- ✓ Support and empower patients with heart failure and their families or other caregivers to engage proactively in long – term care

COURSE DIRECTORS

Prof Nash Ranjith
City Hospital
University of KwaZulu Natal

Dr Martin Mpe
Mediclinic Heart Hospital

Prof Nqoba Tsabedze
University of the Witwatersrand

Dr Tony Lachman
Victoria Hospital

Prof Mpiko Ntsekhe
University of Cape Town

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www.hefssa.org