Managing Heart Failure in the Primary Care

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Preventive Cardiology

The Harley Street Heart & Cancer Centre

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HEART & CANCER CENTRE

HF Management Tips for Primary Care

- Heart Failure - The Asian challenge
- Early diagnosis essential
- Management of risk factors
- Initiating drug therapy
- Newer drug classes
- Following up heart failure

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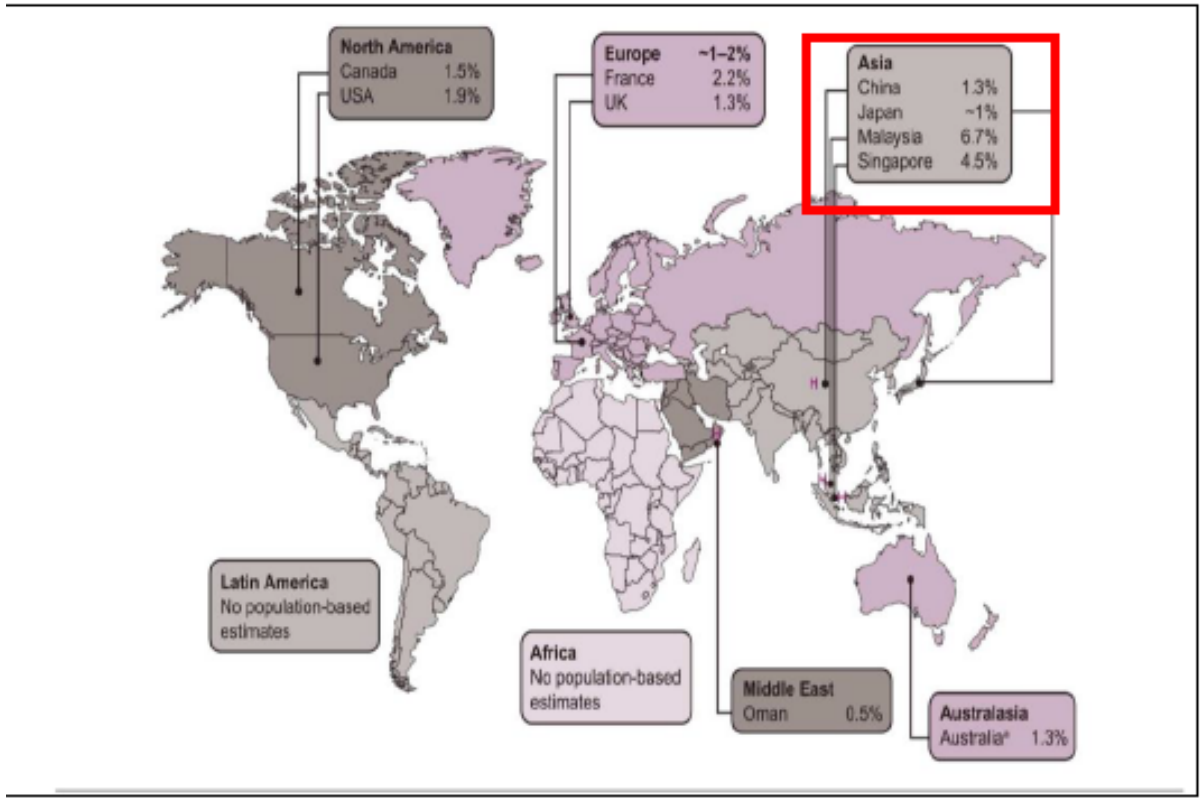
Heart failure in Southeast Asia: facts and numbers

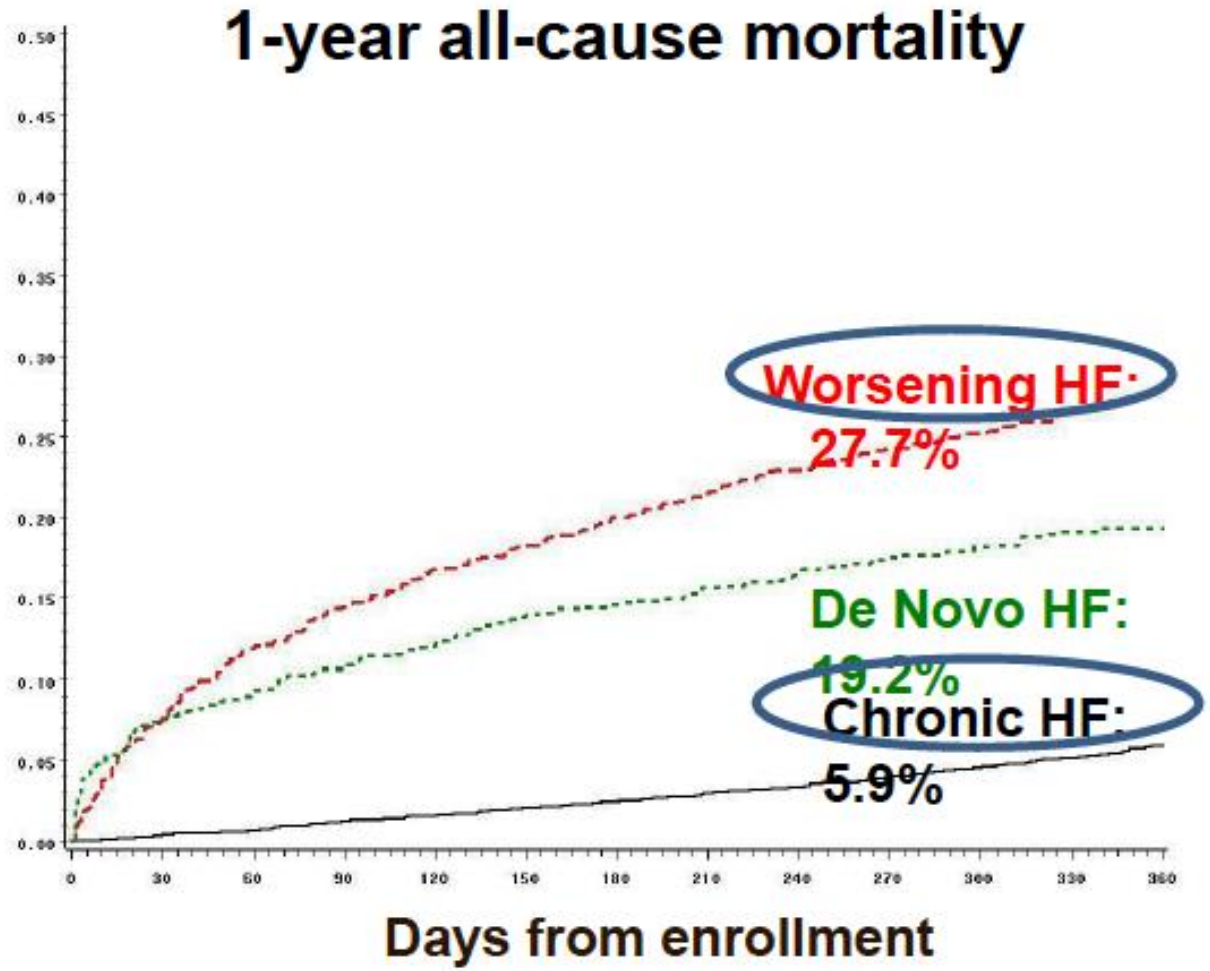


Proportion of the population living with heart failure in individual countries across the globe

Adapted from: Carolyn S.P. Lam, ESC Heart Failure 2015; 2: 46–49

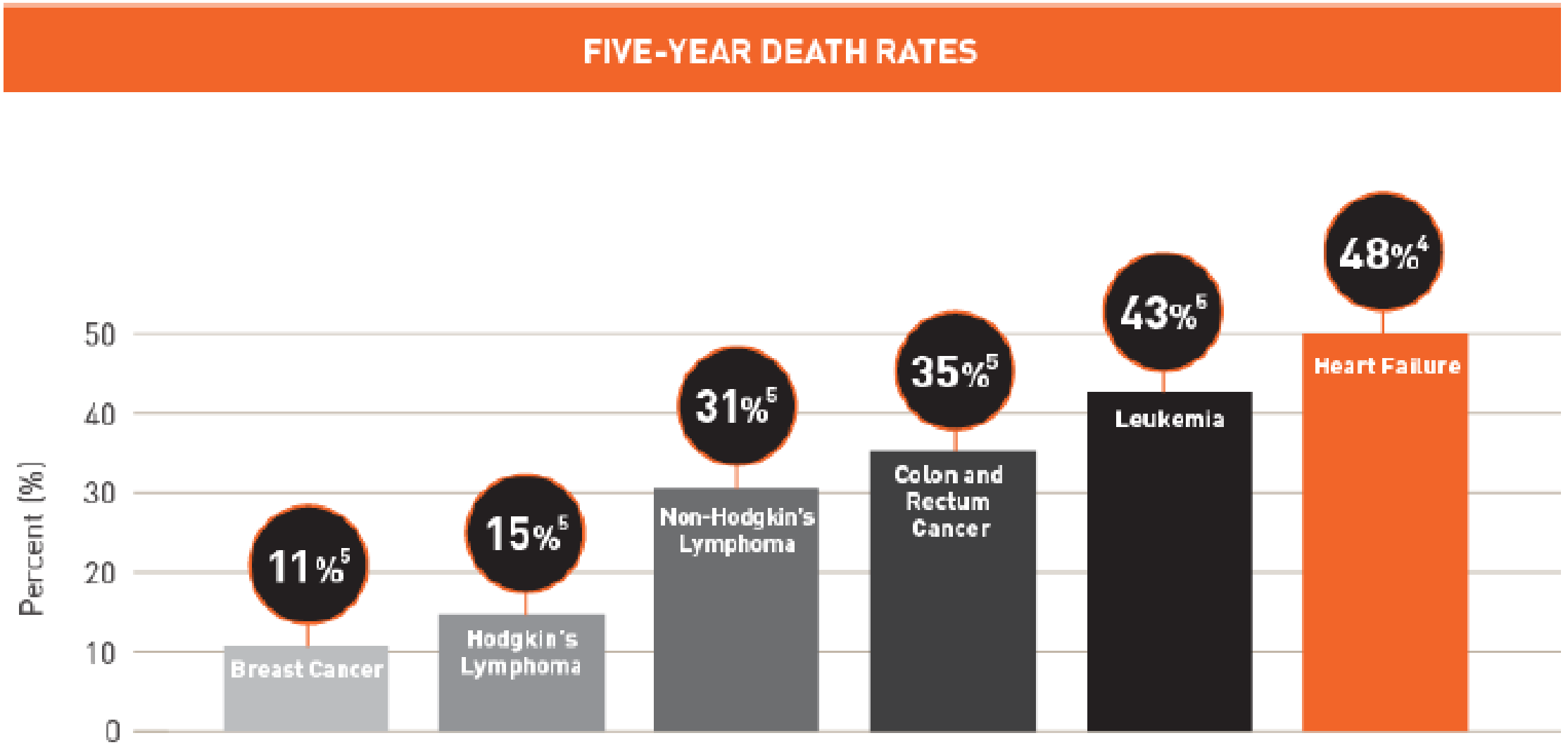
- **Prevalence of HF in Southeast Asian countries is higher compared with countries in the rest of the world (4.5–6.7% vs. 0.5–2% respectively)**
- **Southeast Asian patients present with acute HF at a younger age (54 years) compared with USA patients (75 years) but**
  - **have more severe clinical features, higher rates of mechanical ventilation,**
  - **longer lengths of stay (6 vs. 4.2 days) and**
  - **higher in-hospital mortality (4.8 vs. 3.0%)**
- **Under-usage of disease-modifying HF therapies was reported in the ADHERE Asia-Pacific cohort,**
  - **with ACEi or ARBs prescribed upon discharge in 63%,**
  - **β-blockers in 41% and MRAs in 31% of patients.**
- **Important inter-ethnic differences exist, wherein Malay patients appear to fare worse than Indian or Chinese patients, for reasons that are poorly understood**

Prognosis of Heart failure



Tavazzi L, et al Circ Heart Fail. 2013;6:473-481.

Heart failure deadlier than many cancers



DIAGNOSING HEART FAILURE

Early detection and intervention is essential

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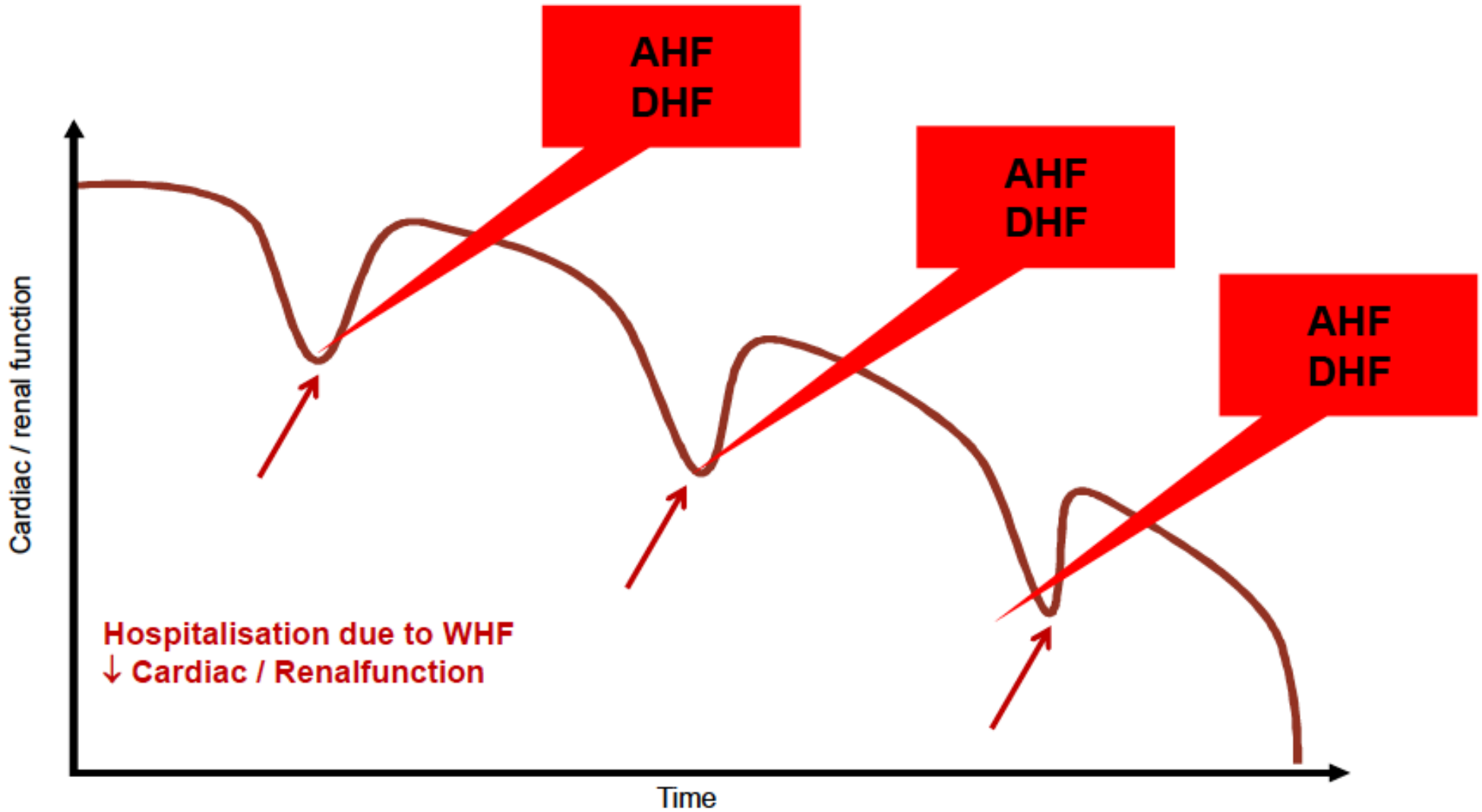
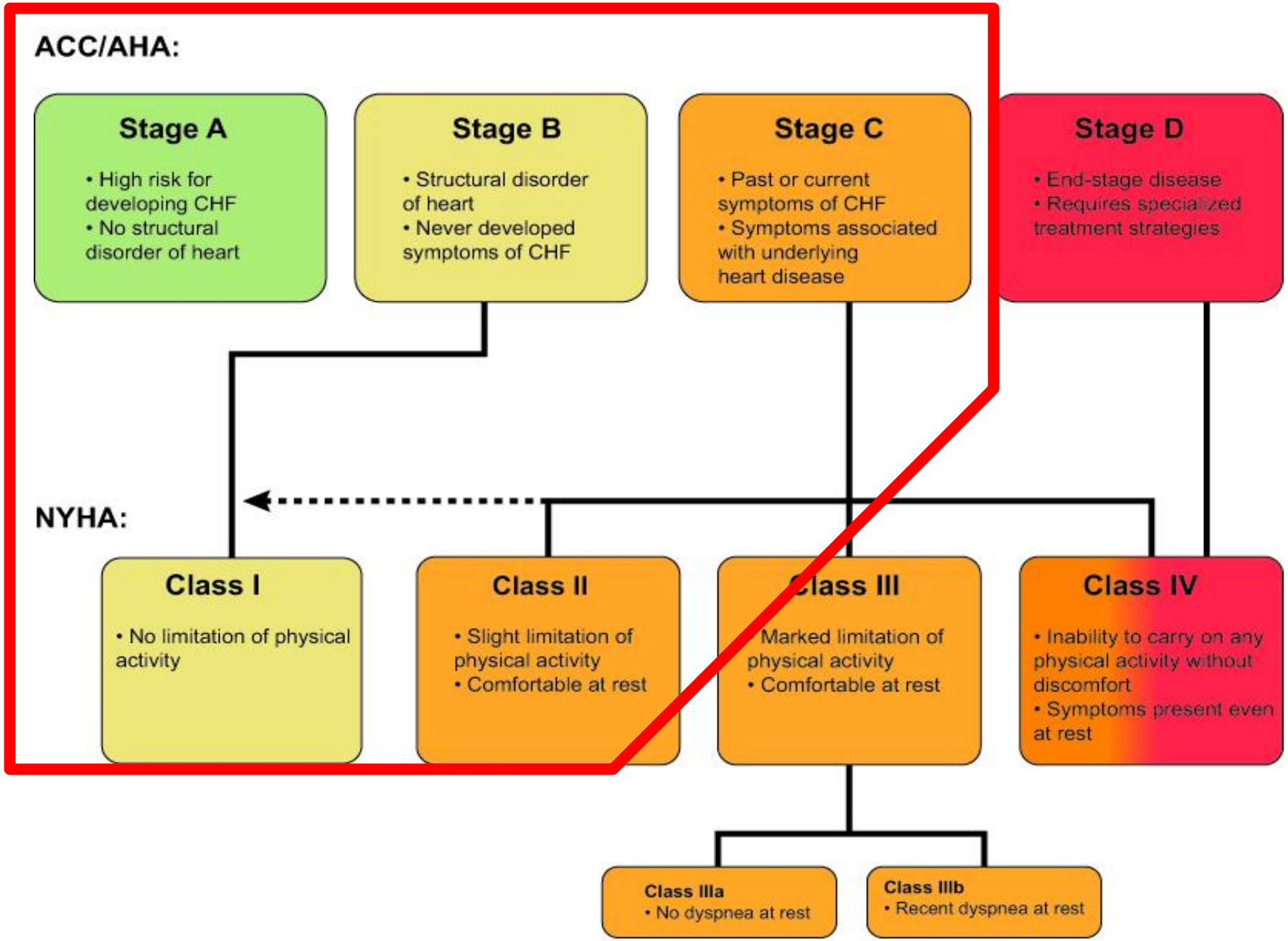
Heart failure is not stable !





GPs see Heart failure at earlier stages, Including the AT RISK PHASE – STAGE A

Symptoms of HF

Symptoms	Signs
Typical	More specific
Breathlessness	Elevated jugular venous pressure
Orthopnea	Hepatojugular reflux
Paroxysmal nocturnal dyspnea	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 edema (ankle, sacral, scrotal)
Wheezing	Pulmonary crepitations
Weight gain (>2 kg/week)	Reduced air entry and dullness to percussion at lung bases (pleural effusion)
Bloated feeling	Irregular pulse
Confusion (especially in the elderly)	Hepatomegaly
Palpitations	Tissue wasting (cachexia)
Syncope	

Adapted from McMurray JJ, et al. *Eur Heart J.* 2012;33(14):1787-1847.

Suspect HF when…

- Hx of CAD, diabetes, hypertension

- Atrial fibrillation

- Chest infection/URTI that is persistent

- COPD that is deteriorating fast

- Unexplained fatigue or fluid retention in the elderly

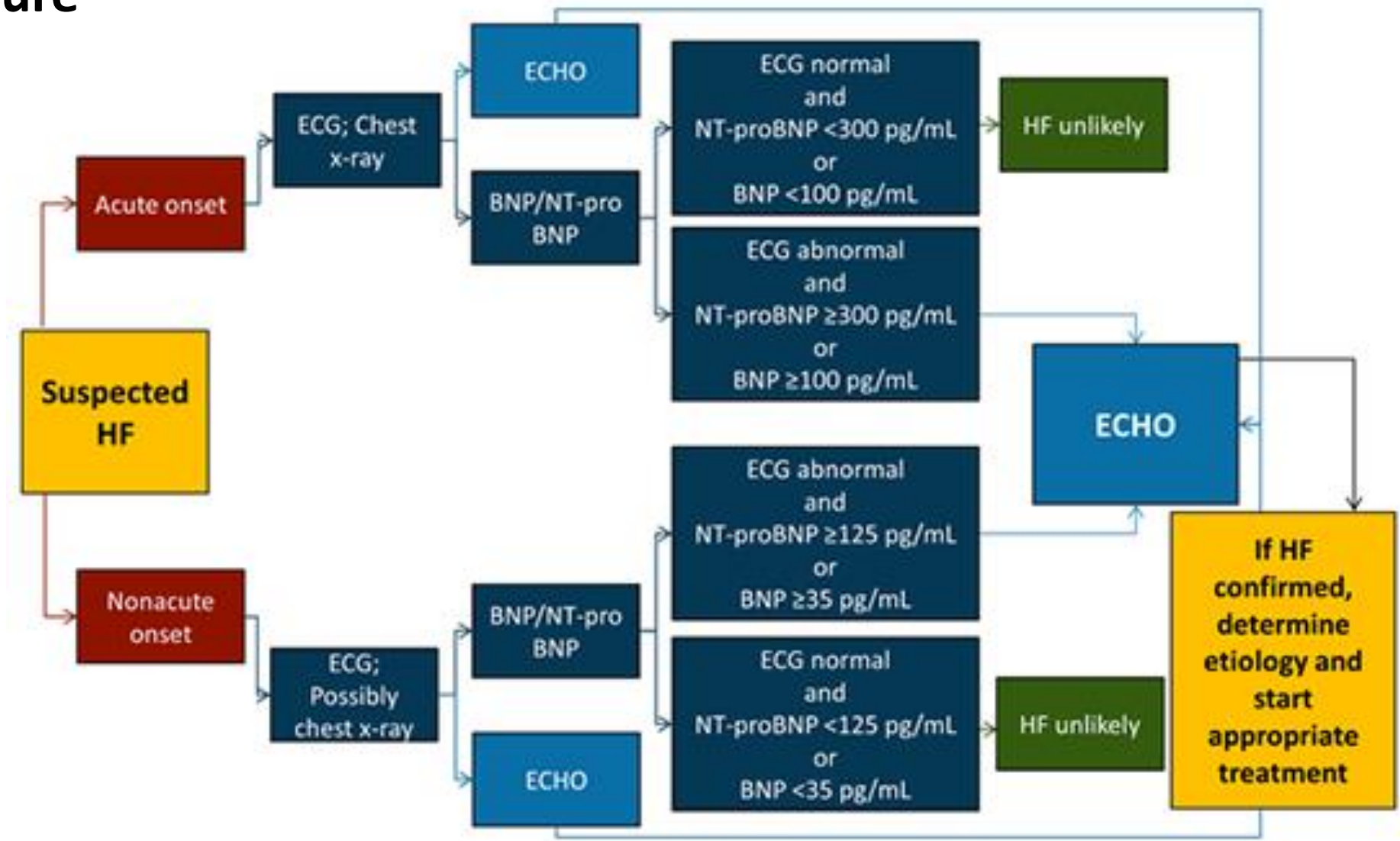
Confirming Heart Failure

ECG

Echo mandatory

NT-pro BNP/BNP

CXR is less useful



Adapted from McMurray JJ, et al. *Eur Heart J.* 2012;33(14):1787-1847.

MANAGING RISK FACTORS

CAD

Diabetes

Obesity/sleep apnea

Hypertension

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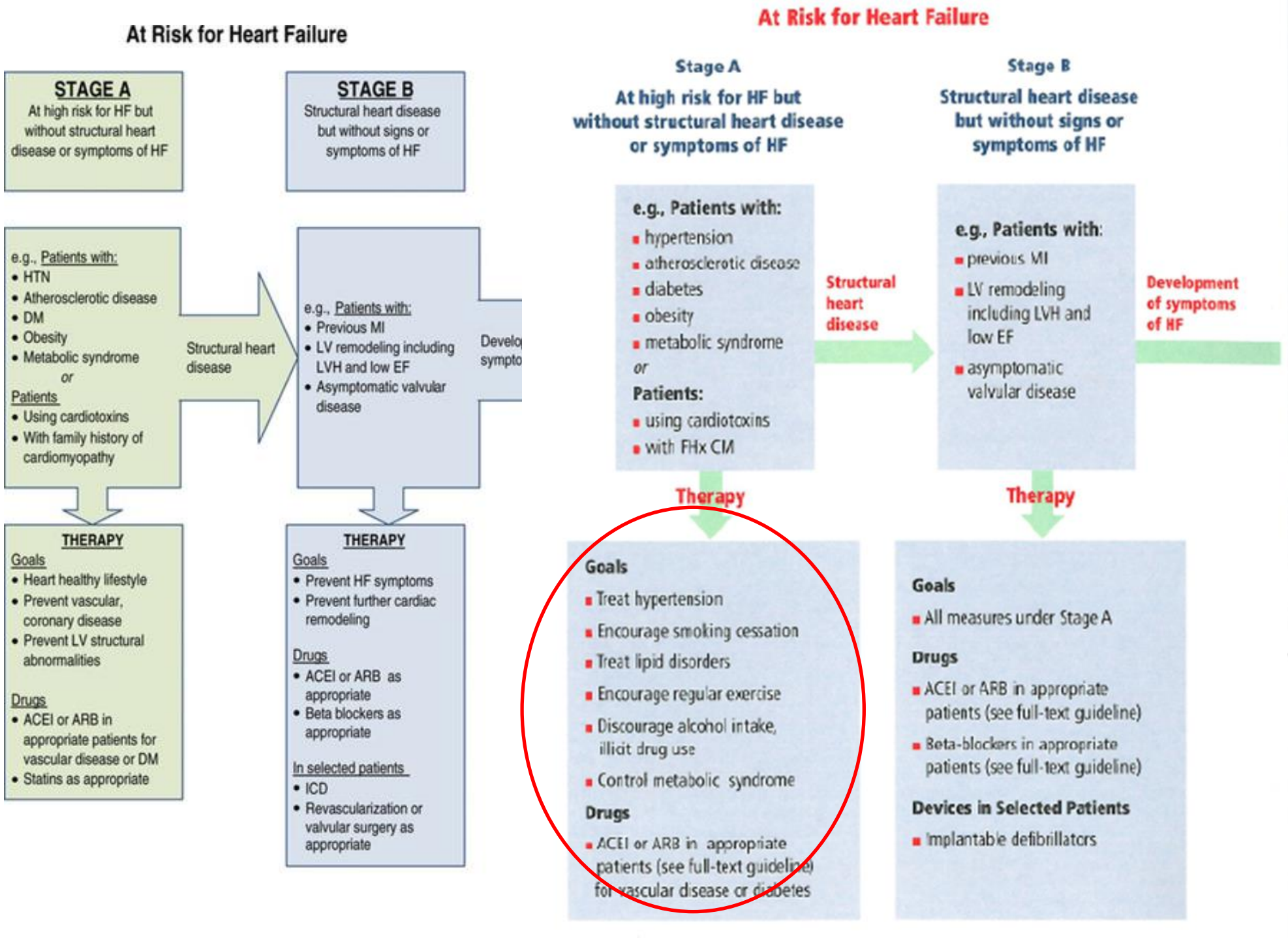

At Risk for Heart Failure
STAGE A
At high risk for HF but without structural heart disease or symptoms of HF
STAGE B
Structural heart disease but without signs or symptoms of HF
e.g., Patients with:
• HTN
• Atherosclerotic disease
• DM
• Obesity
• Metabolic syndrome
or
Patients
• Using cardiotoxins
• With family history of cardiomyopathy
Structural heart disease
e.g., Patients with:
• Previous MI
• LV remodeling including LVH and low EF
• Asymptomatic valvular disease
Develo
sympto
THERAPY
Goals
• Heart healthy lifestyle
• Prevent vascular, coronary disease
• Prevent LV structural abnormalities
Drugs
• ACEI or ARB in appropriate patients for vascular disease or DM
• Statins as appropriate
THERAPY
Goals
• Prevent HF symptoms
• Prevent further cardiac remodeling
Drugs
• ACEI or ARB as appropriate
• Beta blockers as appropriate
In selected patients
• ICD
• Revascularization or valvular surgery as appropriate
At Risk for Heart Failure
Stage A
At high risk for HF but without structural heart disease or symptoms of HF
Stage B
Structural heart disease but without signs or symptoms of HF
e.g., Patients with:
hypertension
atherosclerotic disease
diabetes
obesity
metabolic syndrome
or
Patients:
using cardiotoxins
with FHx CM
Structural heart disease
e.g., Patients with:
previous MI
LV remodeling including LVH and low EF
asymptomatic valvular disease
Development of symptoms of HF
Therapy
Therapy
Goals
Treat hypertension
Encourage smoking cessation
Treat lipid disorders
Encourage regular exercise
Discourage alcohol intake, illicit drug use
Control metabolic syndrome
Drugs
ACEI or ARB in appropriate patients (see full-text guideline) for vascular disease or diabetes
Goals
All measures under Stage A
Drugs
ACEI or ARB in appropriate patients (see full-text guideline)
Beta-blockers in appropriate patients (see full-text guideline)
Devices in Selected Patients
Implantable defibrillators

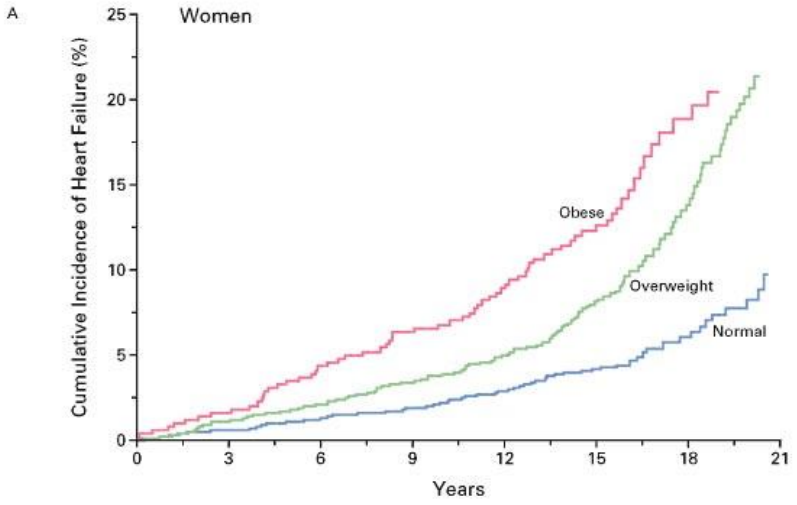
Preventable/Reversible Risk Factors

- Ischemic CMP one of the most common causes of CHF
- Hypertension increased risk of CHF 2-fold in men and 3-fold in women, with a greater impact of the systolic than diastolic blood pressure*
- Diabetes increased CHF risk 2-8 fold with risk ratios twice as large in women as men*

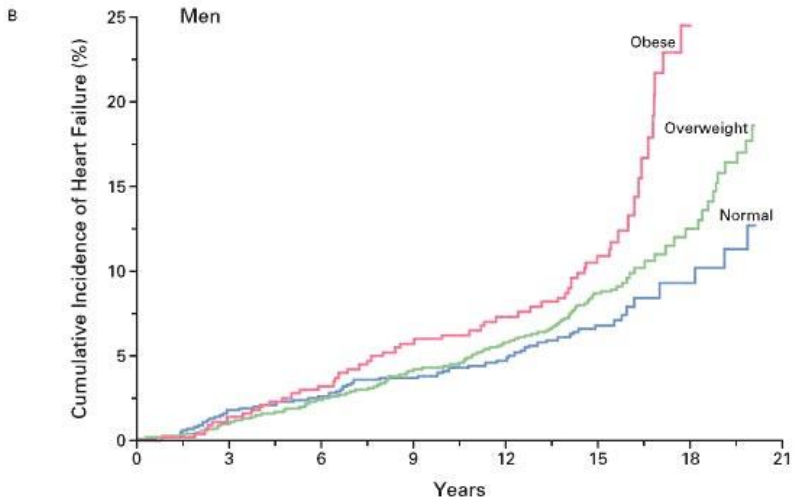
* Corrected for age and other risk factors

Heart Fail Rev. 2000 Jun;5(2):167-73.

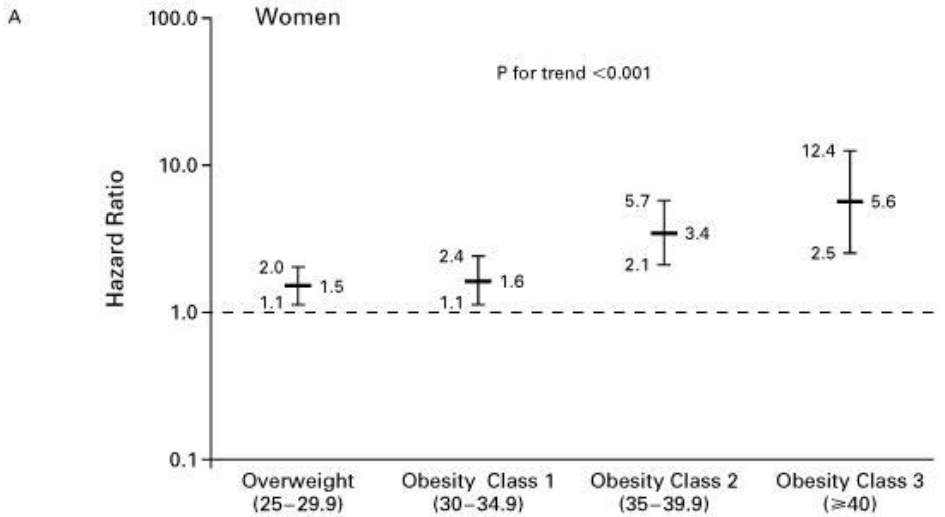
Obesity and heart failure



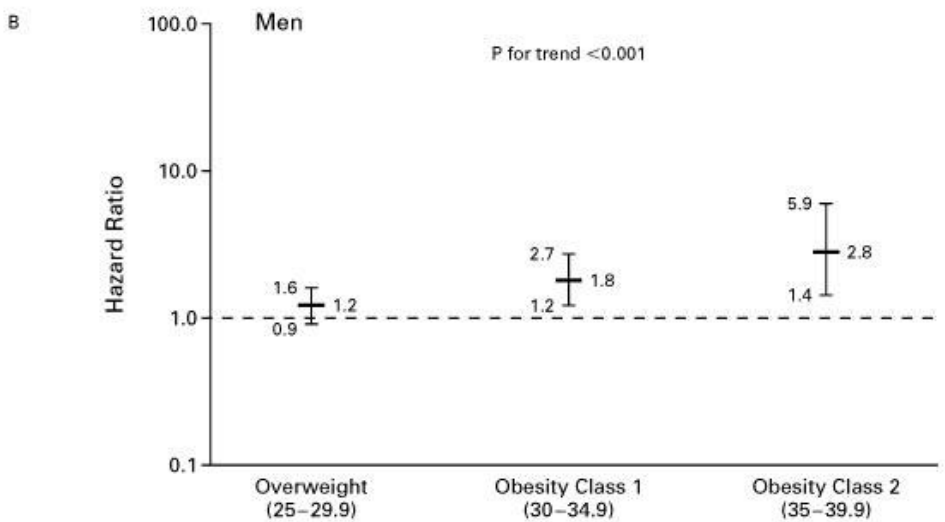
No. at Risk							
Normal	1729	1688	1634	1568	1477	1227	295
Overweight	955	929	880	815	757	634	248
Obese	493	477	448	409	372	296	104



No. at Risk							
Normal	869	822	758	690	637	512	105
Overweight	1378	1322	1254	1163	1071	871	171
Obese	457	433	403	370	342	276	51



No. of events	108	40	21	7
No. at risk	955	339	111	43
Person-yr of follow-up	14,232	4909	1540	595



No. of events	125	45	9
No. at risk	1378	391	58
Person-yr of follow-up	19,358	5315	793

Satish Kenchaiah, et al. N Engl J Med 2002; 347:305-313August 1, 2002

A third of S'poreans 'have sleep apnoea but most are unaware'

Yeo Sam Jo

One in three Singaporeans suffers from moderate to severe obstructive sleep apnoea (OSA), with most of these cases undiagnosed, a recent study has found.

People with this sleep disorder stop breathing repeatedly in their sleep because of a complete or partial blocking in their airway.

This leads to low oxygen levels, which causes symptoms such as daytime fatigue, intellectual impairment and headaches upon waking.

The study by public healthcare group JurongHealth also found that one in 10 Singaporeans has severe sleep apnoea, in which they stop breathing for more than 30 times an hour during slumber.

The study, done between October 2014 and May last year among 250 randomly chosen subjects, was published in the international journal Respirology in March.

Its principal investigator, Dr Adeline Tan, described the high prevalence of the disorder among Singaporeans as worrying. About 90 per cent of the subjects found to have moderate to severe sleep apnoea were unaware of their condition.

Dr Tan, a consultant in respiratory medicine at Ng Teng Fong Hospital, said: "This could be due to low awareness of OSA. The public needs to know the signs so that they or their loved ones know when to seek medical help."

Signs include snoring, choking and gasping during sleep, and frequent urination at night.

Dr Kenny Pang, an ear, nose and throat specialist at Asia Sleep Centre and Mount Elizabeth Hospital, said he diagnoses 30 to 50 cases of sleep apnoea every month.

Patients' airways are blocked because of structural obstructions such as huge tonsils or tongues.

Dr Pang said there has been a huge leap in cases in the past decade, partly due to increased awareness of the condition.

"There is also an increased prevalence in obesity, a risk factor of the disorder," he noted, adding that over half of his sleep apnoea patients are obese or overweight. Those who are obese have more fat in the neck, which extends into their pharynx, or part of the throat, he explained.

Dr Tan's study also showed that Chinese and Malays here have higher rates of moderate to severe OSA, with their estimated population prevalence hitting 32.1 per cent and 33.8 per cent respectively.

Dr Pang said this is partly genetic. "Asians in general have small jaws. When the face is narrow, the tongue has no space in the jaw and falls backwards during sleep, blocking the airway," he said.

Experts said that if left untreated, the condition could lead to hypertension, heart failure, poor job or academic performance and even an increased risk of traffic accidents.

There are three treatment options: surgery of the blocked air passage, wearing an oral appliance to pull out the lower jaw during sleep, or sleeping with a Continuous Positive Airway Pressure (CPAP) machine. This compresses atmospheric air and forces it into the airway through a facial or nasal mask.

Losing weight and avoiding smoking and alcohol help, said Dr Pang.

Sales manager Kenny Tang, 39, was diagnosed with sleep apnoea a year ago. "My wife and reservist bunk mates would say, 'You're not snoring, you're roaring.' "

He removed his left tonsil as it was so huge that it blocked half of his airway. His doctor also said he has a big tongue and small jaw.

Mr Tang, who is overweight, now sleeps with a CPAP machine. "I used to doze off when looking at my laptop in the office. Now I'm not so tired any more."

yeosamjo@sph.com.sg

Sleep apnoea in Singapore

1 in 3
have moderate to severe sleep apnoea

1 in 10
have severe sleep apnoea

Prevalence of moderate to severe sleep apnoea by race

Chinese
32.1%

Malay
33.8%

Indian
16.5%

Top disorders that sleep apnoea patients may have

- Drug-resistant hypertension
- Obesity
- Congestive heart failure
- Type 2 diabetes

Source: JURONGHEALTH
STRAITS TIMES GRAPHICS

CARDIATRICS

DOCTOR LED LIFESTYLE INTERVENTIONS FOR CLINICAL IMPACT

We take a scientific approach to changing your lifestyle; so you can see a sustainable reduction in your risk of heart disease. Partner with a designated Doctor and Coach Team who will develop and guide you through personalized solutions including:

- PRESCRIBED NUTRITION
- PROGRAMMED EXERCISE
- STRESS MANAGEMENT
- SLEEP MANAGEMENT
- SMOKING CESSATION ADVICE*

*Additional consultations with a smoking cessation specialist outside of the regular program may be required.

https://cardiatricshealth.com/

INITIATING TREATMENT

Evidence based pharmacotherapies

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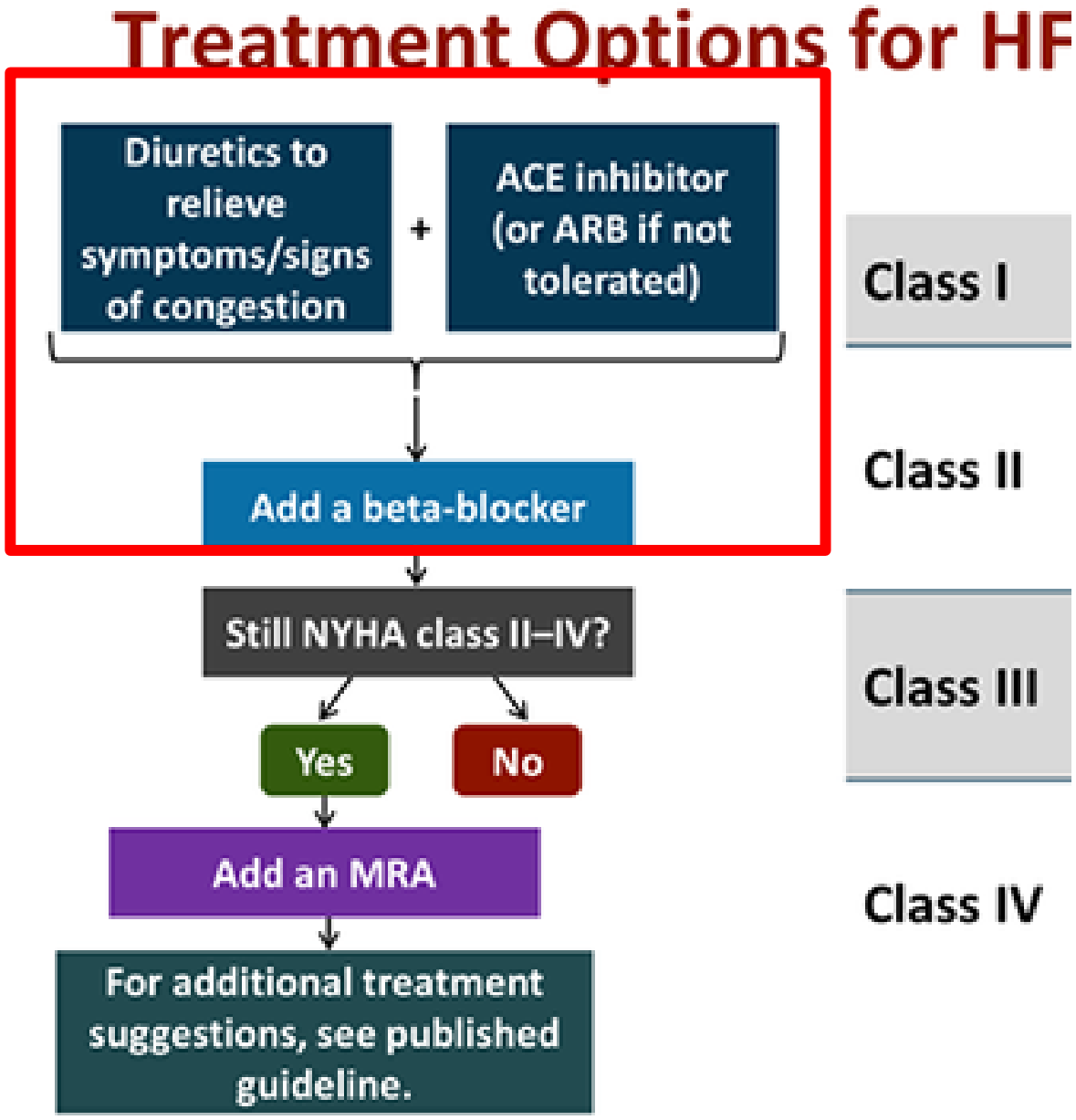
Established Benefits of Guideline-Recommended HF Therapies

Guideline Recommended Therapy	Relative Risk Reduction in Mortality	Number Needed to Treat for Mortality	NNT for Mortality (standardized to 36 months)	Relative Risk Reduction in HF Hospitalizations
ACEI/ARB	17%	22 over 42 months	26	31%
Beta-blocker	34%	28 over 12 months	9	41%
Aldosterone Antagonist	30%	9 over 24 months	6	35%
Hydralazine/Nitrate	43%	25 over 10 months	7	33%
CRT	36%	12 over 24 months	8	52%
ICD	23%	14 over 60 months	23	NA

Fonarow GC, et al. Am Heart J 2011;161:1024-1030.



Adapted from McMurray JJ, et al. *Eur Heart J.* 2012;33(14):1787-1847.

Starting Tips

Start BB and ACEI at lowest doses

Increase every 2 weeks

Use BB proven for CHF – Bisoprolol, Carvedilol and Metoprolol

When initiating ACE/ARB, Cr may increase Between 20-30%

Stop only if causing symptomatic hypotension, Or sig. hyperkalemia

Lower dose if needed rather than stopping immediately

Lower doses work better than one alone

Titrating to therapeutic doses

Drug	Initial Daily Dose(s)	Maximum Doses(s)	Mean Doses Achieved in Clinical Trials
ACE Inhibitors			
Captopril	6.25 mg 3 times	50 mg 3 times	122.7 mg/d (421)
Enalapril	2.5 mg twice	10 to 20 mg twice	16.6 mg/d (412)
Fosinopril	5 to 10 mg once	40 mg once	---------
Lisinopril	2.5 to 5 mg once	20 to 40 mg once	32.5 to 35.0 mg/d (444)
Perindopril	2 mg once	8 to 16 mg once	---------
Quinapril	5 mg twice	20 mg twice	---------
Ramipril	1.25 to 2.5 mg once	10 mg once	---------
Trandolapril	1 mg once	4 mg once	---------
ARBs			
Candesartan	4 to 8 mg once	32 mg once	24 mg/d (419)
Losartan	25 to 50 mg once	50 to 150 mg once	129 mg/d (420)
Valsartan	20 to 40 mg twice	160 mg twice	254 mg/d (109)
Aldosterone Antagonists			
Spironolactone	12.5 to 25 mg once	25 mg once or twice	26 mg/d (424)
Eplerenone	25 mg once	50 mg once	42.6 mg/d (445)

Very often Under dosed

Fear of Adverse events

Manageable with careful monitoring, starting lower with progressive increments

Titrating to therapeutic doses

Drug	Initial Daily Dose(s)	Maximum Doses(s)	Mean Doses Achieved in Clinical Trials
Beta Blockers			
Bisoprolol	1.25 mg once	10 mg once	8.6 mg/d (118)
Carvedilol	3.125 mg twice	50 mg twice	37 mg/d (446)
Carvedilol CR	10 mg once	80 mg once	---
Metoprolol succinate extended release (metoprolol CR/XL)	12.5 to 25 mg once	200 mg once	159 mg/d (447)
Hydralazine & Isosorbide Dinitrate			
Fixed dose combination (423)	37.5 mg hydralazine/ 20 mg isosorbide dinitrate 3 times daily	75 mg hydralazine/ 40 Mg isosorbide dinitrate 3 times daily	~175 mg hydralazine/90 mg isosorbide dinitrate daily
Hydralazine and isosorbide dinitrate (448)	Hydralazine: 25 to 50 mg, 3 or 4 times daily and isorsorbide dinitrate: 20 to 30 mg 3 or 4 times daily	Hydralazine: 300 mg daily in divided doses and isosorbide dinitrate 120 mg daily in divided doses	---

NEWER DRUG THERAPIES

3 drugs

- Entresto (Sacubitril/Valsartan)
- Coralan (Ivabradine)
- Jardiance (Empagliflozin)

European Heart Journal
doi:10.1093/eurheartj/ehw128

ESC GUIDELINES

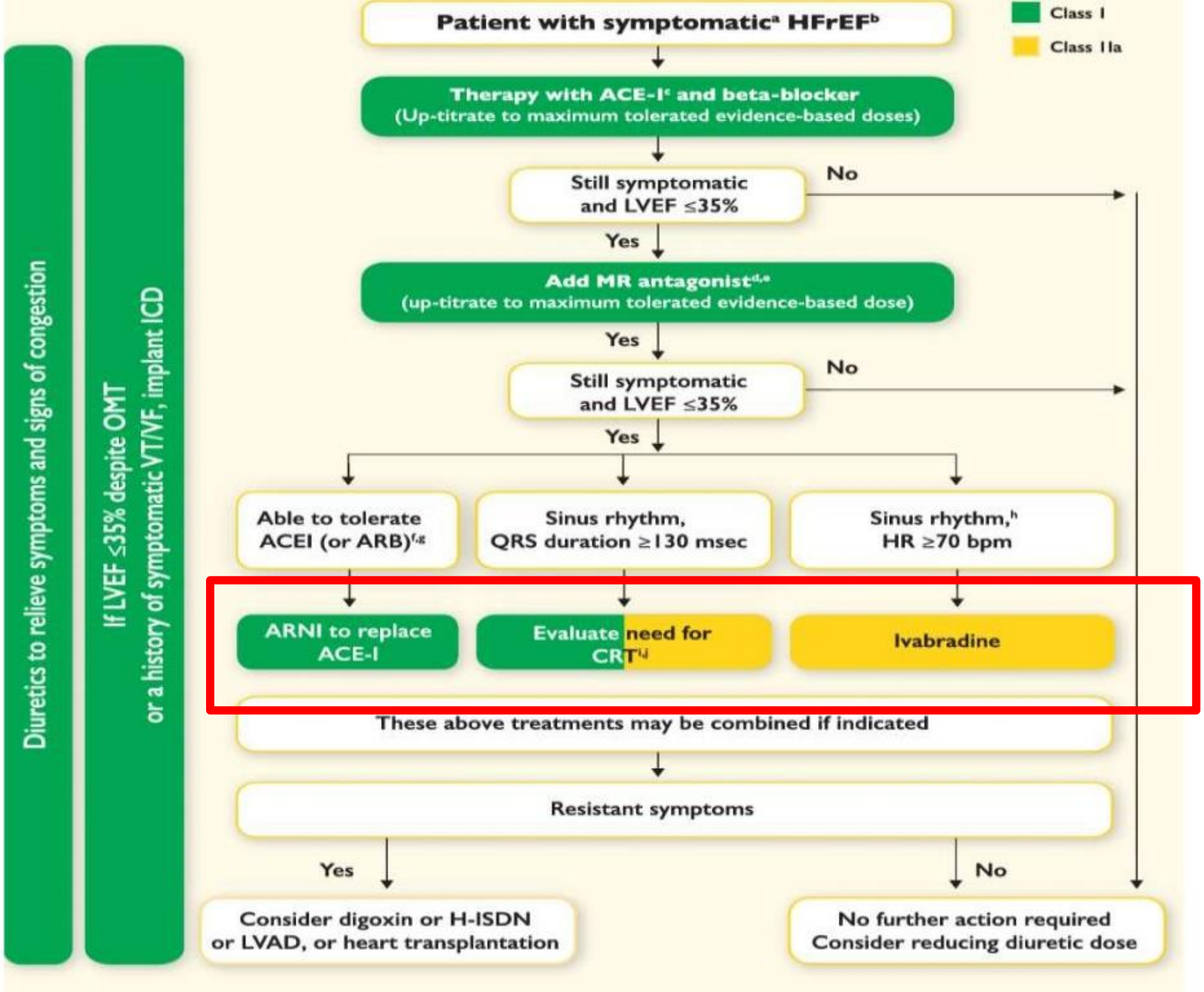
2016 ESC Guidelines for the diagnosis and treatment of acute and chronic heart failure

The Task Force for the diagnosis and treatment of acute and chronic heart failure of the European Society of Cardiology (ESC)

Developed with the special contribution of the Heart Failure Association (HFA) of the ESC

Authors/Task Force Members: Piotr Ponikowski* (Chairperson) (Poland), Adriaan A. Voors* (Co-Chairperson) (The Netherlands), Stefan D. Anker (Germany), Héctor Bueno (Spain), John G. F. Cleland (UK), Andrew J. S. Coats (UK), Volkmar Falk (Germany), José Ramón González-Juanatey (Spain), Veli-Pekka Harjola (Finland), Ewa A. Jankowska (Poland), Mariell Jessup (USA), Cecilia Linde (Sweden), Petros Nihoyannopoulos (UK), John T. Parissis (Greece), Burkert Pieske (Germany), Jillian P. Riley (UK), Giuseppe M. C. Rosano (UK/Italy), Luis M. Ruilope (Spain), Frank Ruschitzka (Switzerland), Frans H. Rutten (The Netherlands), Peter van der Meer (The Netherlands)

Ponikowski P, et *al.* Eur J Heart Fail 2016 & EHJ 2016 (online available)


Class I
Class IIa
Patient with symptomatic[a] HFrEF[b]
Therapy with ACE-I[c] and beta-blocker
(Up-titrate to maximum tolerated evidence-based doses)
Still symptomatic and LVEF ≤35%
No
Yes
Add MR antagonist[d,e]
(up-titrate to maximum tolerated evidence-based dose)
Yes
Still symptomatic and LVEF ≤35%
No
Yes
Able to tolerate ACEI (or ARB)[f,g]
Sinus rhythm, QRS duration ≥130 msec
Sinus rhythm,[h] HR ≥70 bpm
ARNI to replace ACE-I
Evaluate need for CRT[i,j]
Ivabradine
These above treatments may be combined if indicated
Resistant symptoms
Yes
No
Consider digoxin or H-ISDN or LVAD, or heart transplantation
No further action required
Consider reducing diuretic dose
Diuretics to relieve symptoms and signs of congestion
If LVEF ≤35% despite OMT or a history of symptomatic VT/VF, implant ICD

Therapeutic algorithm for a patient with symptomatic HF with reduced ejection fraction

- **ESC-HF guidelines provide strong Class I recommendation for sacubitril/valsartan**
- **Endorsement showing in section 7.3.2 of 2016 Guidelines, discussed in light of PARADIGM-HF**

Estb. Rx

Pharmacological treatments indicated in patients with symptomatic (NYHA Class II-IV) HFrEF

Recommendations	Class	Level
An **ACEi** is recommended, in addition to a beta blocker, for symptomatic patients with HFrEF to reduce the risk of HF hospitalization and death	I	A
A **beta blocker** is recommended, in addition an ACEi, for patients with stable, symptomatic HFrEF to reduce the risk of HF hospitalization and death	I	A
An **MRA** is recommended for patients with HFrEF, who remain symptomatic despite treatment with an ACEi and a beta-blocker, to reduce the risk of HF hospitalization and death	I	A
Sacubitril/valsartan is recommended as a **replacement for an ACEi** to further reduce the risk of HF hospitalization and death in ambulatory patients with HFrEF who remain symptomatic despite optimal treatment with an ACEi, a beta-blocker and an MRA*	I	B

**Patient should have elevated natriuretic peptides (plasma BNP ≥150 pg/mL or plasma NT-proBNP ≥600 pg/mL, or if HF hospitalization within the last 12 months, plasma BNP ≥100 pg/mL or plasma NT-proBNP ≥400 pg/mL) and able to tolerate enalapril 10 mg b.i.d.*

Therapeutic algorithm for a patient with symptomatic HF with reduced ejection fraction

CLASS (STRENGTH) OF RECOMMENDATION

CLASS I (STRONG) — Benefit >>> Risk

Suggested phrases for writing recommendations:
- Is recommended
- Is indicated/useful/effective/beneficial
- Should be performed/administered/other
- Comparative-Effectiveness Phrases†:
  - Treatment/strategy A is recommended/indicated in preference to treatment B
  - Treatment A should be chosen over treatment B

LEVEL (QUALITY) OF EVIDENCE‡

LEVEL A
- High-quality evidence‡ from more than 1 RCT
- Meta-analyses of high-quality RCTs
- One or more RCTs corroborated by high-quality registry studies

LEVEL B-R (Randomized)
- Moderate-quality evidence‡ from 1 or more RCTs
- Meta-analyses of moderate-quality RCTs

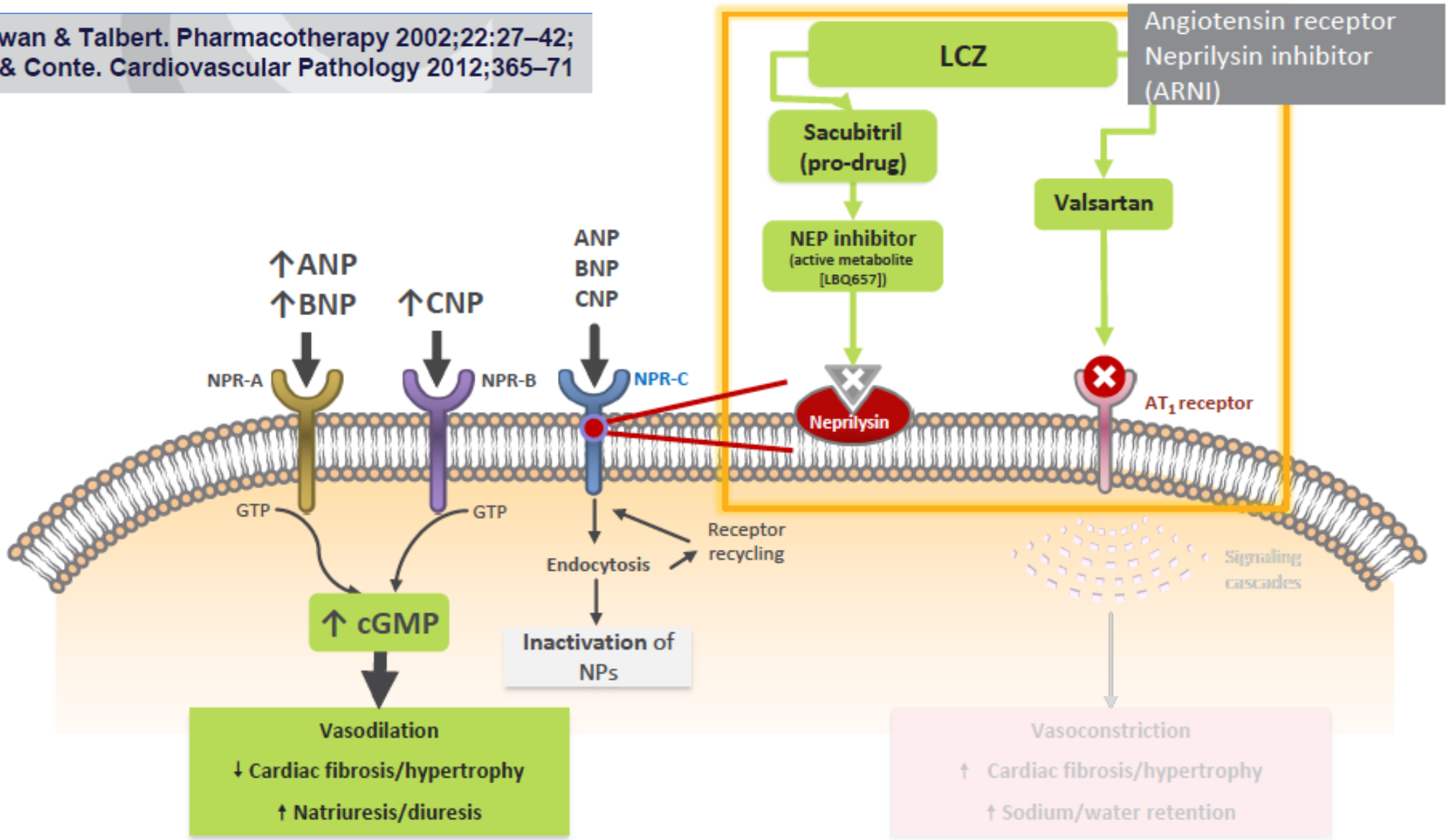
Recommendations for Renin-Angiotensin System Inhibition With ACE Inhibitor or ARB or ARNI		
COR	**LOE**	**Recommendations**
I	ACE: A	The clinical strategy of inhibition of the renin-angiotensin system with ACE inhibitors *(Level of Evidence: A)* (9-14), OR ARBs *(Level of Evidence: A)* (15-18), OR ARNI *(Level of Evidence: B-R)* (19) in conjunction with evidence-based beta blockers (20-22), and aldosterone antagonists in selected patients (23, 24), is recommended for patients with chronic HF*r*EF to reduce morbidity and mortality.
	ARB: A	
	ARNI: B-R	

I	ARNI: B-R	In patients with chronic symptomatic HF*r*EF NYHA class II or III who tolerate an ACE inhibitor or ARB, replacement by an ARNI is recommended to further reduce morbidity and mortality (19).

Mechanism of Action (MoA)

ARNI – angiotensin receptor neprilysin inhibitor

Nathisuwan & Talbert. Pharmacotherapy 2002;22:27–42;
Kemp & Conte. Cardiovascular Pathology 2012;365–71

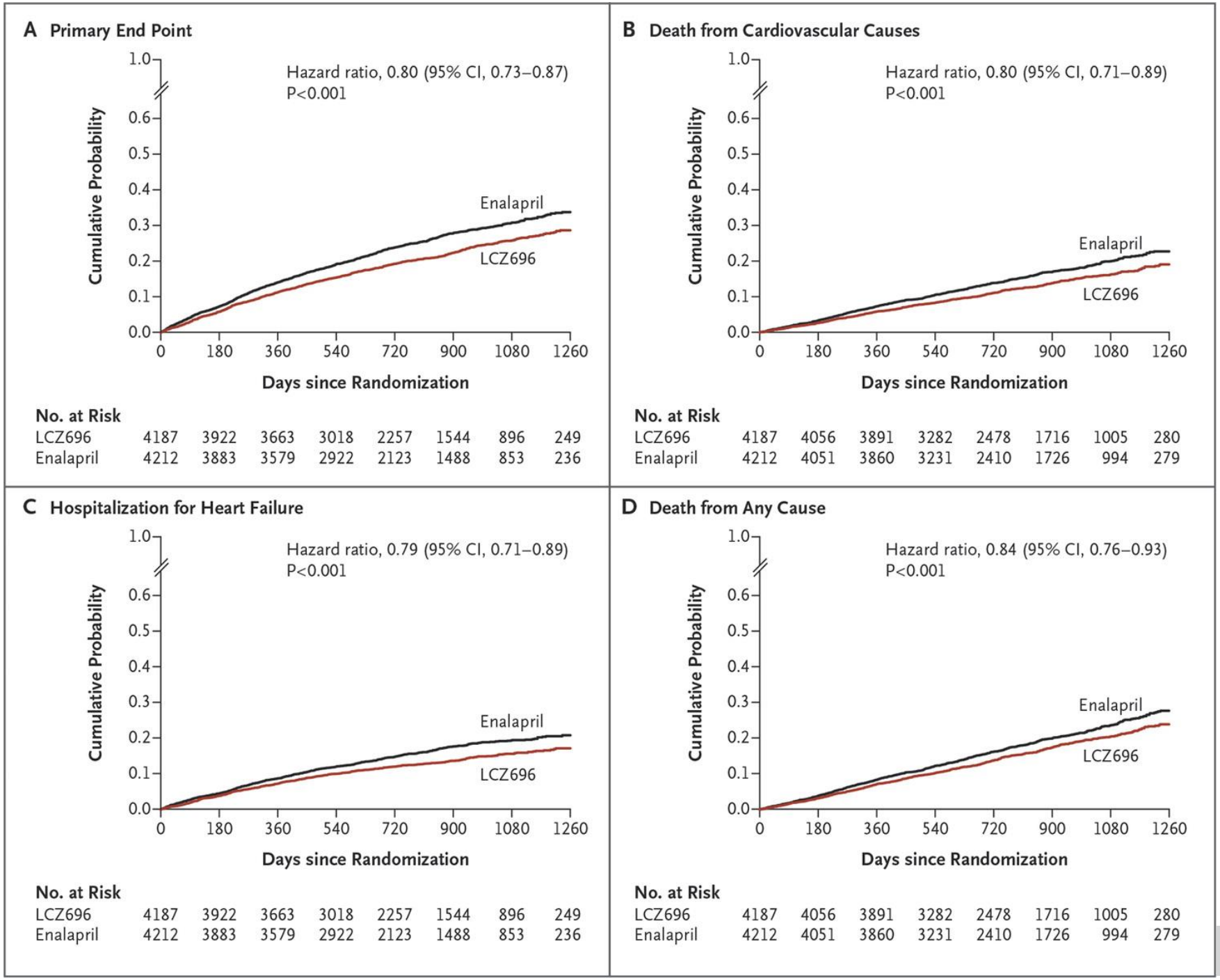


PARADIGM-HF

Prospective comparison of ARNI with ACEI to Determine Impact on Global Mortality and morbidity in Heart Failure

A multi-center, randomized, double-blind, parallel-group, active-controlled study to evaluate the efficacy and safety of ENTRESTO® compared with enalapril on morbidity and mortality in patients with chronic HF and reduced ejection fraction

McMurray et al. New Engl J Med 2014;371:993–1004



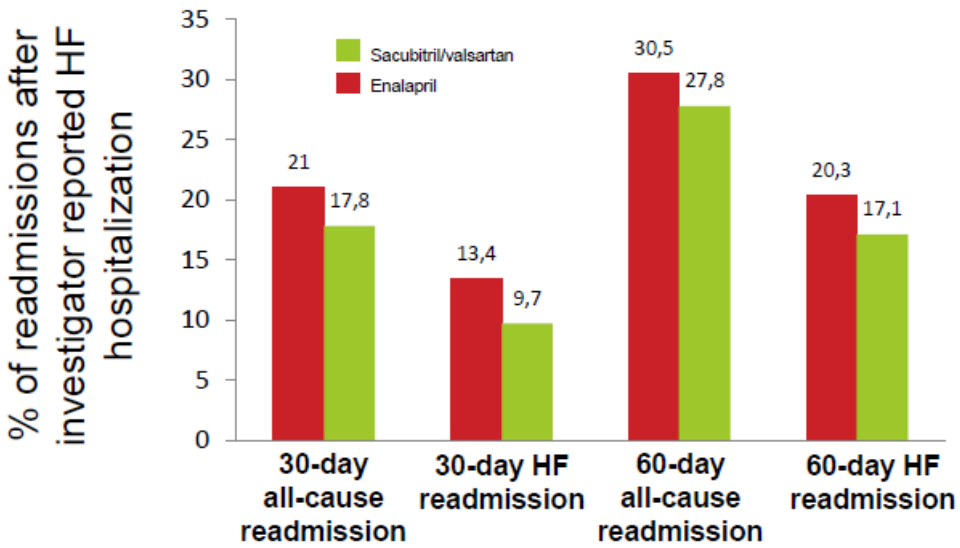
20% reduction in composite endpoint

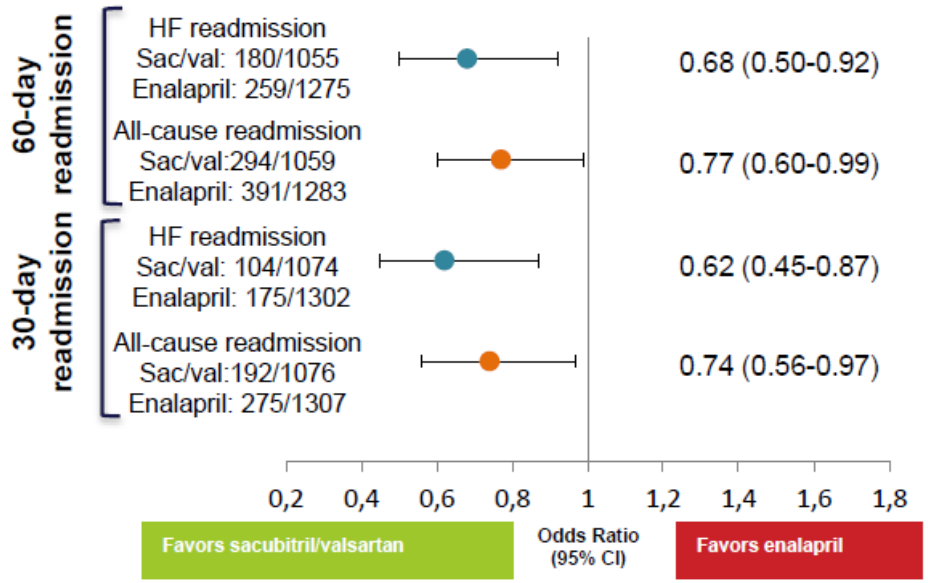
Sig. reductions in CV death, all cause Death and hospitalization for HF

Compared with Enalapril!!

McMurray et al. New Engl J Med 2014;371:993–1004

LCZ 696 significantly reduced the rates of all-cause and HF readmissions compared with enalapril





- readmission for any cause at 30 days (p=0.031)
- readmission for HF at 30 days (p=0.006)
- all-cause (p-0.045) and HF readmission (p=0.01) at 60 days

Desai et al., J Am Coll Cardiol. 2016;68(3):241-8

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Empagliflozin, Cardiovascular Outcomes, and Mortality in Type 2 Diabetes

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ABSTRACT

BACKGROUND

The effects of empagliflozin, an inhibitor of sodium–glucose cotransporter 2, in addition to standard care, on cardiovascular morbidity and mortality in patients with type 2 diabetes at high cardiovascular risk are not known.

METHODS

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2016 ESC Guidelines for the diagnosis and treatment of acute and chronic heart failure

Recommendations to prevent or delay the development of overt heart failure or prevent death before the onset of symptoms

Recommendations	Class[a]	Level[b]	Ref[c]
Treatment of hypertension is recommended to prevent or delay the onset of HF and prolong life.	I	A	126, 129, 150, 151
Treatment with statins is recommended in patients with or at high-risk of CAD whether or not they have LV systolic dysfunction, in order to prevent or delay the onset of HF and prolong life.	I	A	137–140, 152
Counselling and treatment for smoking cessation and alcohol intake reduction is recommended for people who smoke or who consume excess alcohol in order to prevent or delay the onset of HF.	I	C	131–134
Treating other risk factors of HF (e.g. obesity, dysglycaemia) should be considered in order to prevent or delay the onset of HF.	IIa	C	130, 141, 153–155
Empagliflozin should be considered in patients with type 2 diabetes in order to prevent or delay the onset of HF and prolong life.	IIa	B	130

Heart failure outcomes and all-cause hospitalization

Outcome	Placebo (N=2333)		Empagliflozin (N=4687)		HR (95% CI)	p-value
	n (%)	Rate/1000 pt-years	n (%)	Rate/1000 pt-years		
Heart failure hospitalisation or CV death	198 (8.5)	30.1	265 (5.7)	19.7	0.66 (0.55–0.79)	<0.001
Hospitalisation for or death from heart failure	104 (4.5)	15.8	129 (2.8)	9.6	0.61 (0.47–0.79)	<0.001
Hospitalisation for heart failure	95 (4.1)	14.5	126 (2.7)	9.4	0.65 (0.50–0.85)	0.002
Investigator-reported heart failure*	143 (6.1)	22.0	204 (4.4)	15.3	0.70 (0.56–0.87)	0.001
Investigator-reported serious heart failure*†	136 (5.8)	20.9	192 (4.1)	14.4	0.69 (0.55–0.86)	0.001
All-cause hospitalisation	925 (39.6)	183.3	1725 (36.8)	161.9	0.89 (0.82–0.96)	0.003

Patients treated with at least one dose of study drug.
CI, confidence interval; HR, hazard ratio; MedDRA, Medical Dictionary for Regulatory Activities.
*Based on narrow standardised MedDRA query "cardiac failure".
†Adverse events reported as serious adverse events by investigator.

EMPA-REG OUTCOME®

2016 ACC/AHA/HFSA Focused Update on New Pharmacological Therapy for Heart Failure: An Update of the 2013 ACCF/AHA Guideline for the Management of Heart Failure

A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines and the Heart Failure Society of America

Developed in Collaboration With the International Society for Heart and Lung Transplantation

Recommendation for Ivabradine		
COR	LOE	Recommendation
IIa	B-R	Ivabradine can be beneficial to reduce HF hospitalization for patients with symptomatic (NYHA class II-III) stable chronic HF*r*EF (LVEF ≤35%) who are receiving GDEM, including a beta blocker at maximum tolerated dose, and who are in sinus rhythm with a heart rate of 70 bpm or greater at rest (37-40).

2016 ESC Guidelines for the diagnosis and treatment of acute and chronic heart failure

Other pharmacological treatments recommended in selected patients with symptomatic (NYHA Class II-IV) failure with reduced ejection fraction

Recommendations	Class [a]	Level [b]
Diuretics		
Diuretics are recommended in order to improve symptoms and exercise capacity in patients with signs and/or symptoms of congestion.	I	B
Diuretics should be considered to reduce the risk of HF hospitalization in patients with signs and/or symptoms of congestion.	IIa	B
Angiotensin receptor neprilysin inhibitor		
Sacubitril/valsartan is recommended as a replacement for an ACE-I to further reduce the risk of HF hospitalization and death in ambulatory patients with HFrEF who remain symptomatic despite optimal treatment with an ACE-I, a beta-blocker and an MRA[d]	I	B
I*f*-channel inhibitor		
Ivabradine should be considered to reduce the risk of HF hospitalization and cardiovascular death in symptomatic patients with LVEF ≤35%, in sinus rhythm and a resting heart rate ≥70 bpm despite treatment with an evidence-based dose of beta-blocker (or maximum tolerated dose below that), ACE-I (or ARB), and an MRA (or ARB).	IIa	B
Ivabradine should be considered to reduce the risk of HF hospitalization and cardiovascular death in symptomatic patients with LVEF ≤35%, in sinus rhythm and a resting heart rate ≥70 bpm who are unable to tolerate or have contra-indications for a beta-blocker. Patients should also receive an ACE-I (or ARB) and an MRA (or ARB).	IIa	C
ARB		
An ARB is recommended to reduce the risk of HF hospitalization and cardiovascular death in symptomatic patients unable to tolerate an ACE-I (patients should also receive a beta-blocker and an MRA).	I	B
An ARB may be considered to reduce the risk of HF hospitalization and death in patients who are symptomatic despite treatment with a beta-blocker who are unable to tolerate an MRA.	IIb	C

Systolic Heart failure treatment with the I_f inhibitor ivabradine Trial

Main results

Swedberg K, et al. *Lancet*. 2010;376(9744):875-885

Effect of Ivabradine on outcomes

Endpoints	Hazard ratio	95% CI	p value
Primary composite endpoint (CV death or hospital admission for worsening HF)	**0.82**	[0.75;0.90]	**p<0.0001**
All-cause mortality	**0.90**	[0.80;1.02]	**p=0.092**
Death from heart failure	**0.74**	[0.58;0.94]	**p=0.014**
All-cause hospital admission	**0.89**	[0.82;0.96]	**p=0.003**
Any CV hospital admission	**0.85**	[0.78;0.92]	**p=0.0002**
CV death/hospital admission for HF or non-fatal MI	**0.82**	[0.74;0.89]	**p<0.0001**

2010;376(9744):875-885

Conclusion

Ivabradine significantly reduces major risks associated with heart failure:

- 18% reduction in CV death or hospital admission for worsening HF
- 26% reduction in death from heart failure
- 26% reduction in hospital admission for worsening heart failure

Benefits are apparent early, are consistent in predefined subgroups, and have been demonstrated on top of recommended therapy

Treatment is well tolerated

FOLLOWING UP HEART FAILURE

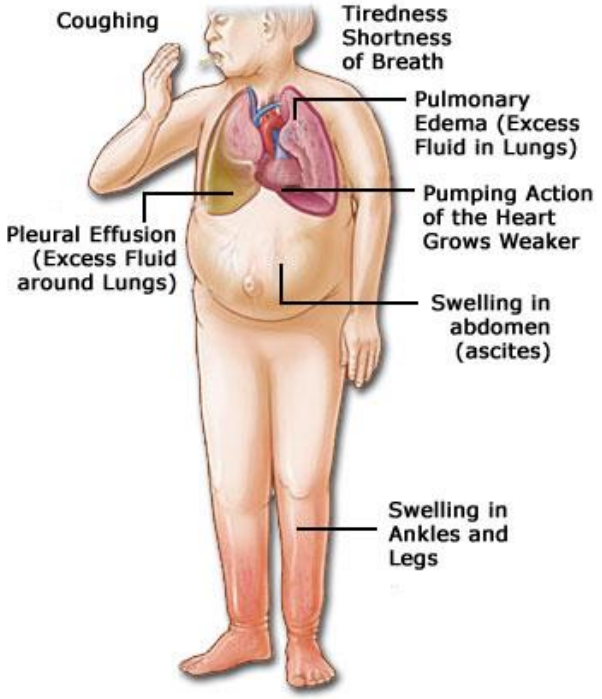
THE HARLEY STREET
HEART & CANCER CENTRE

Clinical Events and Findings Useful for Identifying Patients With Advanced HF

Repeated (≥2) hospitalizations or ED visits for HF in the past year
Progressive deterioration in renal function (e.g., rise in BUN and creatinine).
Weight loss without other cause (e.g., cardiac cachexia).
Intolerance to ACE inhibitors due to hypotension and/or worsening renal function.
Intolerance to beta blockers due to worsening HF or hypotension.
Frequent systolic blood pressure <90 mm Hg.
Persistent dyspnea with dressing or bathing requiring rest.
Inability to walk 1 block on the level ground due to dyspnea or fatigue
Recent need to escalate diuretics to maintain volume status, often reaching daily furosemide equivalent dose >160 mg/d and/or use of supplemental metolazone therapy.
Progressive decline in serum sodium, usually to <133 mEq/L.
Frequent ICD shocks.

Adapted from Russell et al. Congest Heart Fail. 2008;14:316-21.

What to assess at each visit



- Functional ability (ADL)
- Volume status and weight
- Use of alcohol, tobacco, illicit drugs, alternative Rx
- Any new drugs or cardiotoxic drugs
- Dietary/Sodium intake
- Physical activity level

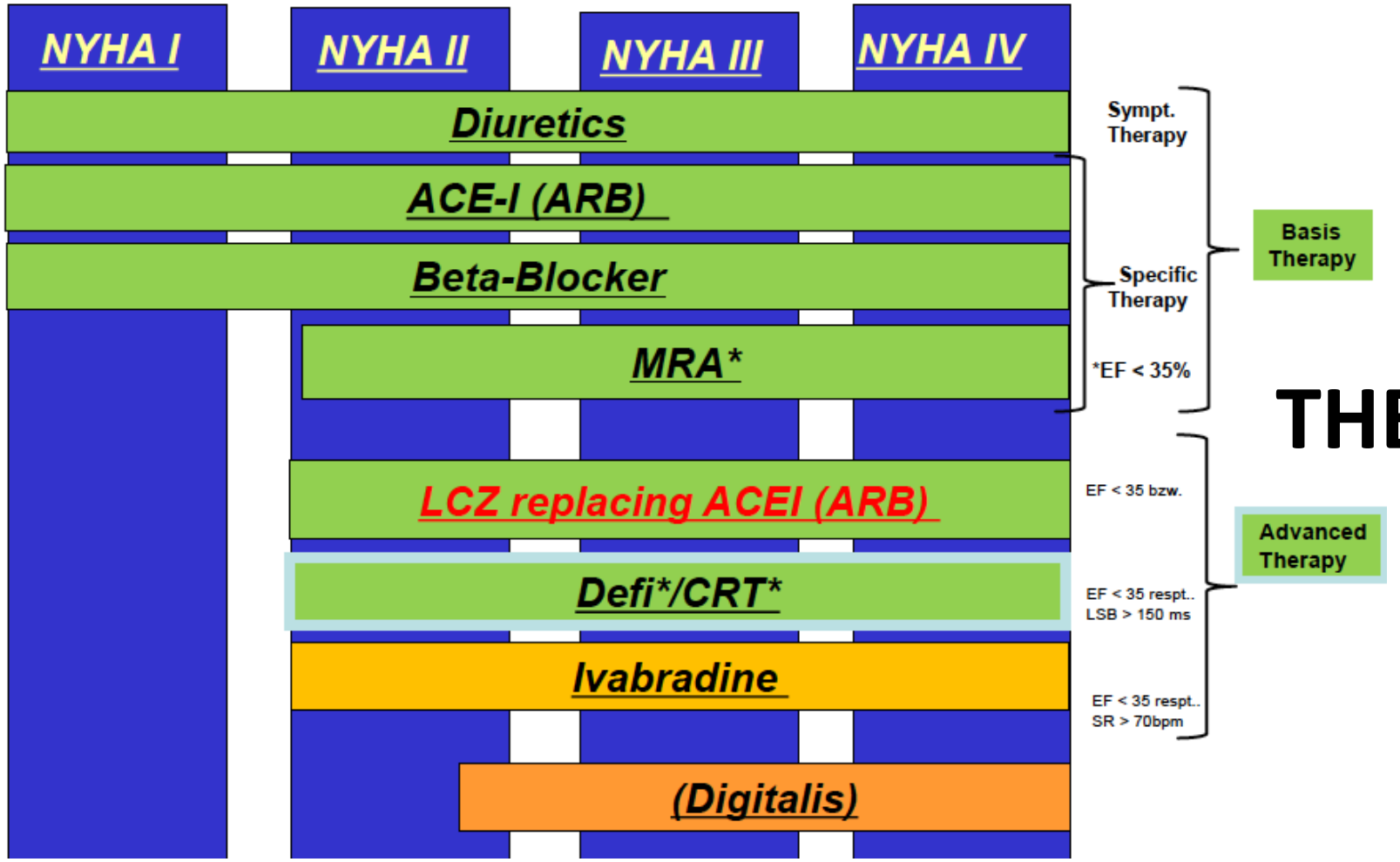
- Any change in clinical status -
  - New Symptoms or findings (e.g. AF, arrhythmias, LBBB, angina, SOBOE)
  - Recent new clinical event or change in treatment
  - Consider a follow-up echocardiogram to assess left ventricular ejection fraction and structural remodelling

Drugs to take precautions

- NSAIDS, including COX2 inhibitors
- Non-dihydropyridine CCBs
- Some antiarrhythmic – flecainide, dronedarone
- TCA – may prolong QT and cause arrhythmias
- Thiazolidinediones (TZDs) – fluid retention
- Corticosteroids
- Oncology drugs
- Note: Over the counter medications may also worsen CHF, decongestants, cough mixture, constipation meds.

- Appropriate preventative care includes pneumococcal vaccination and annual influenza vaccination.

Basis – CHF Therapy 2017



Preventive measures focusing on risk factors

Identify early, appropriate use of medications and aggressive lifestyle modification (at times with help of structured lifestyle intervention programs)

THE END

THE HARLEY STREET HEART & CANCER CENTRE