Nouveautés et Innovations dans l'insuffisance cardiaque

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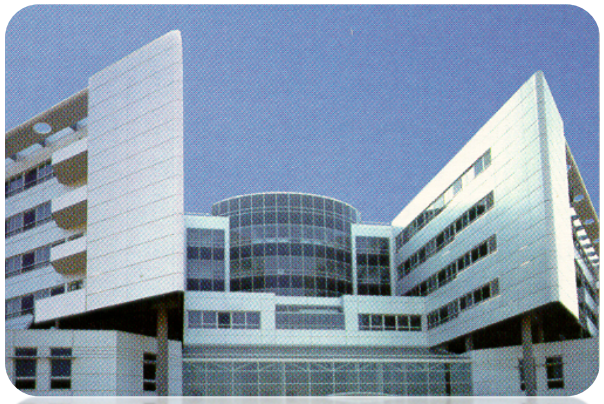

European Heart Journal
doi:10.1093/eurheartj/ehw128

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

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Classification

Type of HF		HFrEF	HFpEF
CRITERIA	1	Symptoms ± Signs[a]	Symptoms ± Signs[a]
	2	LVEF <40%	LVEF ≥50%
	3	–	1- ↑ BNP / NT-proBNP 2- au moins un critère suivant - Anomalie structurale (HVG, ↑OG) - Anomalie diastolique

HFmrEF
Symptoms ± Signs[a]
LVEF 40–49%
1- ↑ BNP / NT-proBNP 2- au moins un critère suivant - Anomalie structurale (HVG, ↑OG) - Anomalie diastolique

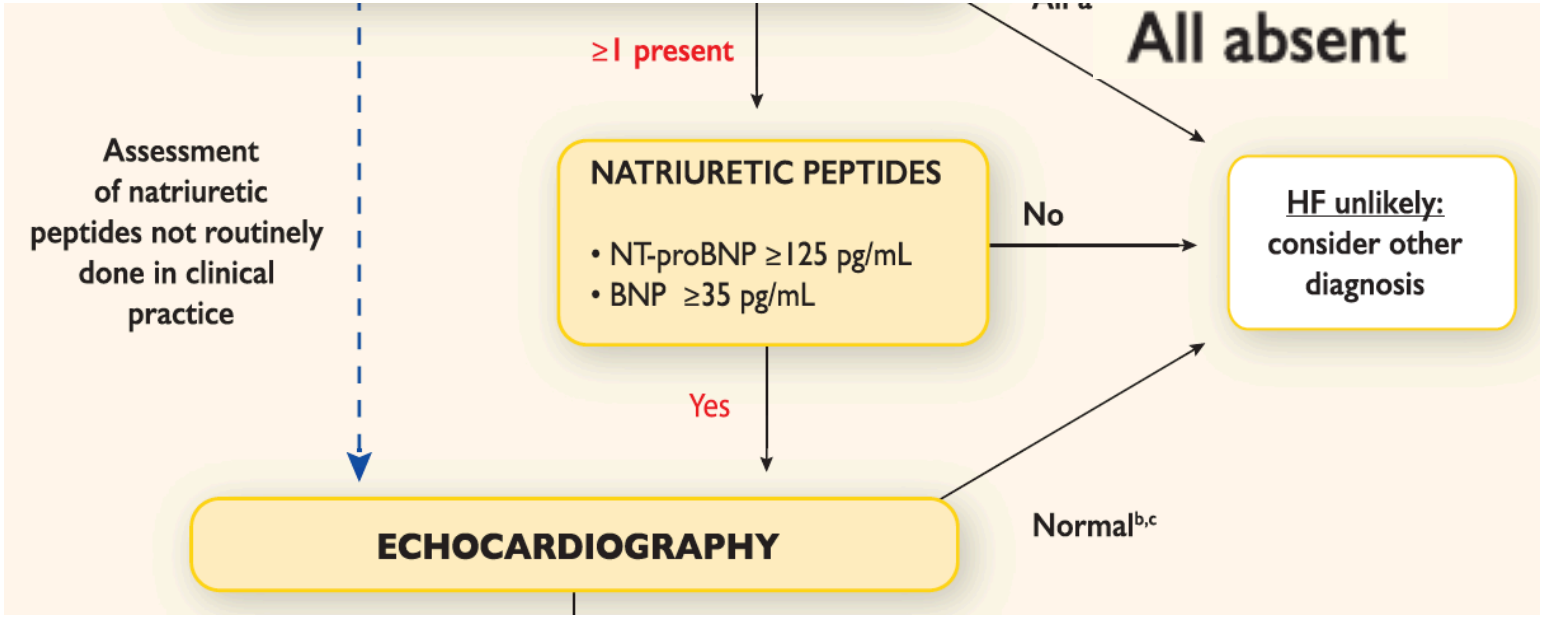
PATIENT WITH SUSPECTED HF[a]
(non-acute onset)

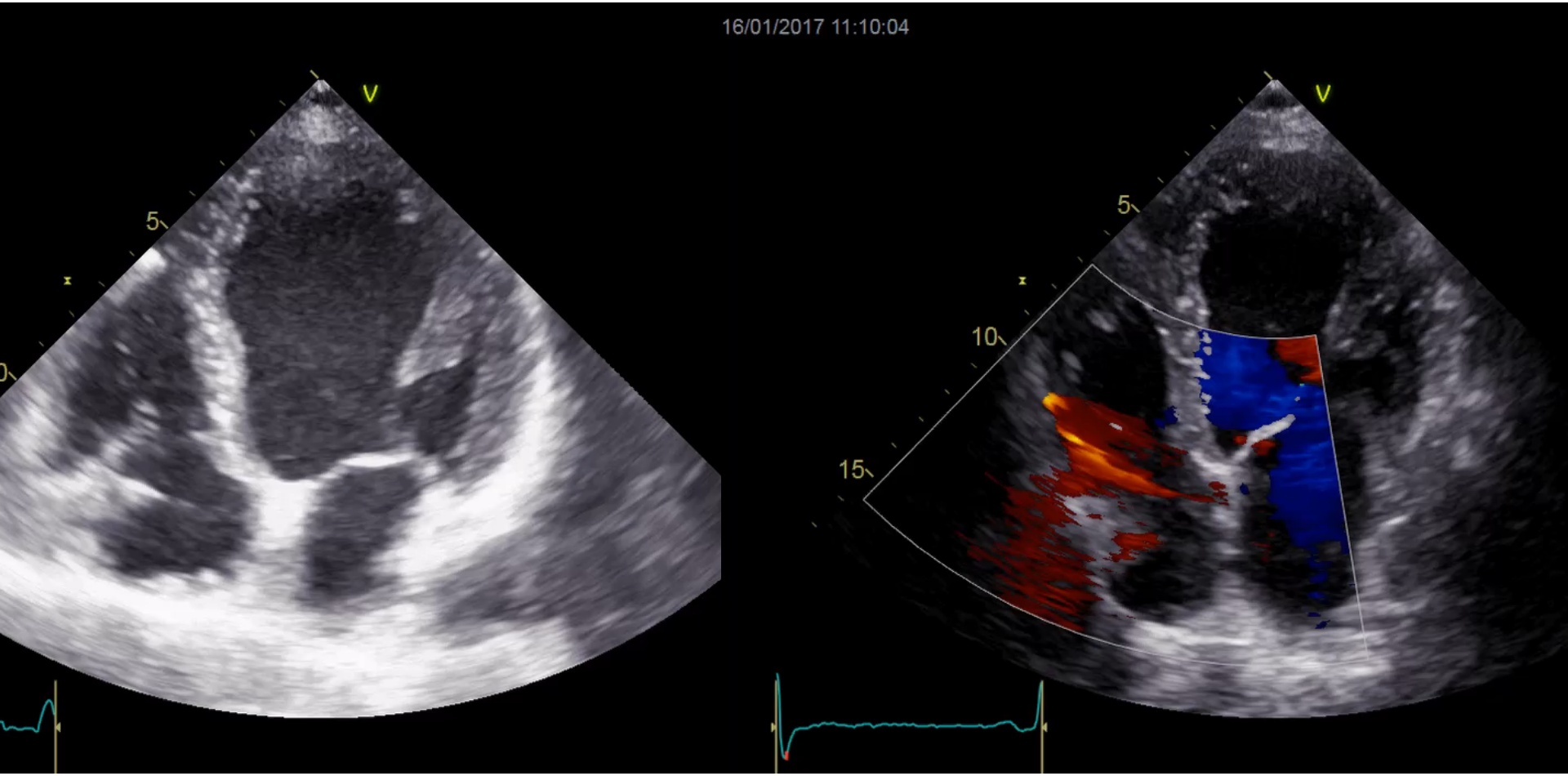
ASSESSMENT OF HF PROBABILITY

1. Clinical history:
History of CAD (MI, revascularization)
History of arterial hypertension
Exposition to cardiotoxic drug/radiation
Use of diuretics
Orthopnoea / paroxysmal nocturnal dyspnoea

2. Physical examination:
Rales
Bilateral ankle oedema
Heart murmur
Jugular venous dilatation
Laterally displaced/broadened apical beat

3. ECG:
Any abnormality

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V
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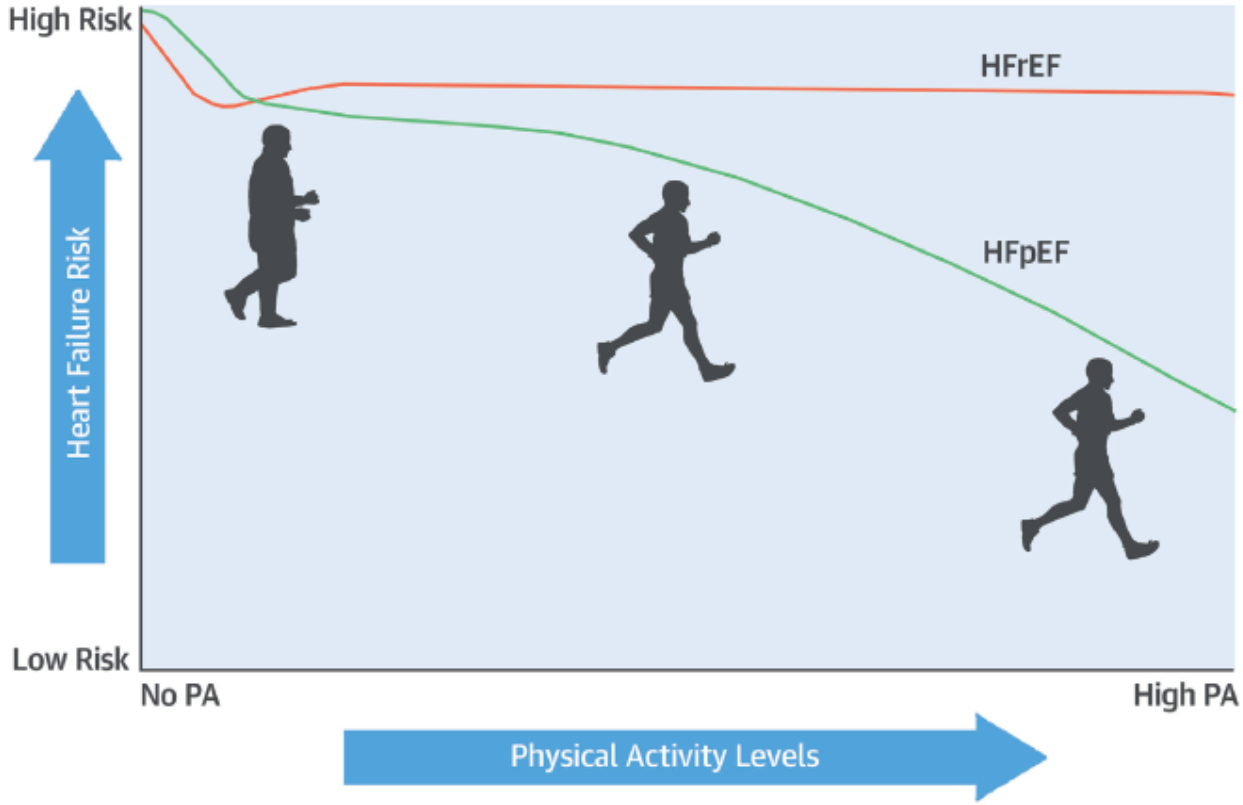
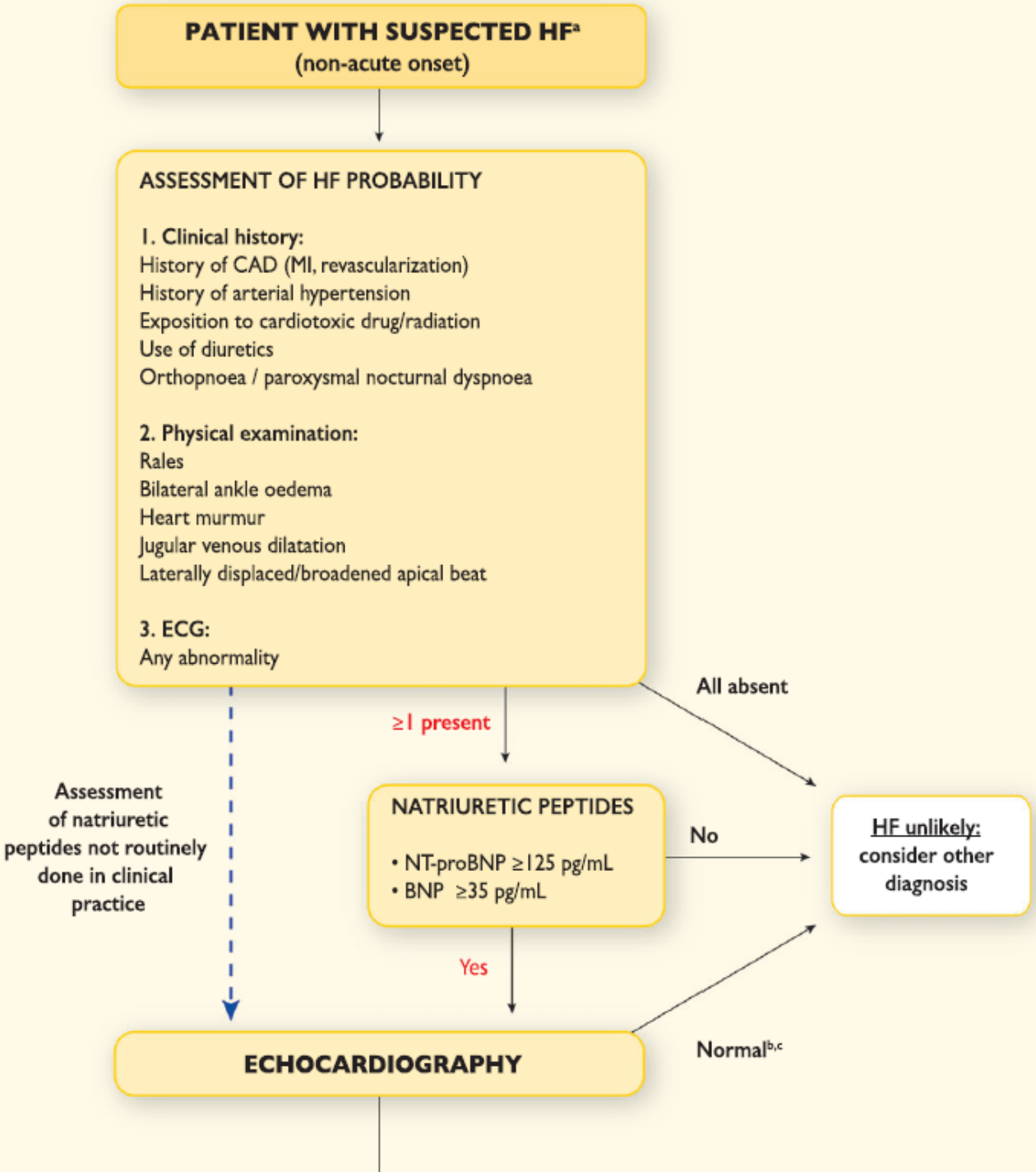
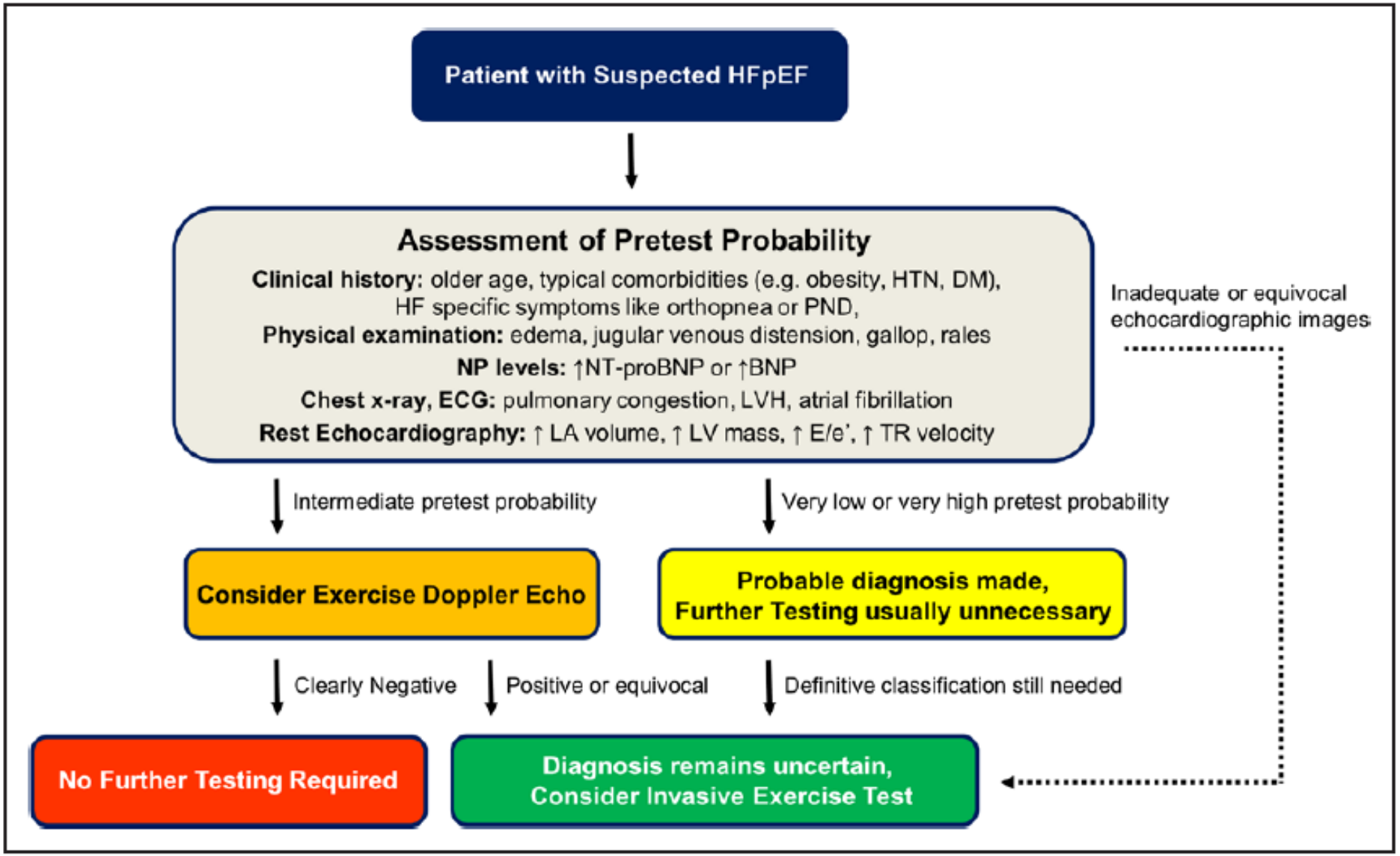
CENTRAL ILLUSTRATION Association Between Increasing Levels of Leisure-Time Physical Activity and Risk of Different Heart Failure Phenotypes



	Guideline Recommended Minimum PA	2 x Guideline Recommended Minimum PA	3 x Guideline Recommended Minimum PA
Brisk Walking ~3.35 METs	150 minutes per week	300 minutes per week	450 minutes per week
Jogging/Running ~6.5-7 METs	75 minutes per week	150 minutes per week	225 minutes per week

Pandey, A. et al. J Am Coll Cardiol. 2017;69(9):1129–42.


PATIENT WITH SUSPECTED HF[a]
(non-acute onset)
ASSESSMENT OF HF PROBABILITY
1. Clinical history:
History of CAD (MI, revascularization)
History of arterial hypertension
Exposition to cardiotoxic drug/radiation
Use of diuretics
Orthopnoea / paroxysmal nocturnal dyspnoea
2. Physical examination:
Rales
Bilateral ankle oedema
Heart murmur
Jugular venous dilatation
Laterally displaced/broadened apical beat
3. ECG:
Any abnormality
All absent
≥1 present
Assessment of natriuretic peptides not routinely done in clinical practice
NATRIURETIC PEPTIDES
• NT-proBNP ≥125 pg/mL
• BNP ≥35 pg/mL
No
HF unlikely: consider other diagnosis
Yes
ECHOCARDIOGRAPHY
Normal[b,c]



ORIGINAL RESEARCH ARTICLE

Role of Diastolic Stress Testing in the Evaluation for Heart Failure With Preserved Ejection Fraction

A Simultaneous Invasive-Echocardiographic Study

Masaru Obokata, MD, PhD
Garvan C. Kane, MD, PhD
Yogesh N. V. Reddy, MD
Thomas P. Olson, PhD
Vojtech Melenovsky, MD, PhD
Barry A. Borlaug, MD

Circulation 2017; 135(9): 825

Diagnosis of HFpEF/HFmrEF

Signs (± symptoms) of HF

+

HFpEF: EF≥50%
HFmrEF: EF 40-49%

+

Structural abnormalities

LAVI
>34ml/m^2

LVMI
>115g/m^2 (m)
>95 g/m^2 (f)

Functional abnormalities

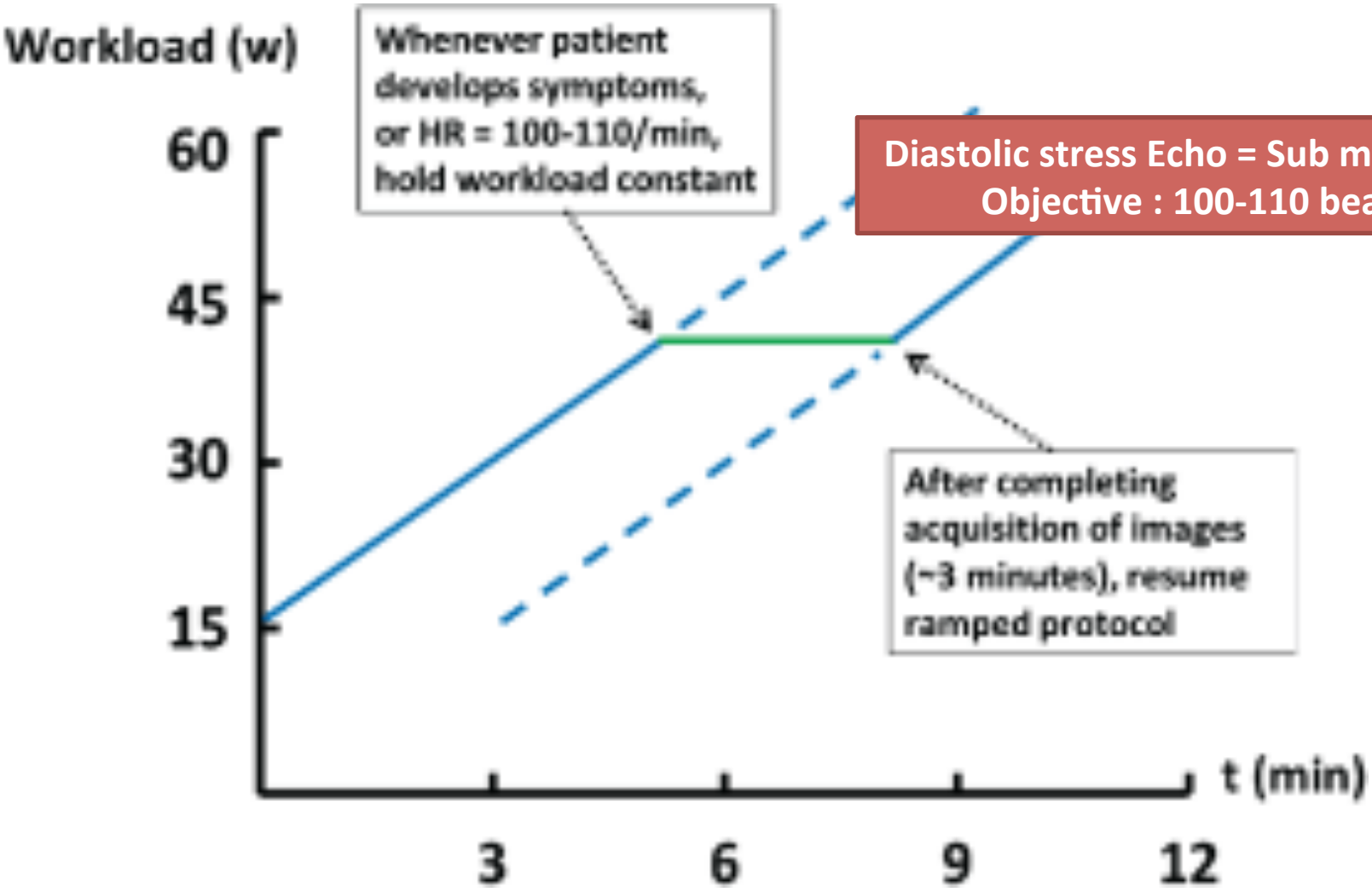
E/e'$_{avg}$ ≥ 13

e' average (lateral-septal) < 9 cm/s

- Limited data (Unmet Need!)
- Cut-offs arbitrary
- More criteria; greater certainty of diagnosis
- Diastolic stress test?
- Invasive hemodynamic measurements?

www.escardio.org/guidelines

A systematic review of diastolic stress tests in heart failure with preserved ejection fraction, with proposals from the EU-FP7 MEDIA study group



European Journal of Heart Failure 2014; 16: 1345.

« Diastolic stress test »

- Non invasif = ECHO
  - E/e’ > 13
  - Vitesse de l’IT
- Invasif = KT droit
  - Repos: PCAP > 15 mmHg / PTDVG > 16 mmHg
  - Effort ?

Imagerie

ECHO

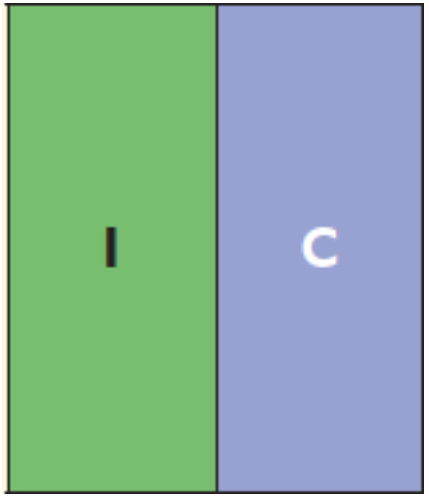
TTE is recommended for the assessment of myocardial structure and function in subjects with suspected HF in order to establish a diagnosis of either HFrEF, HFmrEF or HFpEF.	I	C
TTE is recommended to assess LVEF in order to identify patients with HF who would be suitable for evidence-based pharmacological and device (ICD, CRT) treatment recommended for HFrEF.	I	C
TTE is recommended for the assessment of valve disease, right ventricular function and pulmonary arterial pressure in patients with an already established diagnosis of either HFrEF, HFmrEF or HFpEF in order to identify those suitable for correction of valve disease.	I	C
TTE is recommended for the assessment of myocardial structure and function in subjects to be exposed to treatment which potentially can damage myocardium (e.g. chemotherapy).	I	C

IRM

CMR is recommended for the assessment of myocardial structure and function (including right heart) in subjects with poor acoustic window and patients with complex congenital heart diseases (taking account of cautions/contra-indications to CMR).	I	C
CMR is recommended for the characterization of myocardial tissue in case of suspected myocarditis, amyloidosis, sarcoidosis, Chagas disease, Fabry disease non-compaction cardiomyopathy, and haemochromatosis (taking account of cautions/contra-indications to CMR).	I	C
Reassessment of myocardial structure and function is recommended using non-invasive imaging: - in patients presenting with worsening HF symptoms (including episodes of AHF) or experiencing any other important cardiovascular event; - in patients with HF who have received evidence-based pharmacotherapy in maximal tolerated doses, before the decision on device implantation (ICD, CRT); - in patients exposed to therapies which may damage the myocardium (e.g. chemotherapy) (serial assessments).	I	C

Tests biologiques

- haemoglobin and WBC
- sodium, potassium, urea, creatinine (with estimated GFR)
- liver function tests (bilirubin, AST, ALT, GGTP)
- glucose, HbA1c
- lipid profile
- TSH
- ferritin, TSAT = TIBC



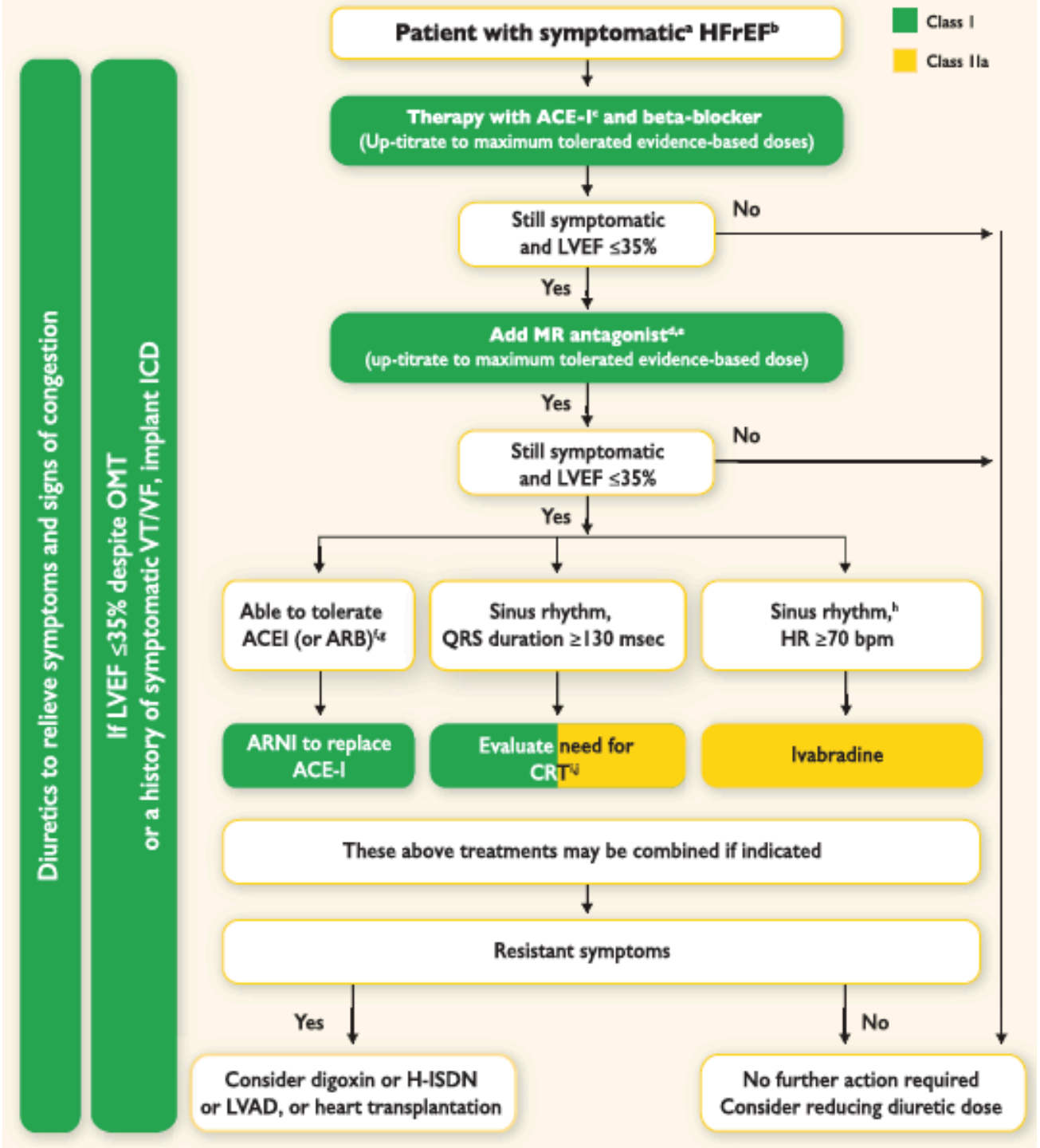
Others

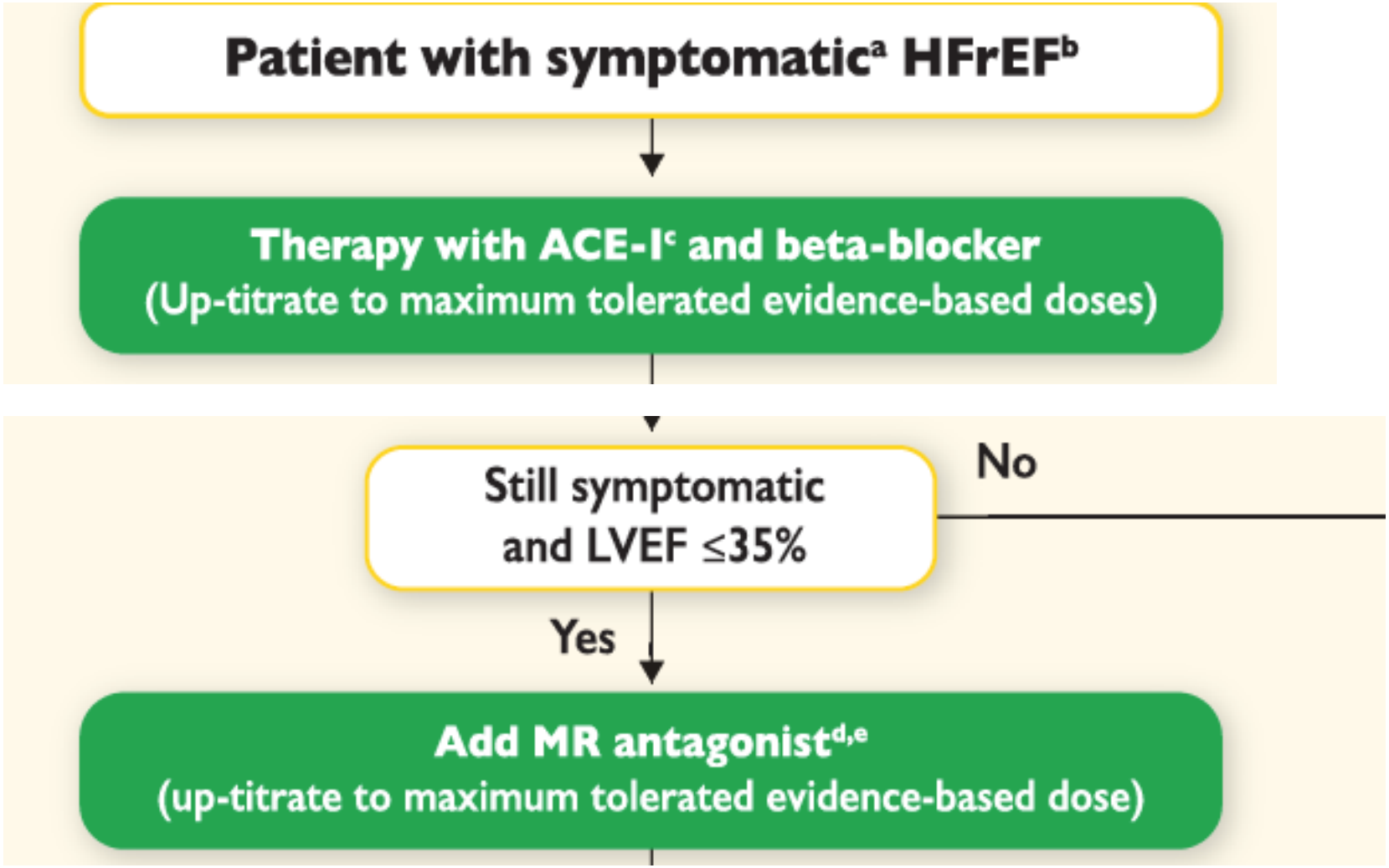
ECG A 12-lead ECG is recommended in all patients with HF in order to determine heart rhythm, heart rate, QRS morphology, and QRS duration, and to detect other relevant abnormalities. This information is needed to plan and monitor treatment.	I	C
Exercise testing in patients with HF: **VO2** - is recommended as a part of the evaluation for heart transplantation and/or mechanical circulatory support (cardiopulmonary exercise testing);	I	C
- should be considered to optimize prescription of exercise training (preferably cardiopulmonary exercise testing);	IIa	C
- should be considered to identify the cause of unexplained dyspnoea (cardiopulmonary exercise testing).	IIa	C
Radio Thorax Chest radiography (X-ray) is recommended in patients with HF to detect/exclude alternative pulmonary or other diseases, which may contribute to dyspnoea. It may also identify pulmonary congestion/oedema and is more useful in patients with suspected HF in the acute setting.	I	C
Right heart catheterization with a pulmonary artery catheter: **KT droit** - is recommended in patients with severe HF being evaluated for heart transplantation or mechanical circulatory support;	I	C
- should be considered in patients with probable pulmonary hypertension assessed by echocardiography in order to confirm pulmonary hypertension and its reversibility before the correction of valve/structural heart disease;	IIa	C
- may be considered in order to adjust therapy in patients with HF who remain severely symptomatic despite initial standard therapies and whose haemodynamic status is unclear.	IIb	C
Thoracic ultrasound may be considered for the confirmation of pulmonary congestion and pleural effusion in patients with AHF.	IIb	C
Ultrasound measurement of inferior vena cava diameter may be considered for the assessment of volaemia status in patients with HF.	IIb	C

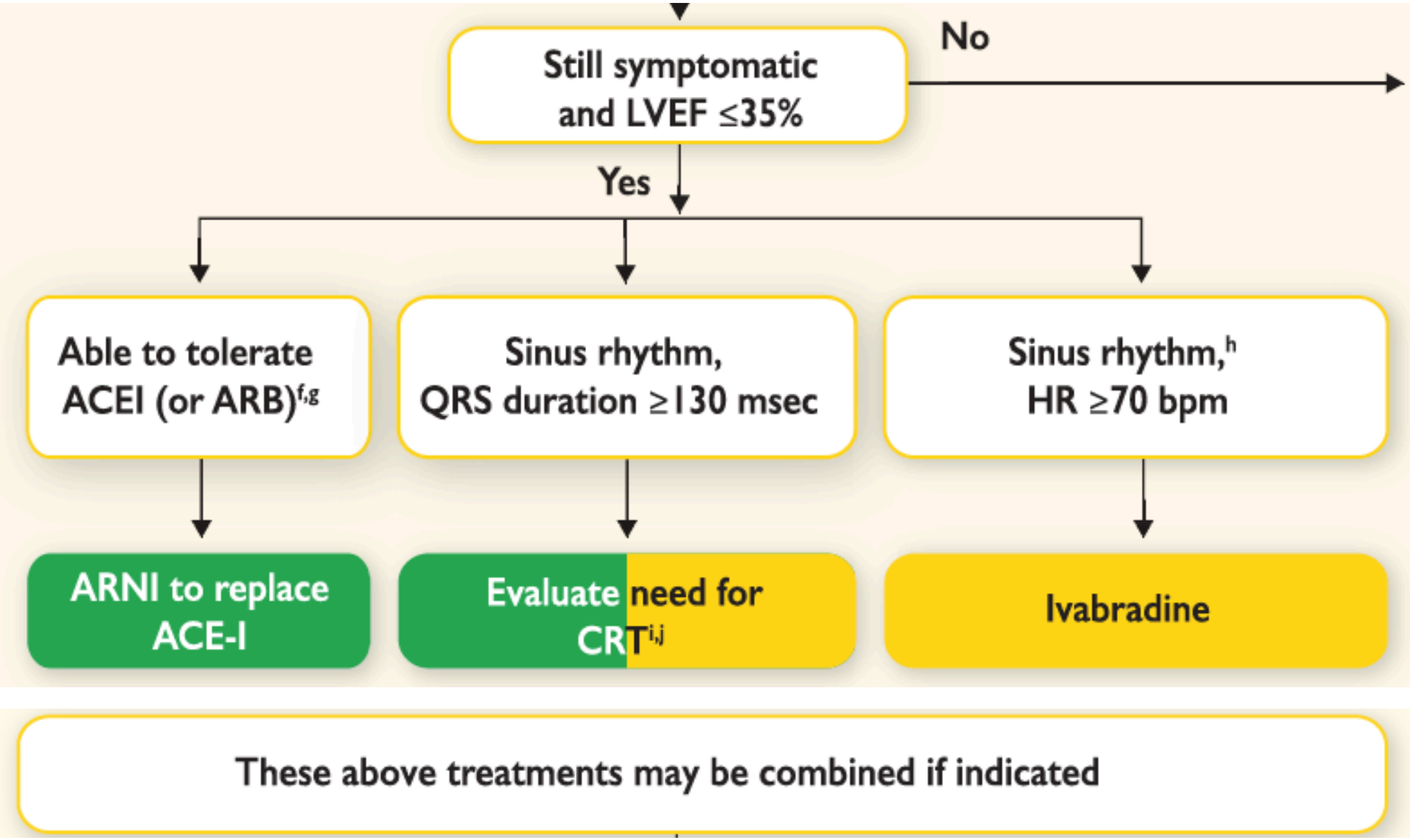
Traitement pharmacologique de l'IC à FE réduite

Traitement pharmacologique de l'IC à FEVG diminuée

An ACE-I[d] 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 ACE-I[d], 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 ACE-I[d] and a beta-blocker, to reduce the risk of HF hospitalization and death.	I	A


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

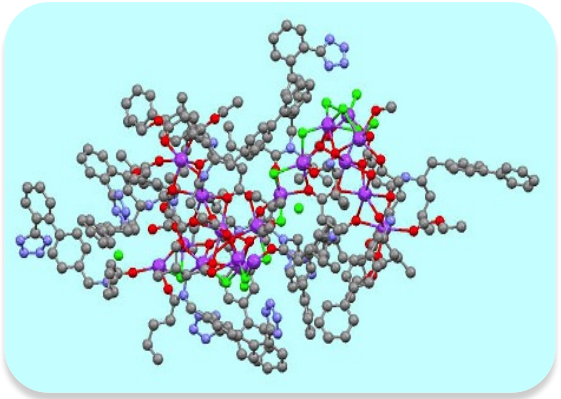

Patient with symptomatic[a] HFrEF[b]
Therapy with ACE-I[c] and beta-blocker
(Up-titrate to maximum tolerated evidence-based doses)
Still symptomatic
and LVEF ≤35%
No
Yes
Add MR antagonist[d,e]
(up-titrate to maximum tolerated evidence-based dose)

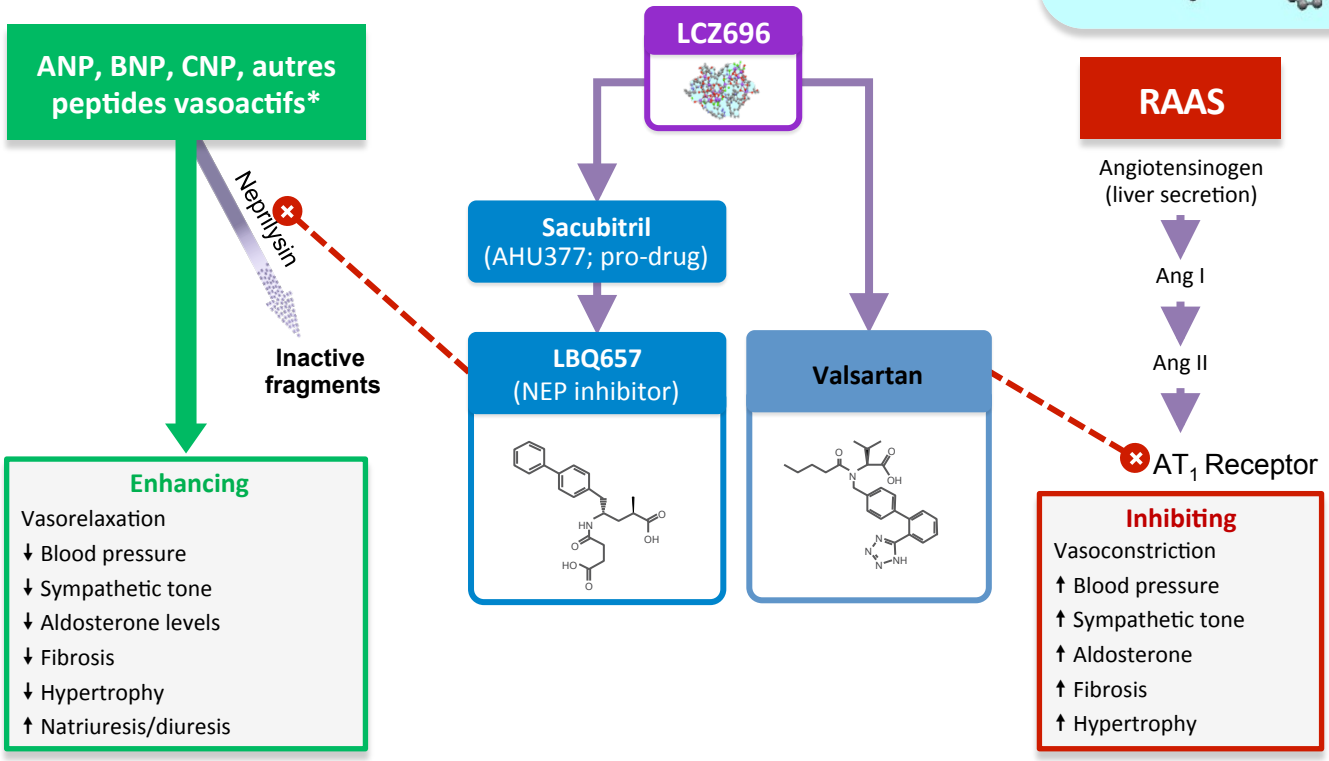

Still symptomatic and LVEF ≤35%
No
Yes
Able to tolerate ACEI (or ARB)[f,g]
Sinus rhythm, QRS duration ≥130 msec
Sinus rhythm,[h] HR ≥70 bpm
ARNI to replace ACE-I
Evaluate need for CRT[i,j]
Ivabradine
These above treatments may be combined if indicated

PARADIGM-HF

- **âge ≥18 ans**
- symptômes **NYHA de classe II, III ou IV**
- **fraction d'éjection systolique ≤40%** (valeur modifiée en " ≤35%" par amendement au protocole)
- taux plasmatique de BNP ≥150pg/ml (ou NT-proBNP ≥600pg/ml) OU taux de BNP ≥100pg/ml (ou NT-proBNP ≥400pg/ml), si hospitalisation pour insuffisance cardiaque au cours des 12 derniers mois
- **patients préalablement traités par IEC ou ARAII** quelle que soit la dose sous réserve d'une prise d'une dose stable d'un ß-bloquant et d'un IEC (ou d'un ARAII) équivalente à ≥10mg d'énalapril/jour pendant les 4 semaines précédant la sélection

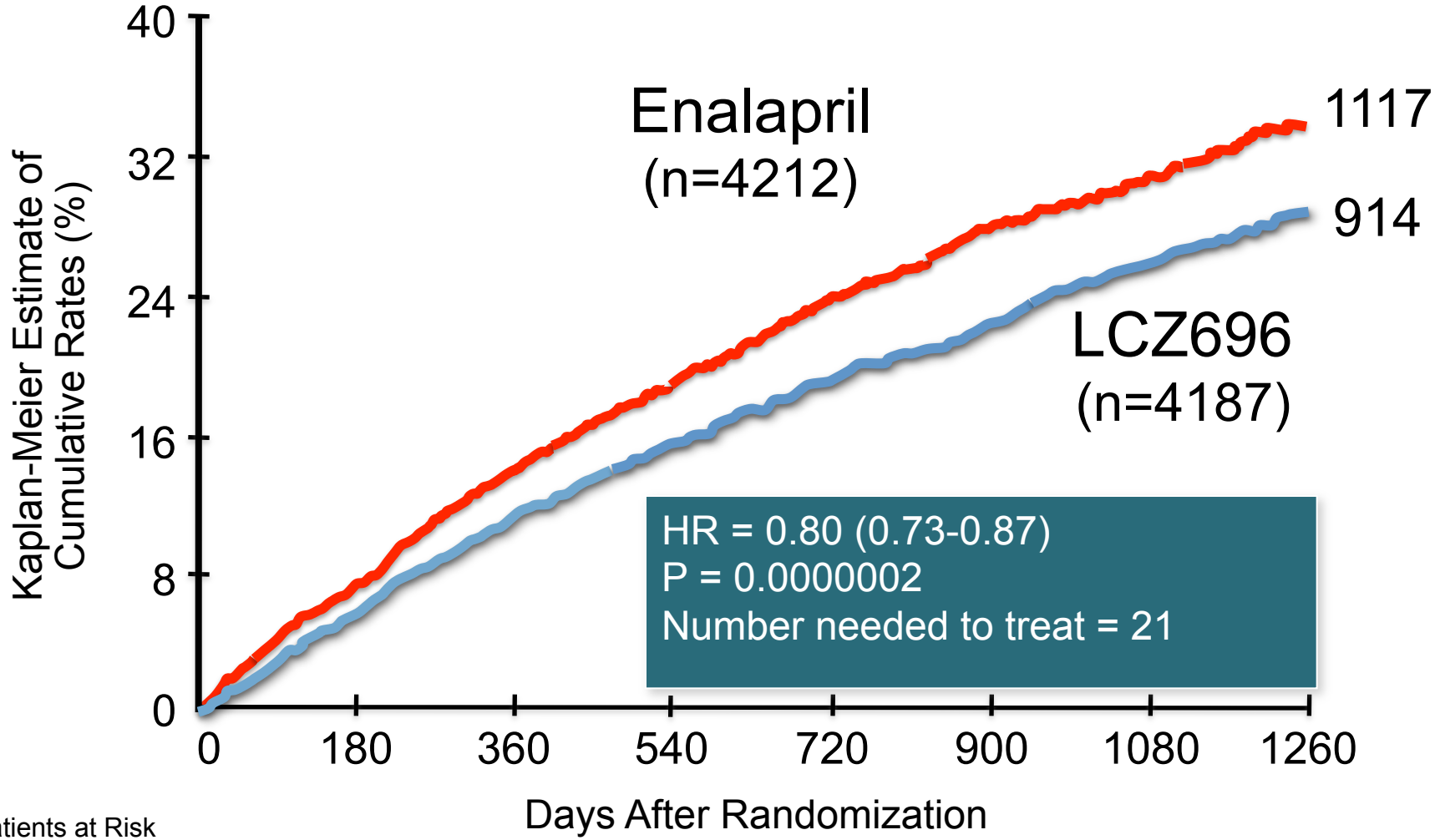
LCZ696: ENTRESTO





Vardeny: Nature Clin Pharmacol Therap 2013;94:445

PARADIGM-HF: Cardiovascular Death or Heart Failure Hospitalization (Primary Endpoint)



Patients at Risk

LCZ696	4187	3922	3663	3018	2257	1544	896	249
Enalapril	4212	3883	3579	2922	2123	1488	853	236

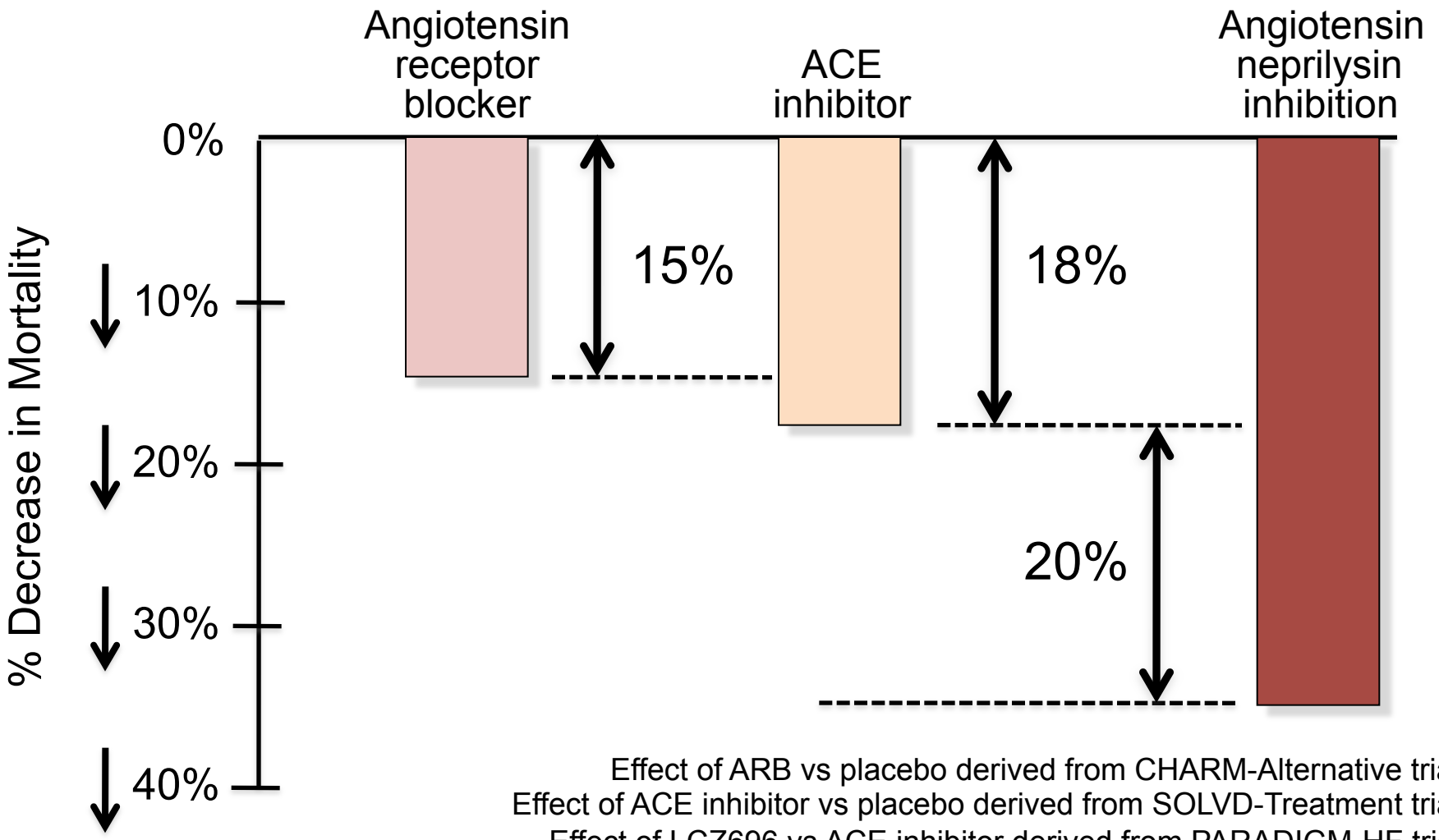
PARADIGM-HF: Effect of LCZ696 vs Enalapril on Primary Endpoint and Its Components

	LCZ696 (n=4187)	Enalapril (n=4212)	Hazard Ratio (95% CI)	P Value
Primary endpoint	914 (21.8%)	1117 (26.5%)	0.80 (0.73-0.87)	0.0000002
Cardiovascular death	558 (13.3%)	693 (16.5%)	0.80 (0.71-0.89)	0.00004
Hospitalization for heart failure	537 (12.8%)	658 (15.6%)	0.79 (0.71- 0.89)	0.00004

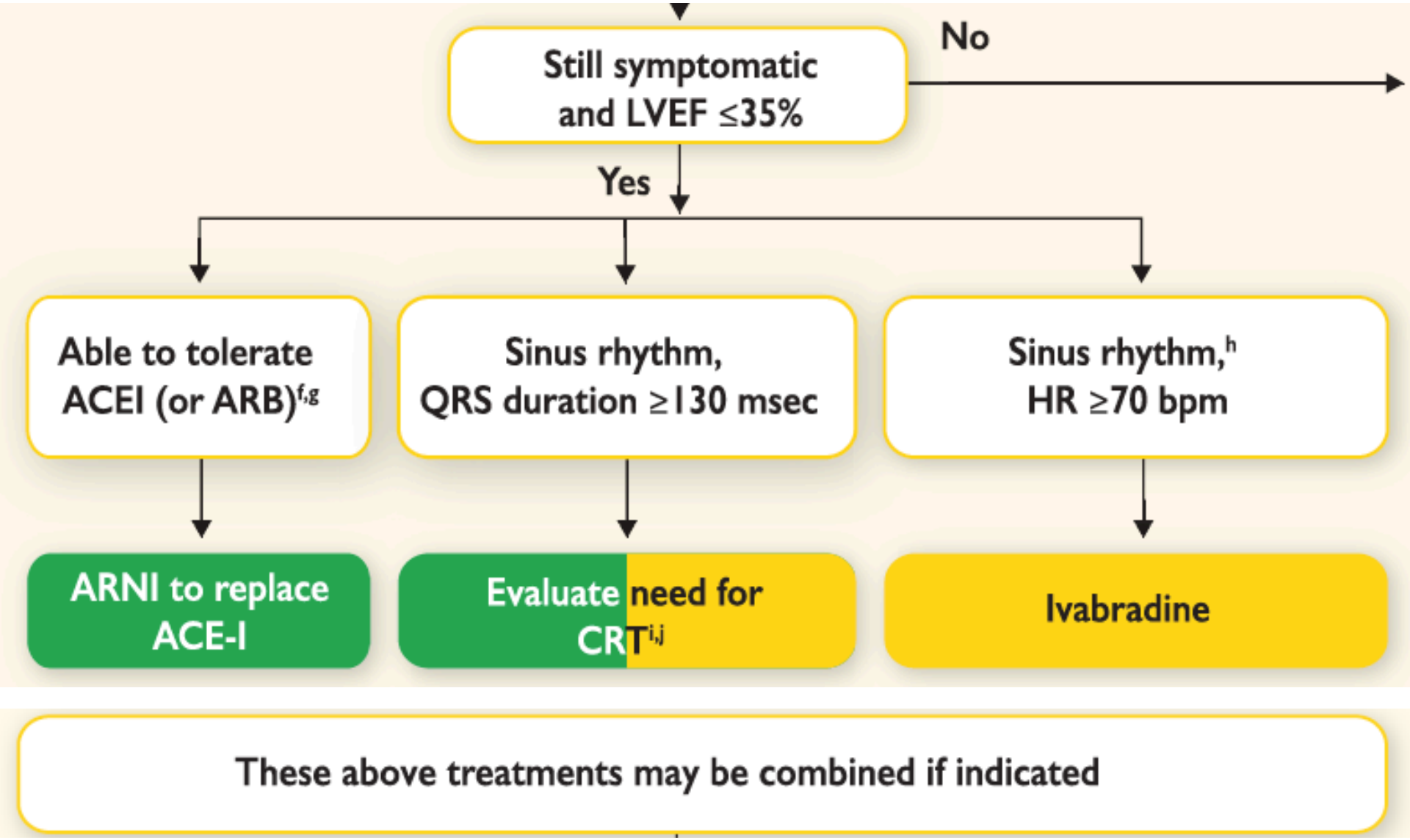
PARADIGM-HF: Adverse Events

	LCZ696 (n=4187)	Enalapril (n=4212)	P Value
Prospectively identified adverse events			
Symptomatic hypotension	588	388	< 0.001
Serum potassium > 6.0 mmol/l	181	236	0.007
Serum creatinine ≥ 2.5 mg/dl	139	188	0.007
Cough	474	601	< 0.001
Discontinuation for adverse event	**449**	**516**	**0.02**
Discontinuation for hypotension	36	29	NS
Discontinuation for hyperkalemia	11	15	NS
Discontinuation for renal impairment	29	59	0.001
Angioedema (adjudicated)			
Medications, no hospitalization	16	9	NS
Hospitalized; no airway compromise	3	1	NS
Airway compromise	0	0	----

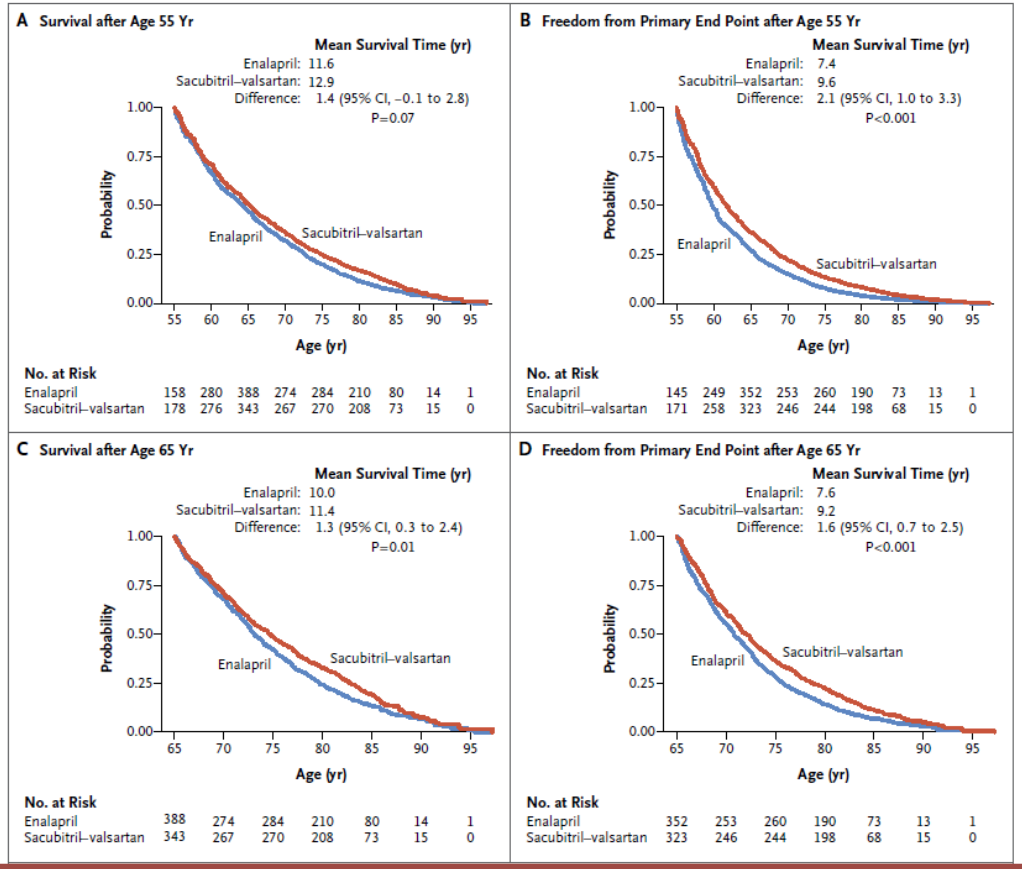
Angiotensin Neprilysin Inhibition With LCZ696 Doubles Effect on Cardiovascular Death of Current Inhibitors of the Renin-Angiotensin System



Effect of ARB vs placebo derived from CHARM-Alternative trial
Effect of ACE inhibitor vs placebo derived from SOLVD-Treatment trial
Effect of LCZ696 vs ACE inhibitor derived from PARADIGM-HF trial


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

a 55-year-old patient such as those enrolled in the PARADIGM-HF trial would have a projected life expectancy of 11.6 additional years while receiving enalapril, as compared with 12.9 years while receiving sacubitril–valsartan, which is a mean benefit of 1.4 years (95% confidence interval [CI], −0.1 to 2.8) with sacubitril–valsartan



55-yearold patient would have a corresponding mean benefit of 2.1 years (95% CI, 1.0 to 3.3) in freedom from the primary end point of death from cardiovascular causes or hospitalization for heart failure

n engl j med 2015 373;23

Le traitement ne doit pas prescrit à des patients présentant une tension basse ou un niveau élevé de potassium. surveiller l'inocuité d'Entresto, : Pression artérielle, fonction rénale et le risque d'œdème de Quincke

Study or Subgroup	NEPI / RAASi Events	Total	RAASi Events	Total	Weight	Risk Ratio M-H, Random, 95% CI	Year
IMPRESS 2000	5	289	17	284	8.0%	0.29 [0.11, 0.77]	2000
OVERTURE 2002	196	2886	291	2884	48.4%	0.67 [0.57, 0.80]	2002
PARAMOUNT 2012	3	149	7	152	4.6%	0.44 [0.12, 1.66]	2012
PARADIGM 2014	94	4187	108	4212	39.0%	0.88 [0.67, 1.15]	2014
Total (95% CI)		**7511**		**7532**	**100.0%**	**0.68 [0.51, 0.92]**	
Total events	298		423				

Heterogeneity: Tau² = 0.04; Chi² = 6.34, df = 3 (P = 0.10); I² = 53%
Test for overall effect: Z = 2.49 (P = 0.01)

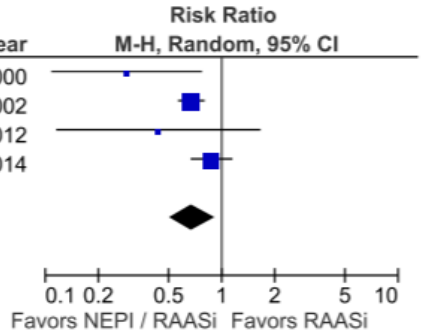


Fig. 1. Risk of decline in renal function.

"There were no clinically meaningful changes in creatinine, potassium, blood urea nitrogen and eGFR."

Safety and efficacy of LCZ696, a first-in-class angiotensin receptor neprilysin inhibitor, in Japanese patients with hypertension and renal dysfunction

Hypertension Research (2015) 38, 269–275

www.nature.com/hr

Neprilysin inhibitors preserve renal function in heart failure

Fiona Bodey [a,*], Ingrid Hopper [a,b], Henry Krum [a,b]

[a] Clinical Pharmacology and Therapeutics Department, Alfred Hospital, Australia
[b] CCRE Therapeutics, Monash University, Melbourne, Australia

favorable renal effects of NEP–RAAS inhibition and offers promise for treatment of heart failure and potentially the cardiorenal syndrome with these agents.
These renal effects may also offer greater potential for dose-titration of other heart failure therapies which have additional mortality benefits.

Follow and Increase the dosage according to Blood pressure and Ionogram but Increase the dosage (potentially with a decrease in diuretics)

International Journal of Cardiology 179 (2015) 329–330

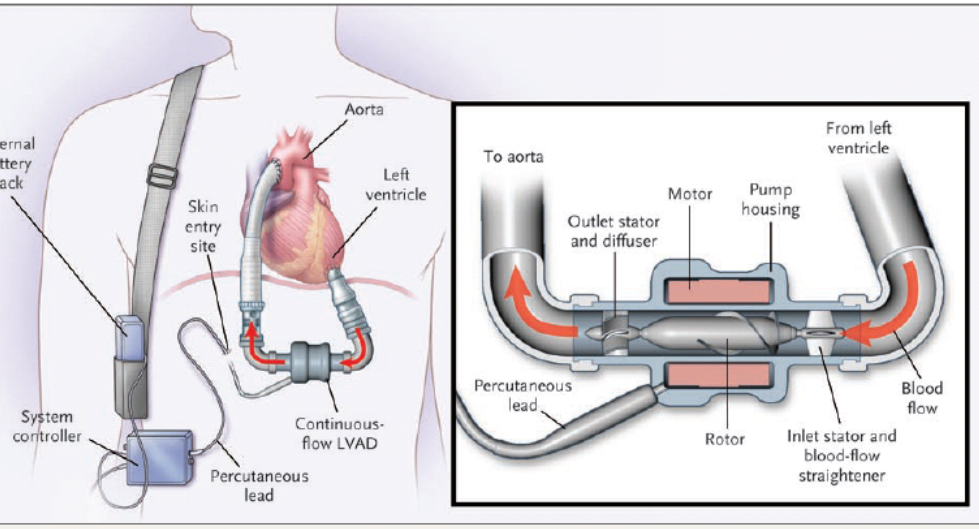
Resistant symptoms

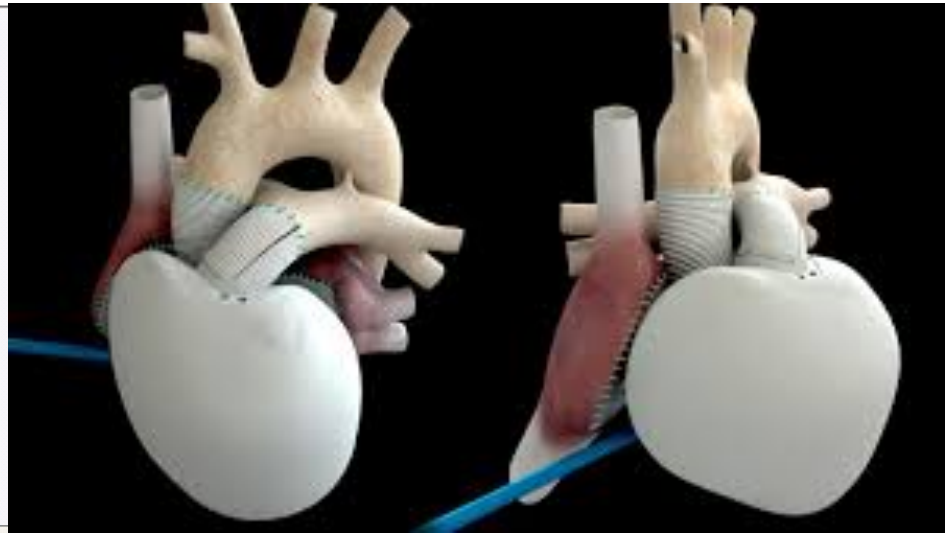
Yes

Consider digoxin or H-ISDN
or LVAD, or heart transplantation

No

No further action required
Consider reducing diuretic dose





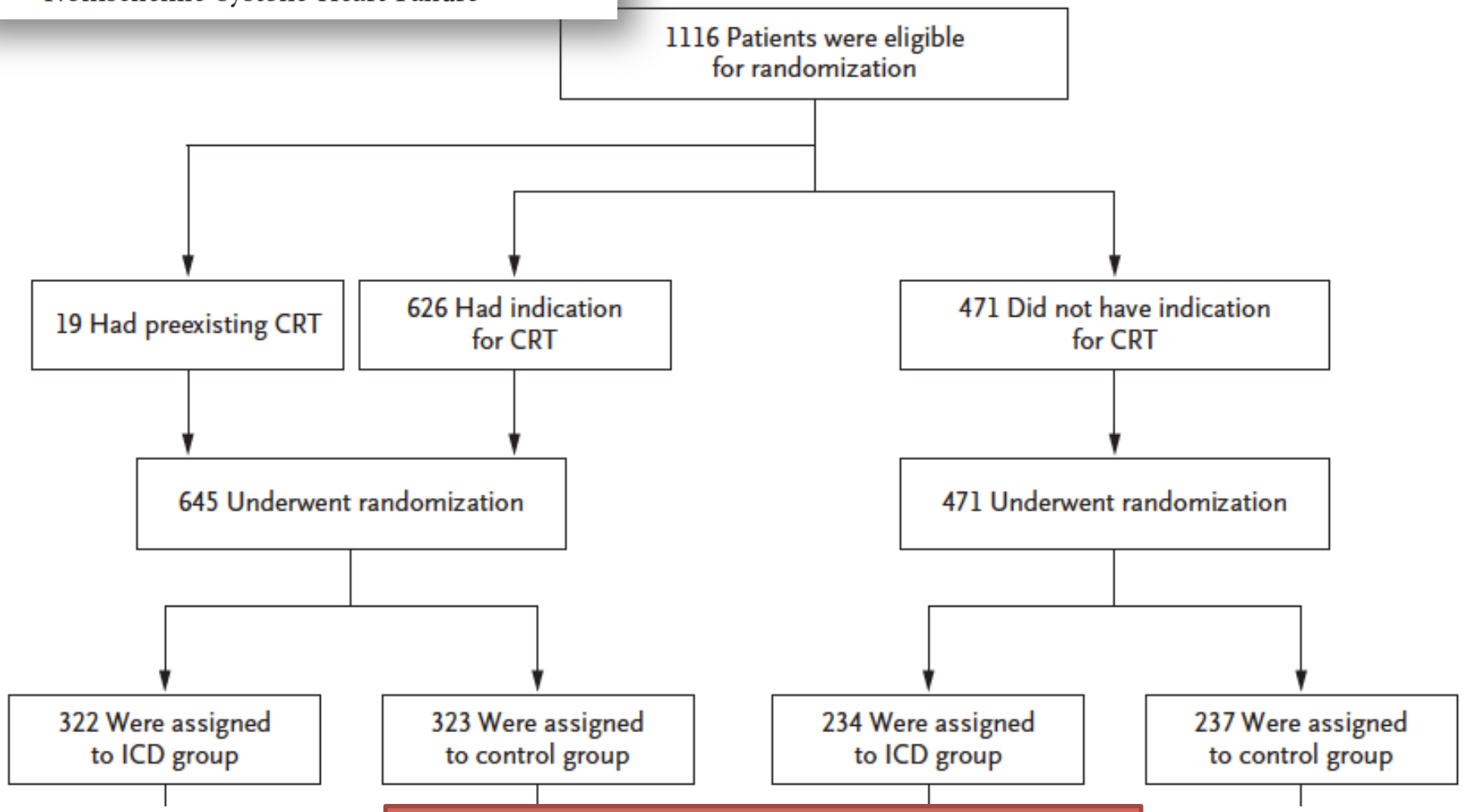
ICD implantation

Primary prevention An ICD is recommended to reduce the risk of sudden death and all-cause mortality in patients with symptomatic HF (NYHA Class II–III), and an LVEF ≤35% despite ≥3 months of OMT, provided they are expected to survive substantially longer than one year with good functional status, and they have:		
• IHD (unless they have had an MI in the prior 40 days – see below).	I	A
• DCM.	I	B
ICD implantation is not recommended within 40 days of an MI as implantation at this time does not improve prognosis.	III	A
ICD therapy is not recommended in patients in NYHA Class IV with severe symptoms refractory to pharmacological therapy unless they are candidates for CRT, a ventricular assist device, or cardiac transplantation.	III	C
Patients should be carefully evaluated by an experienced cardiologist before generator replacement, because management goals and the patient's needs and clinical status may have changed.	IIa	B
A wearable ICD may be considered for patients with HF who are at risk of sudden cardiac death for a limited period or as a bridge to an implanted device.	IIb	C

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Defibrillator Implantation in Patients with Nonischemic Systolic Heart Failure

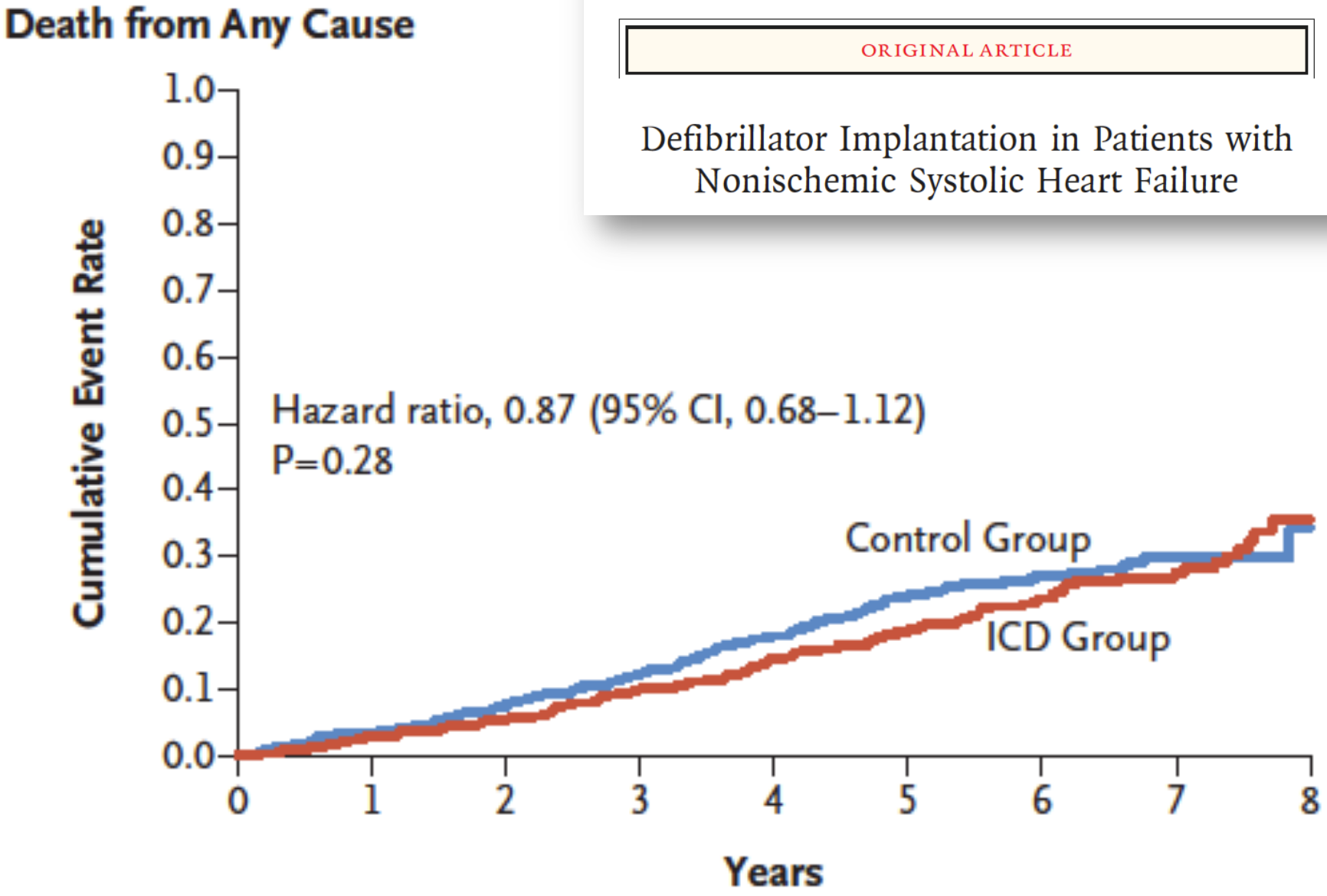


Mean Follow-up = 68 months

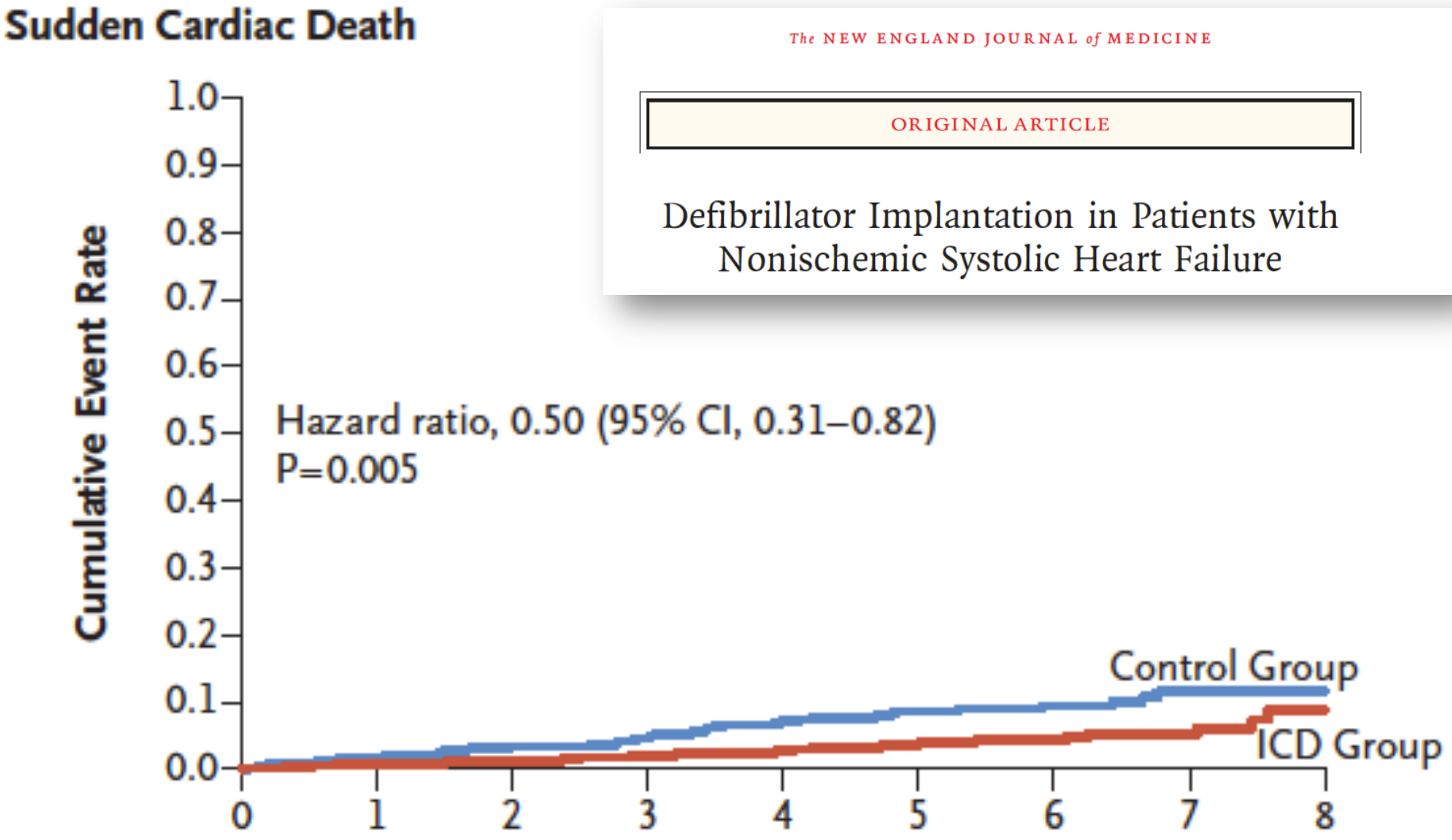
The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Defibrillator Implantation in Patients with Nonischemic Systolic Heart Failure



Sudden cardiac death	24 (4.3)	46 (8.2)



The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Defibrillator Implantation in Patients with Nonischemic Systolic Heart Failure

CRT implantation

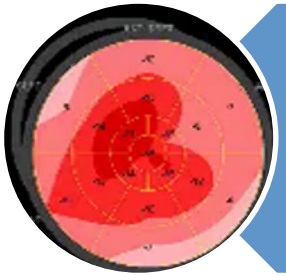
Symptômes, RS, FE < 35 %,

- QRS ≥ 150 ms, BBG
- QRS ≥ 150 ms, non BBG
- QRS 130-149 ms, BBG
- QRS 130-149 ms, non BBG

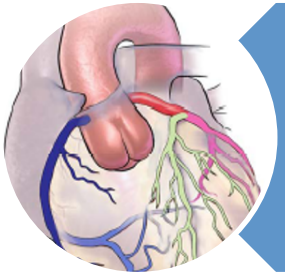
Discharge planning

Early readmission after hospital discharge is common and may be addressed through coordinated discharge planning. The standards of care that patients should expect have been published by the HFA and the Acute Cardiac Care Association.[540,631] Discharge planning should commence as soon as the patient's condition is stable. During hospital admission, providing patients with information and education for self-care improves outcome. Discharge should be arranged for when the patient is euvolaemic and any precipitants of the admission have been treated. Hospitals with early physician follow-up after discharge show reduced 30-day readmission, and those that initiated programmes to discharge patients with an outpatient follow-up appointment already scheduled experienced a greater reduction in readmissions than those not taking up this strategy.[632]

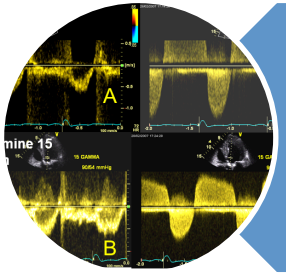
Conclusion



Une révolution thérapeutique : ENTRESTO pour les patients symptomatiques



Un affinement des critères pour la CRT et bientôt pour le DAI



Prendre en compte le suivi : télé-médecine? Réseau de soins: en tout cas : prise de conscience nécessaire

Et puis, encore beaucoup à faire pour l'IC aigue et l'ICFEP et ICFEmr

14 - 16 JUIN 2017

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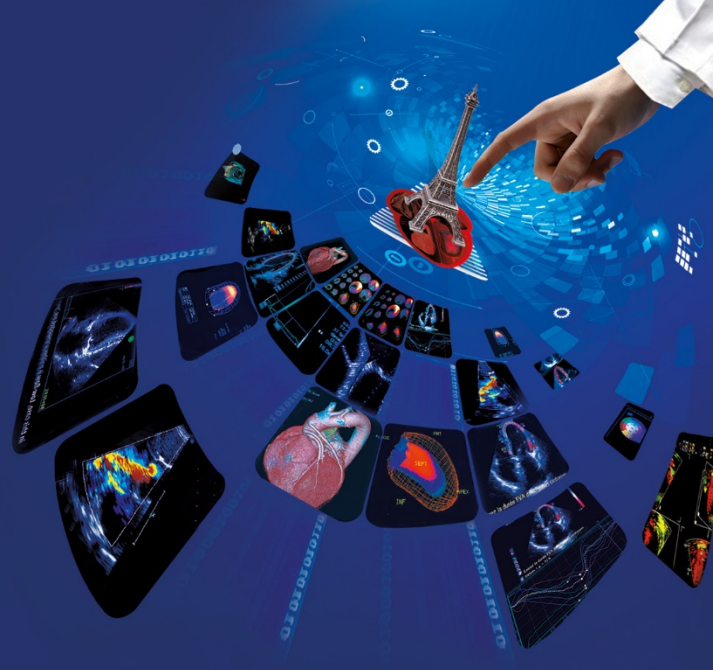

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Valvular disease

Aortic stenosis

In symptomatic patients with reduced LVEF and 'low-flow, low-gradient' aortic stenosis (valve area <1 cm^2, LVEF <40%, mean pressure gradient <40 mmHg), low-dose dobutamine stress echocardiography should be considered to identify those with severe aortic stenosis suitable for valve replacement.	IIa	C
TAVI is recommended in patients with severe aortic stenosis who are not suitable for surgery as assessed by a 'heart team' and have predicted post-TAVI survival >1 year.	I	B
TAVI should be considered in high-risk patients with severe aortic stenosis who may still be suitable for surgery, but in whom TAVI is favoured by a 'heart team' based on the individual risk profile and anatomic suitability.	IIa	A

Mitral regurgitation

Combined surgery of secondary mitral regurgitation and coronary artery bypass grafting should be considered in symptomatic patients with LV systolic dysfunction (LVEF <30%), requiring coronary revascularization for angina recalcitrant to medical therapy.	IIa	C
Isolated surgery of non-ischaemic regurgitant mitral valve in patients with severe functional mitral regurgitation and severe LV systolic dysfunction (LVEF <30%) may be considered in selected patients in order to avoid or postpone transplantation.	IIb	C

MITRACLIP

In patients with HF with moderate-severe, secondary mitral regurgitation who are judged inoperable or at high surgical risk, percutaneous mitral valve intervention (percutaneous edge-to-edge repair) may be considered in order to improve symptoms and quality of life, although no RCT evidence of improvement has been published, only registry studies.[504–506]