HFpEF Masterclasses
in centers of expertise

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7th November 2024 - DAY 1
8th November 2024 - DAY 2

Management of atrial fibrillation and coronary artery disease in patients with HFpEF

Pr. Nathan Mewton, Lyon

HCL HOSPICES CIVILS DE LYON
L'INSTITUT DE CARDIOLOGIE

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AF Pathophysiology and Epidemiology

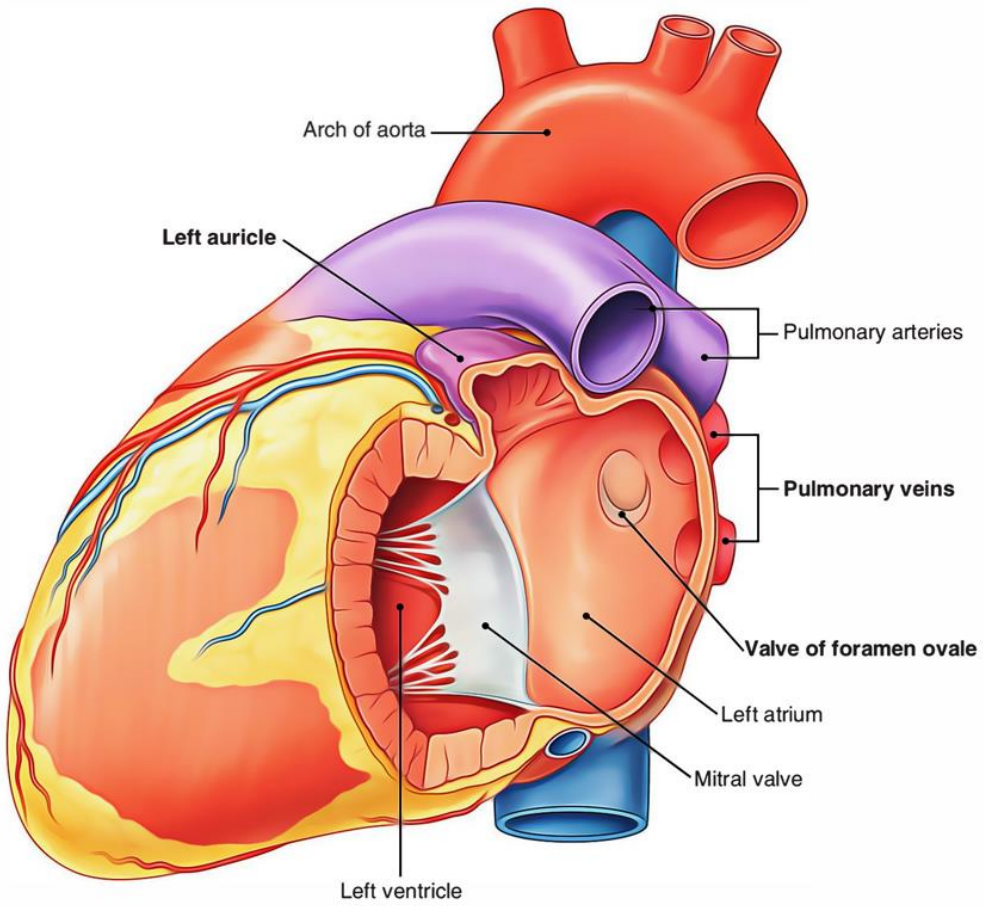

ALI MACGRAW
RYAN O'NEAL
LOVESTORY
L'AMOUR C'EST N'AVOIR JAMAIS À DIRE QU'ON EST DÉSOLÉ
HFPEF
AF

Healthy Left Atrium

-Index volume < 34 ml/m^2

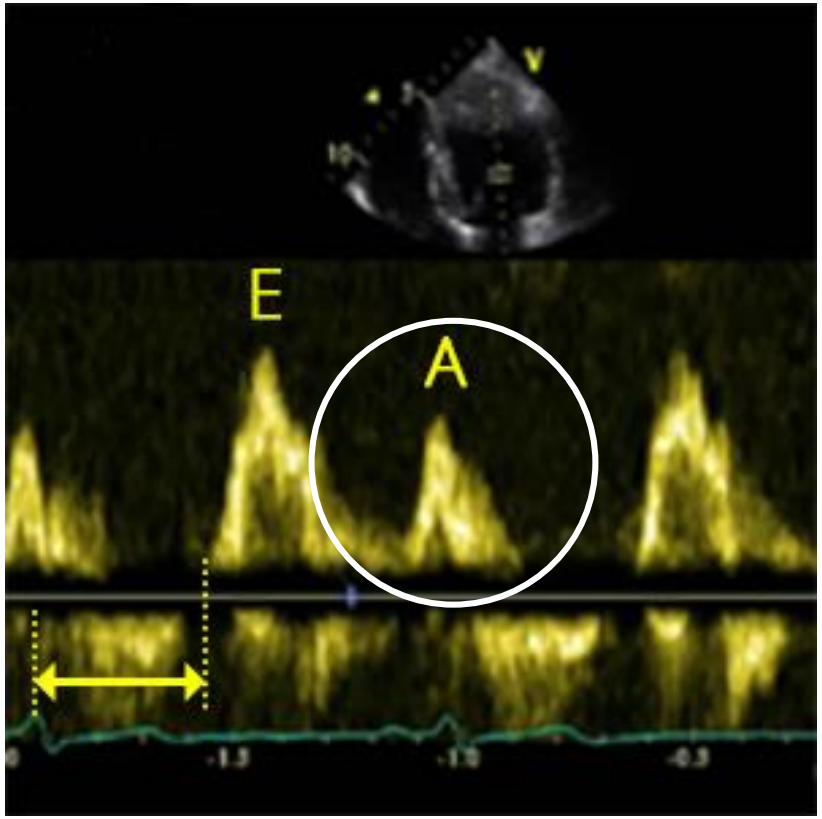
-Atrial Diastolic pressure = 0-5 mmHg

-Atrial Systolic pressure= 10-15 mmHg

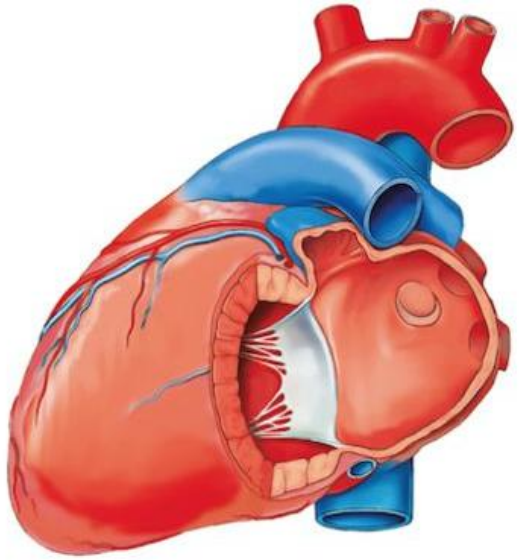


-Atrial systole produces the A wave

-Improves LV filling by 25-30%



Atrial Myopathy ⇄ Atrial Fibrillation

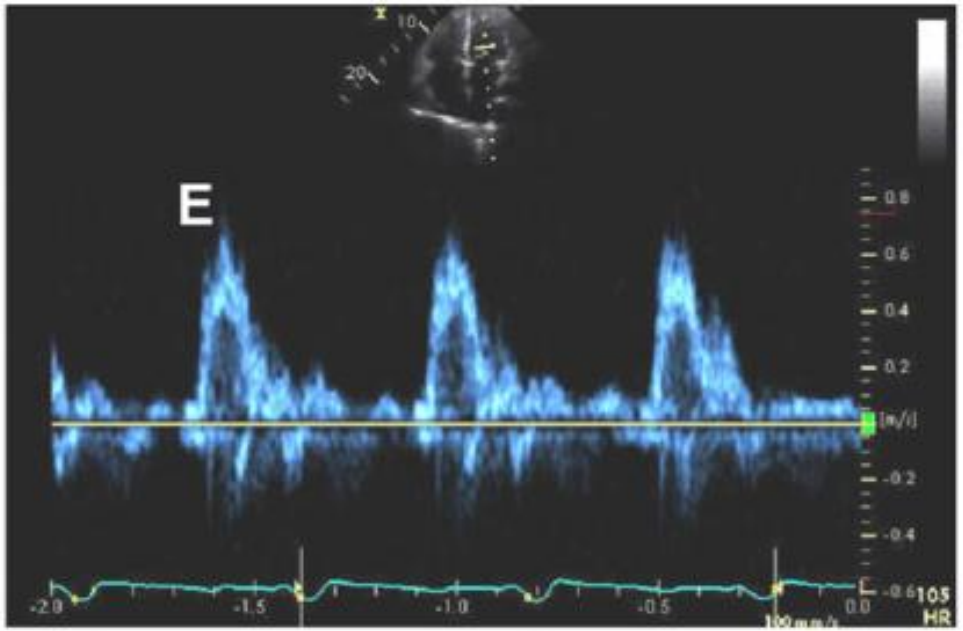


Atrial dilatation

Atrial cardiomyopathy?

Genetic	Aging	Hypertension	Coronary artery disease
Valvular heart disease	Type 2 diabetes	Obesity	Chronic respiratory disorders

Risk factors and predisposing comorbidities



Loss of LA contraction

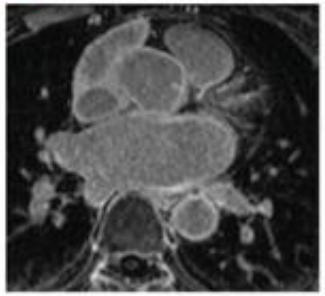
Reduction in LV filling by 20-30%

LVEF reduction up to 10%

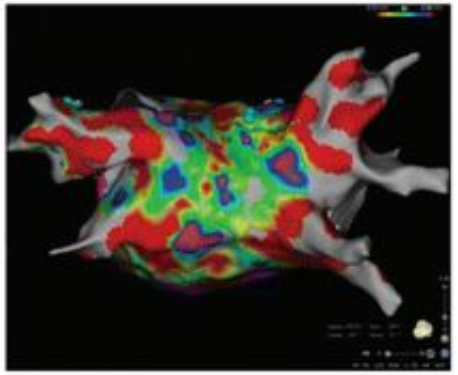
Assessment of Left Atrial Myopathy in Heart Failure

LA Structure

LA Dilation

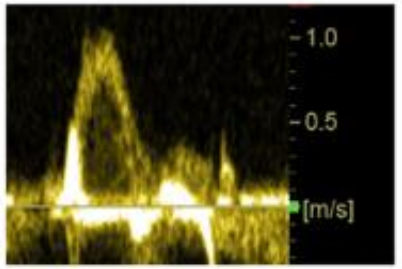


Fibrosis on CMR

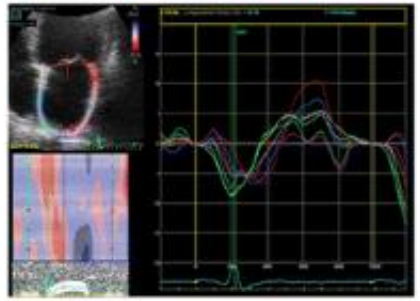


Areas of Low Voltage

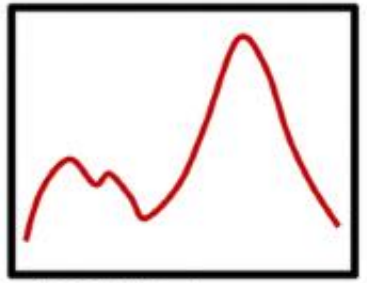
LA Function



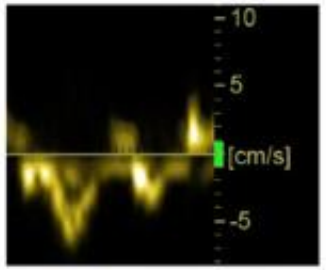
Low A wave velocity



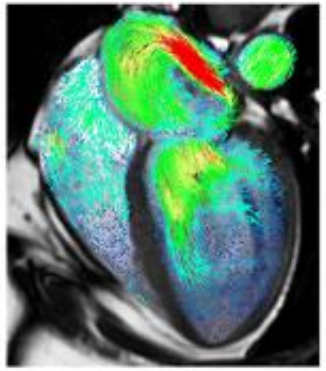
Reduced Strain



PCWP: Large v waves in absence of significant MR

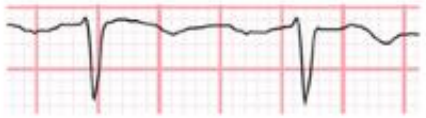


Low a' tissue Doppler velocity

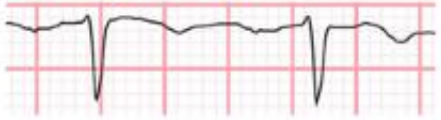


LA Stasis on 4D Flow CMR

Supportive Diagnostics



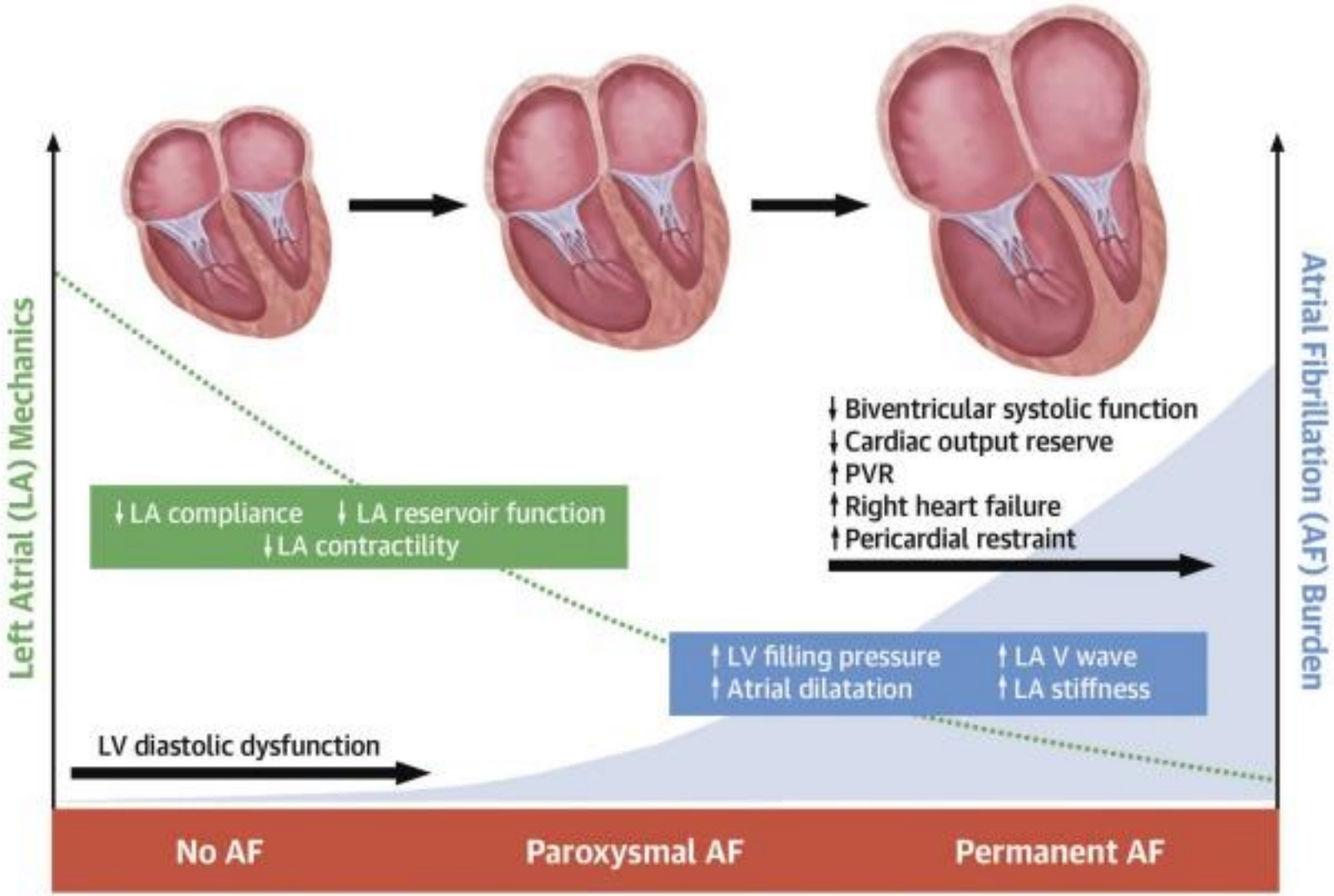
High AF burden



Low amplitude P-waves in sinus rhythm

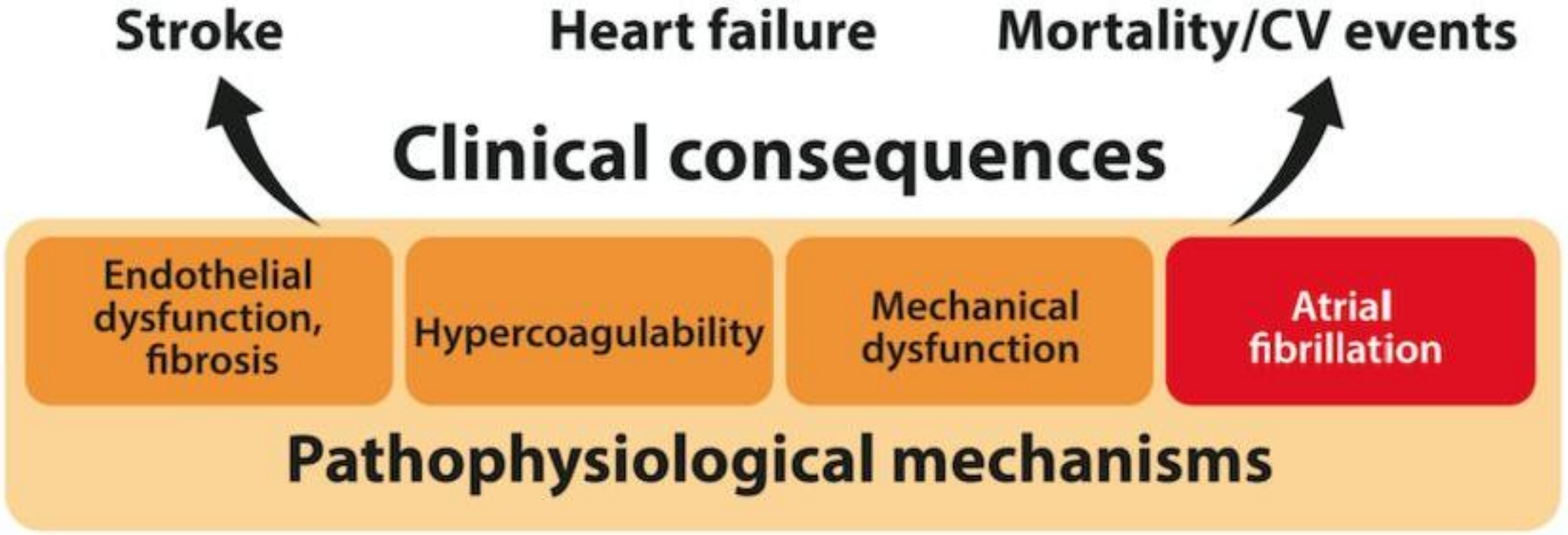
Peigh et al. Curr Heart Fail Rep 2021

CENTRAL ILLUSTRATION: Progressive Left Atrial Myopathy and Atrial Fibrillation Burden in Heart Failure With Preserved Ejection Fraction



Reddy, Y.N.V. et al. J Am Coll Cardiol. 2020;76(9):1051-64.

Clinical Consequences of AF



ESC European Society of Cardiology

European Journal of Heart Failure (2024)
doi:10.1002/ejhf.3402

RESEARCH ARTICLE

Characterizing atrial fibrillation in patients with and without heart failure across the ejection fraction spectrum: Incidence, prevalence, and treatment strategies

Valeria Valente[1], Giulia Ferrannini[1,2], Lina Benson[1], Paolo Gatti[1,2], Federica Guidetti[1], Michael Melin[1,3], Frieder Braunschweig[1,4], Cecilia Linde[1,4], Ulf Dahlström[5], Lars H. Lund[1,4], Marat Fudim[6,7], and Gianluigi Savarese[1]*

Methods

Study population: SwedeHF registry matched 1:1 by sex, year of birth and, for individuals <90 years old, county of residence with a non-HF cohort chosen at random from the Swedish population.

195 106 patients (97 553 with and 97 553 without HF), of which 63% were men, median age 75 years (Q1–Q3: 66–82).

Cohort 1 : prevalence of AF overall by 3-year periods of time and treatment management

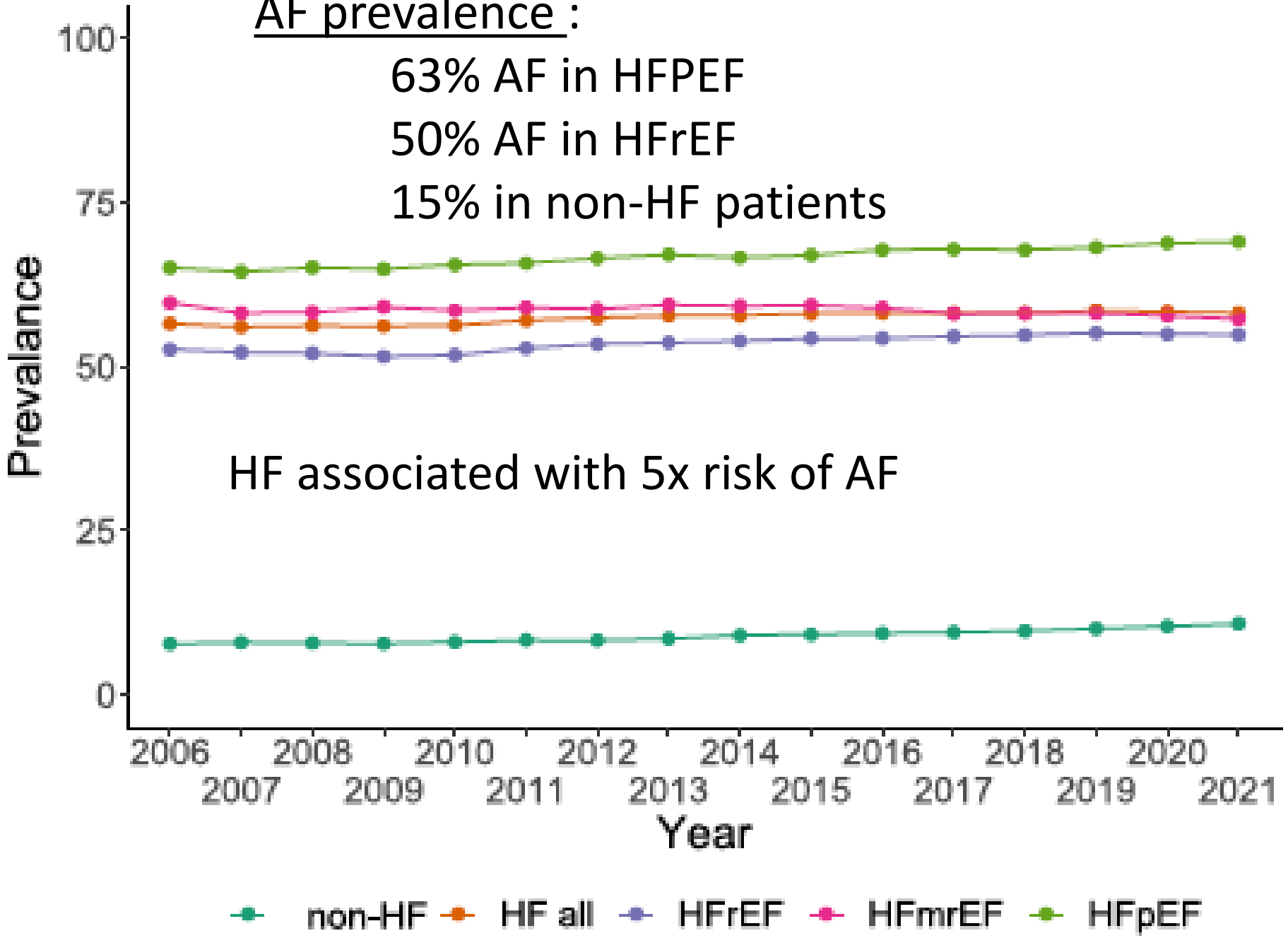
Cohort 2 : incidence of AF over time and predictors

AF prevalence :

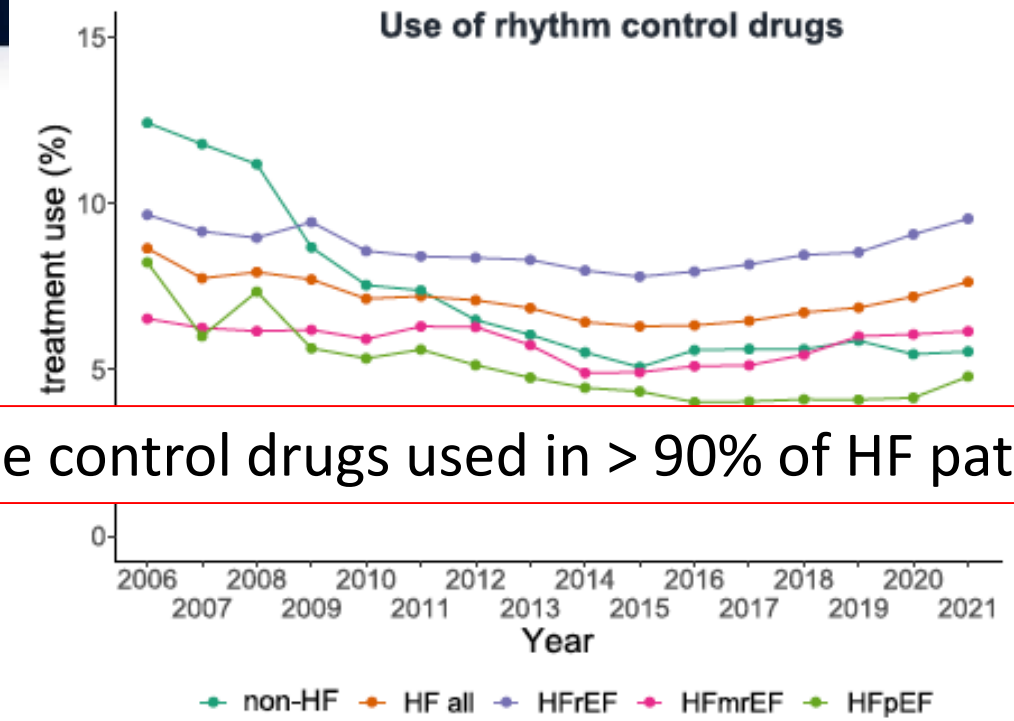
63% AF in HFPEF

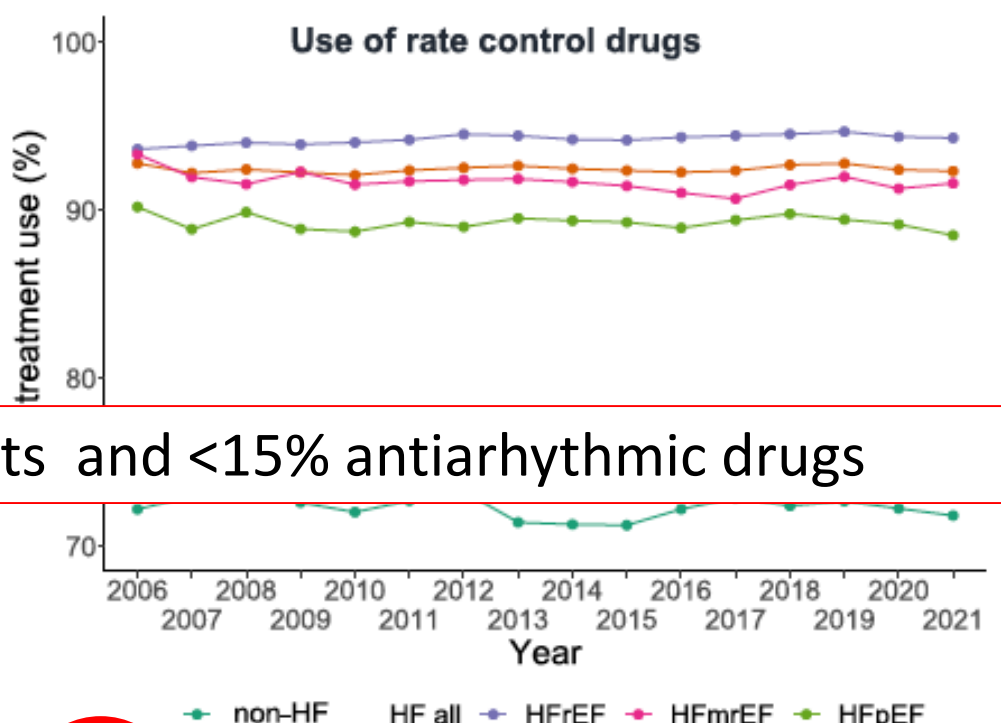
50% AF in HFrEF

15% in non-HF patients

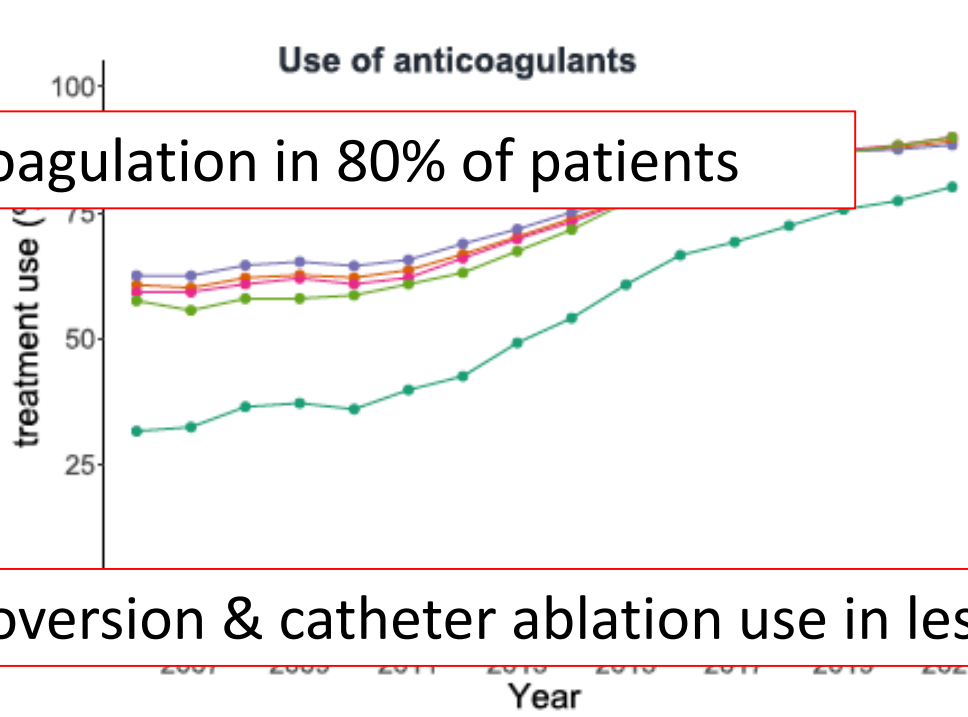


HF associated with 5x risk of AF

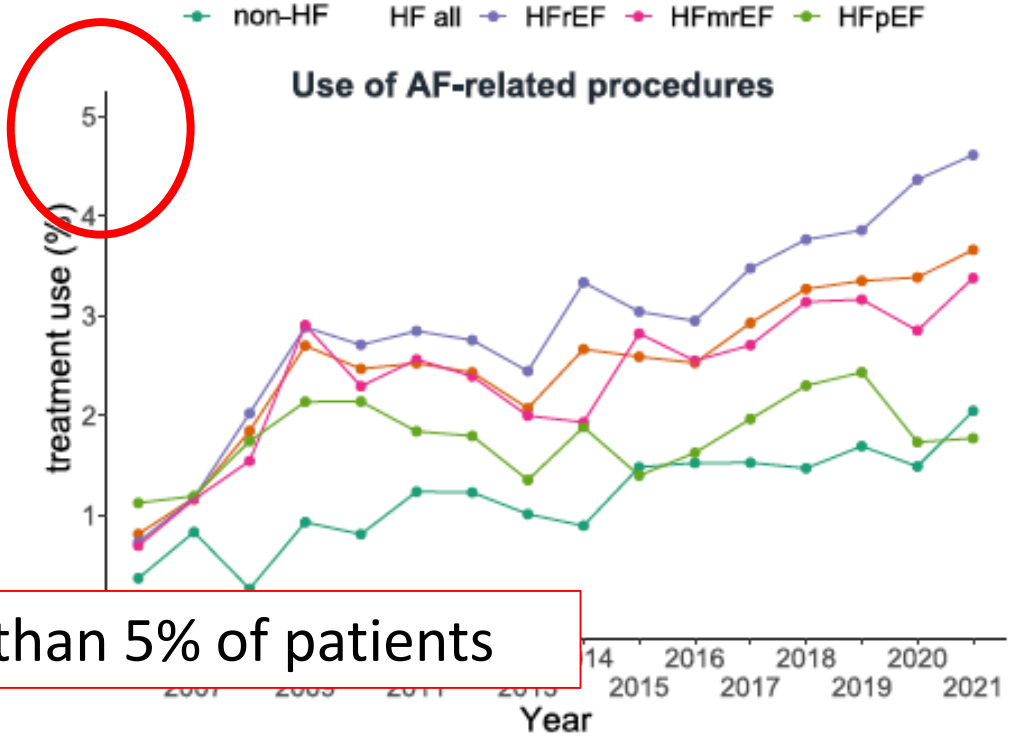




Rate control drugs used in > 90% of HF patients and <15% antiarhythmic drugs

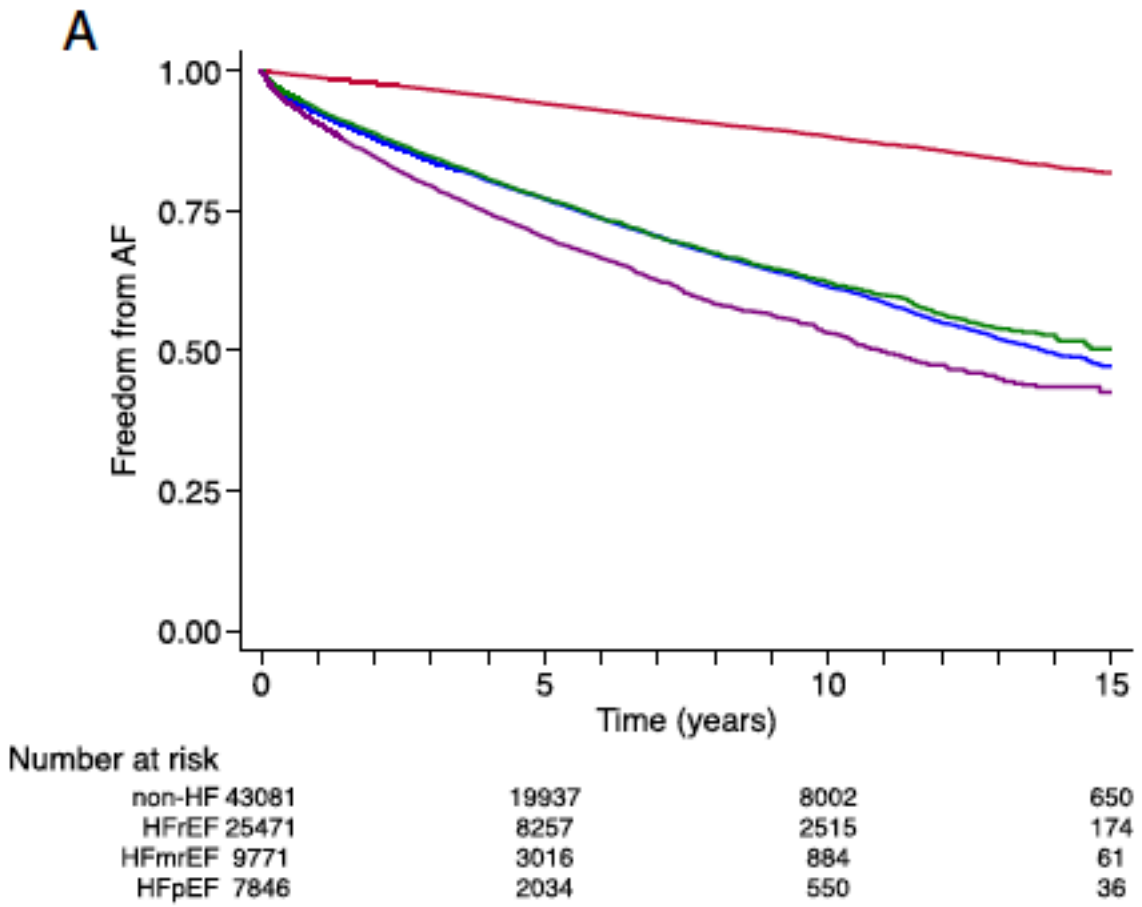


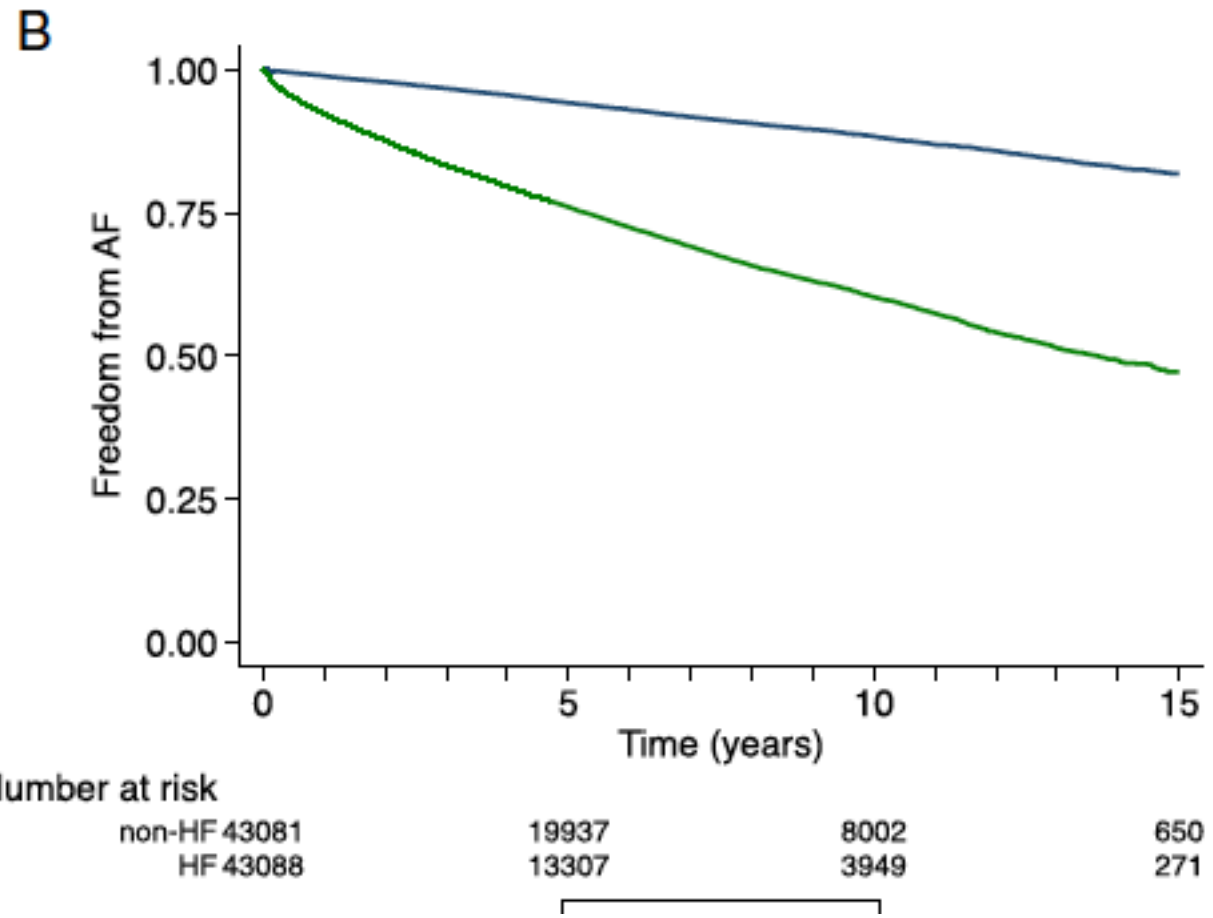
Anticoagulation in 80% of patients



Cardioversion & catheter ablation use in less than 5% of patients

Incidence of AF in HF patients = 0.03% pt / year





HFPEF independent predictor of AF (HR=3.12)

Higher in HFPEF vs HFrEF

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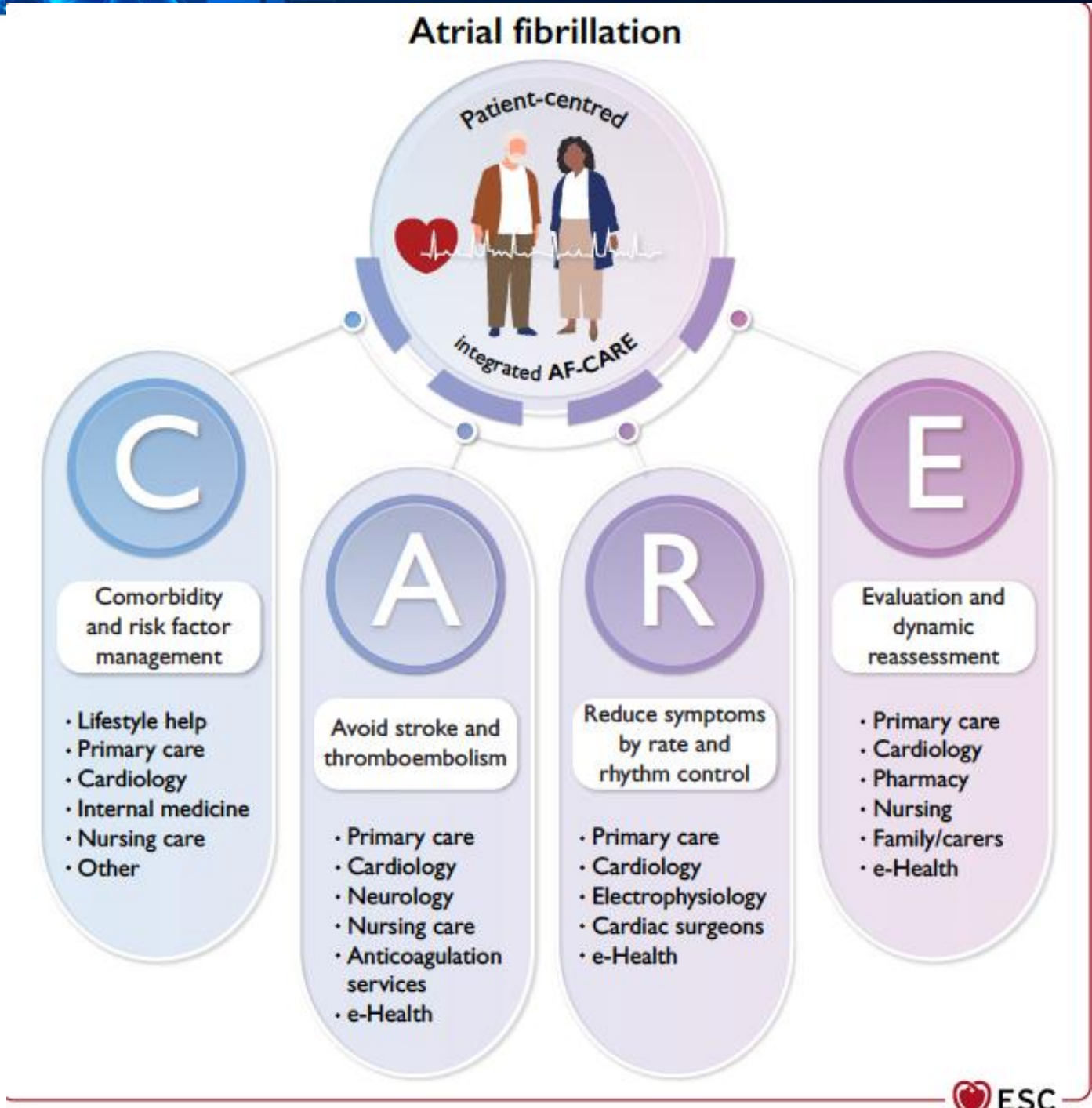
How to treat AF in HFPEF ?

AF Management ESC Guidelines 2024

Integrated AF-CARE

The first treatment of AF in HFPEF is the HF treatment !

Van Gelder et al. EHJ 2024



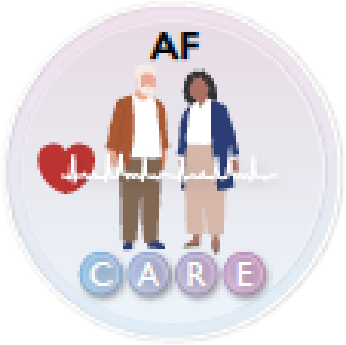
ANTICOAGULATION NEW SCORE = CHADS-VA

Table 10 Updated definitions for the CHA_2DS_2-VA score

CHA_2DS_2-VA component		Definition and comments	Points awarded[a]
C	Chronic heart failure	Symptoms and signs of heart failure (irrespective of LVEF, thus including HFpEF, HFmrEF, and HFrEF), or the presence of asymptomatic LVEF ≤40%.[261–263]	1
H	Hypertension	Resting blood pressure >140/90 mmHg on at least two occasions, or curr… tihypertensive treatment. The optimal BP target associated with lowest risk of majo… r events is 120–129/70–79 mmHg (or keep as low as reasonably achievabl…	1
A	Age 75 years or above	Age is an independent determinant of ischaemic stroke ri… d risk is a continuum, but for reasons of practicality, two points are given f… s.	2
D	Diabetes mellitus	Diabetes mellitus (type 1 or type 2), as define… cepted criteria,[266] or treatment with glucose lowering therapy.	1
S	Prior stroke, TIA, or arterial thromboembolism	Previous thromboembolism is asso… y elevated risk of recurrence and therefore weighted 2 points.	2
V	Vascular disease	Coronary artery disease… myocardial infarction, angina, history of coronary revascularization (s… taneous), and significant CAD on angiography or cardiac imaging.[267] OR Peripheral vascular disease, including: intermittent claudication, previous revascularization for PVD, percutaneous or surgical intervention on the abdominal aorta, and complex aortic plaque on imaging (defined as features of mobility, ulceration, pedunculation, or thickness ≥4 mm).[268,269]	1
A	Age 65–74 years	1 point is given for age between 65 and 74 years.	1

No more gender difference!

Recommendations	Class[a]	Level[b]
Oral anticoagulation is recommended in patients with clinical AF at elevated thromboembolic risk to prevent ischaemic stroke and thromboembolism.[239,240]	I	A
A CHA_2DS_2-VA score of 2 or more is recommended as an indicator of elevated thromboembolic risk for decisions on initiating oral anticoagulation.	I	C
Oral anticoagulation is recommended in all patients with AF and hypertrophic cardiomyopathy or cardiac amyloidosis, regardless of CHA_2DS_2-VA score, to prevent ischaemic stroke and thromboembolism.[270–276]	I	B
Individualized reassessment of thromboembolic risk is recommended at periodic intervals in patients with AF to ensure anticoagulation is started in appropriate patients.[277–280]	I	B



Equality in healthcare provision (gender, ethnicity, socioeconomic) (Class I)

Education for patients, families and healthcare professionals (Class I)

Patient-centred AF management with a multidisciplinary approach (Class IIa)

C Comorbidity and risk factor management

Hypertension

Blood pressure lowering treatment (Class I)

Heart failure

Diuretics for congestion (Class I)

Appropriate HFrEF medical therapy (Class I)

SGLT2 inhibitors (Class I)

Overweight or obese

Weight loss (target 10%)[a] (Class I)

Bariatric surgery if rhythm control[a] (Class IIb)

Obstructive sleep apnoea

Management of OSA[a] (Class IIb)

Alcohol

Reduce to ≤3 drinks per week (Class I)

Diabetes mellitus

Effective glycaemic control[a] (Class I)

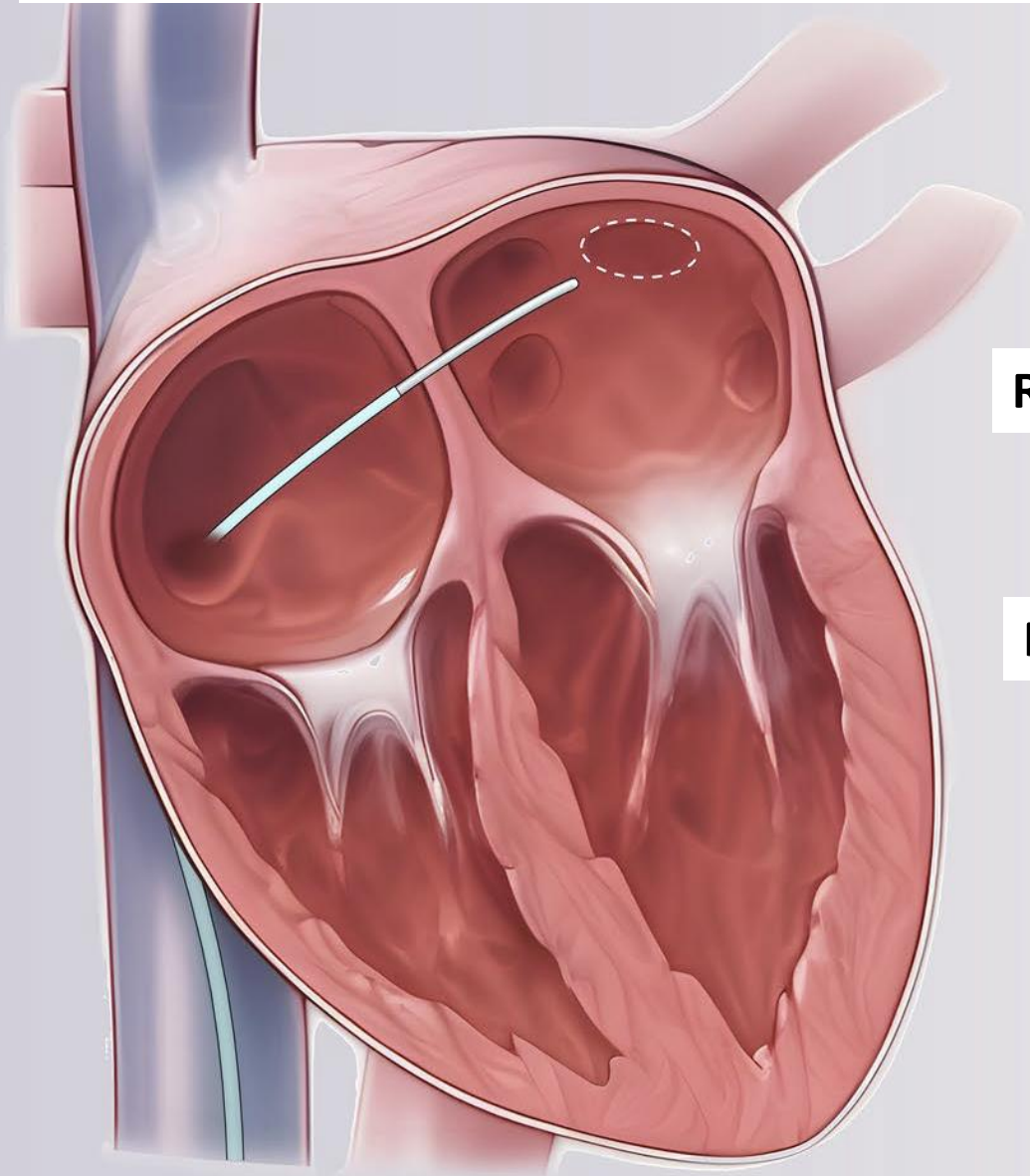
Exercise capacity

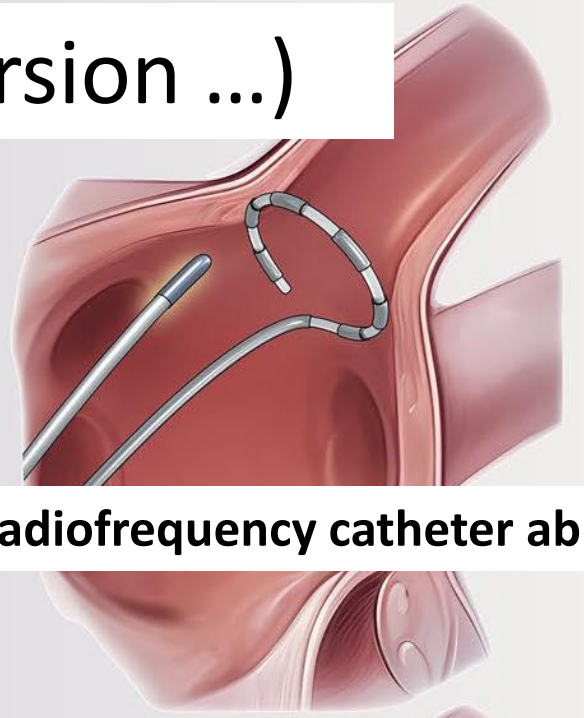
Tailored exercise programme (Class I)

Other risk factors/ comorbidities

Identify and manage aggressively[a] (Class I)

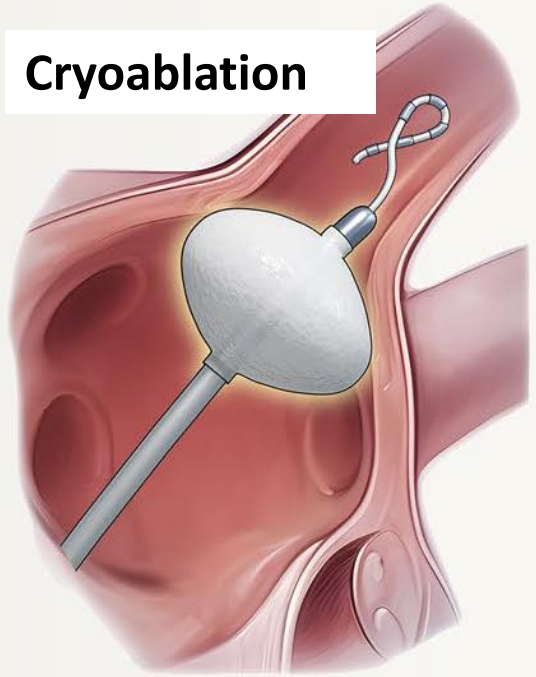
AF Ablation (and cardioversion …)



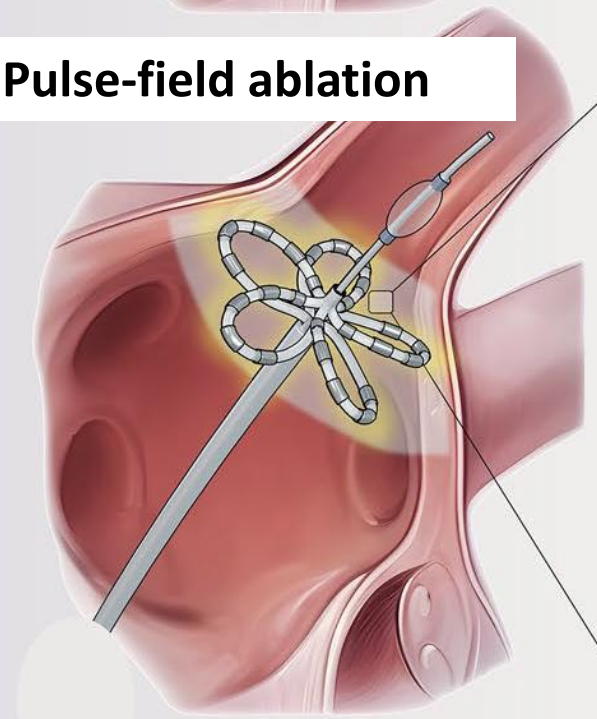


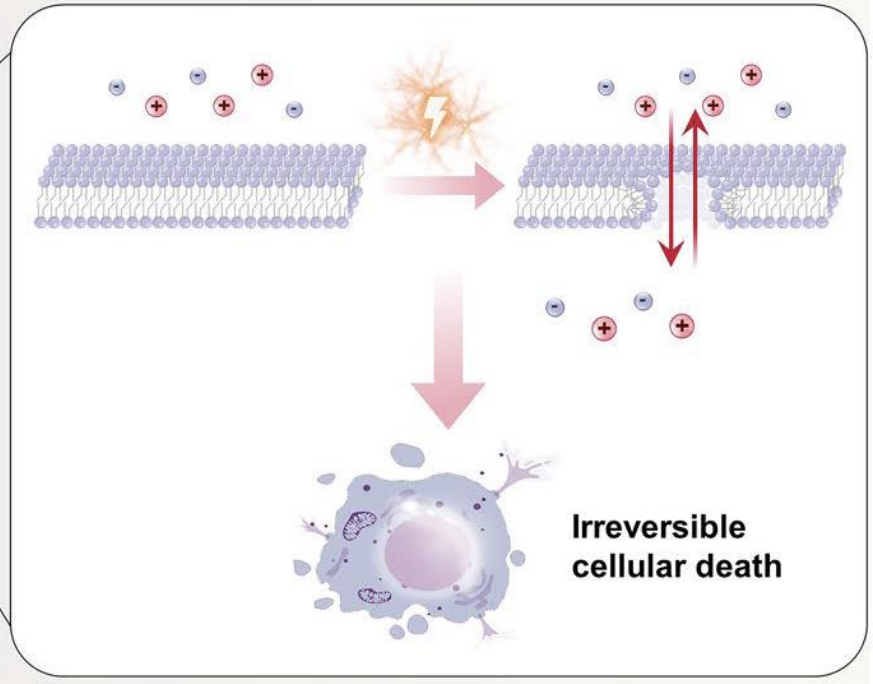
Radiofrequency catheter ablation

Cryoablation

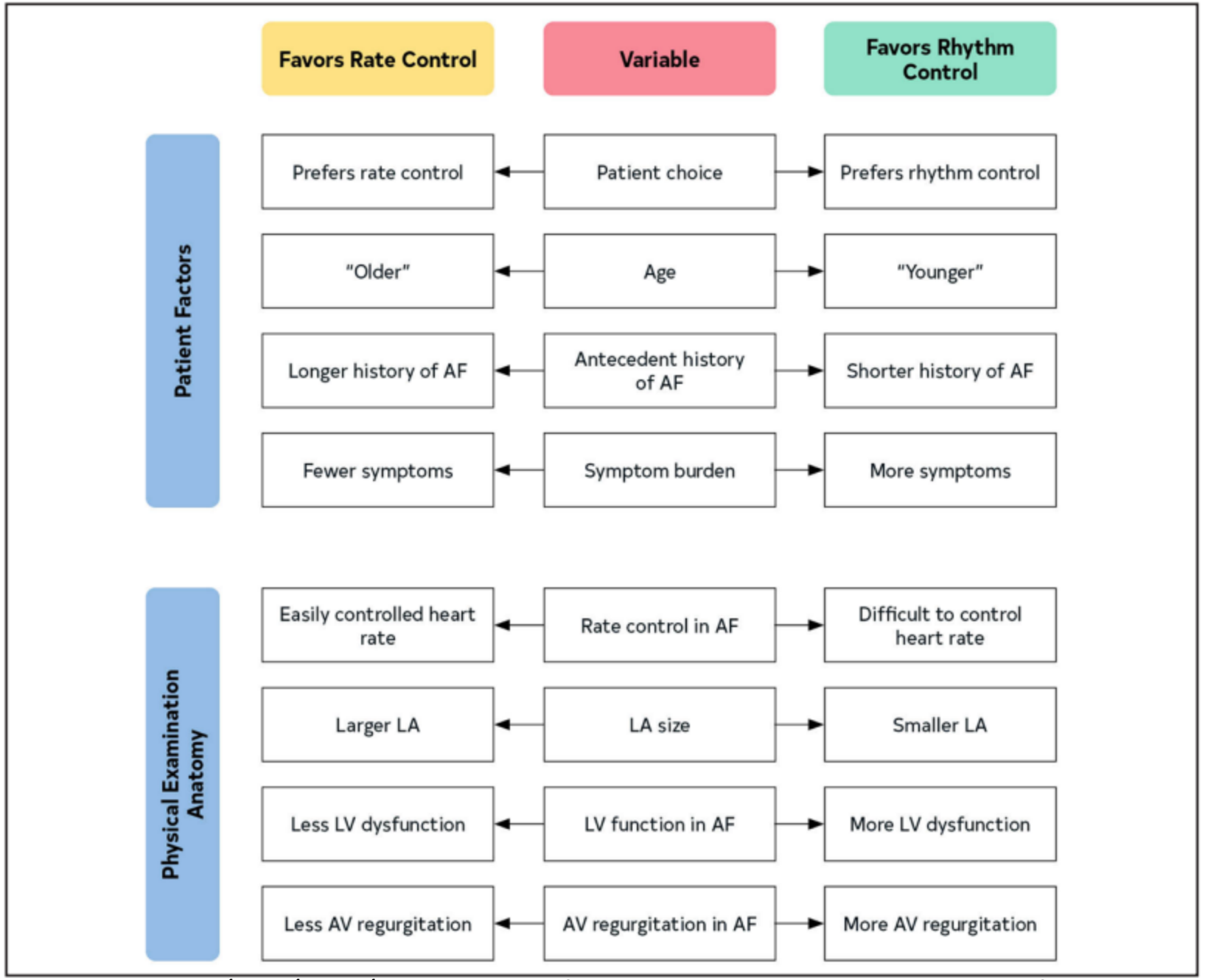


Pulse-field ablation





Zhang et al. HF Reviews 2024



2023 ACC/AHA/ACCP/HRS Guideline for the Diagnosis and Management of Atrial Fibrillation. Circulation 2023

No randomised studies for catheter ablation in HFPEF

- Ongoing CABA-HFPEF study
- East AFNET4 trial : early rhythm control with catheter ablation in pts with AF <1 year improves cardiovascular outcomes and symptoms compared to usual care.
- Chinese registry : Catheter ablation associated with improved outcomes in ChadsVasc pts ≤ 4 , but no difference in pts with ChadsVasc > 4

Fauchier et al. BMC Medicine 2023; Peng et al. Heart Rhythm 2024

R

Reduce symptoms by rate and rhythm control

See patient pathways for:

First-diagnosed AF | Paroxysmal AF | Persistent AF | Permanent AF

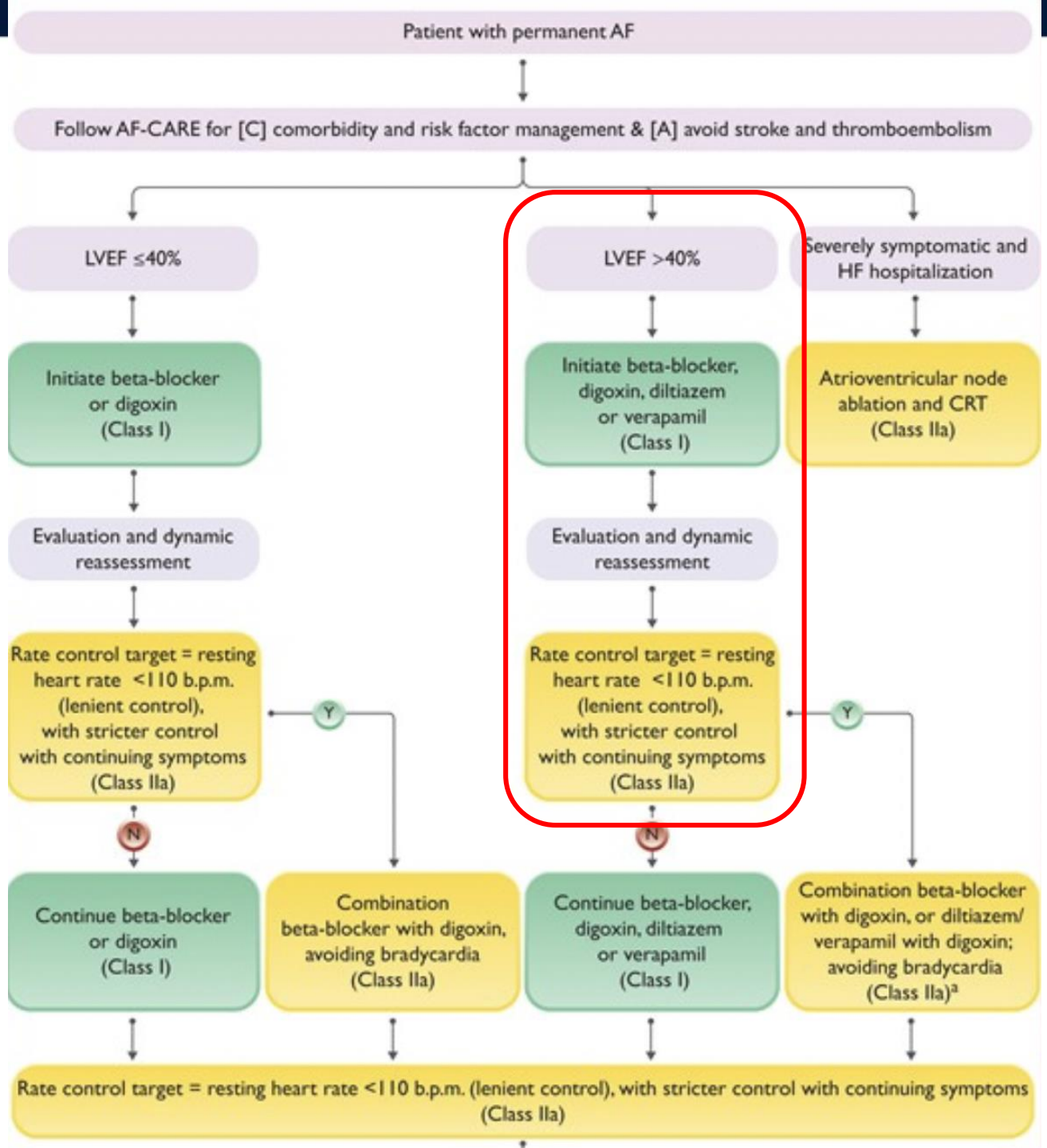
Consider:

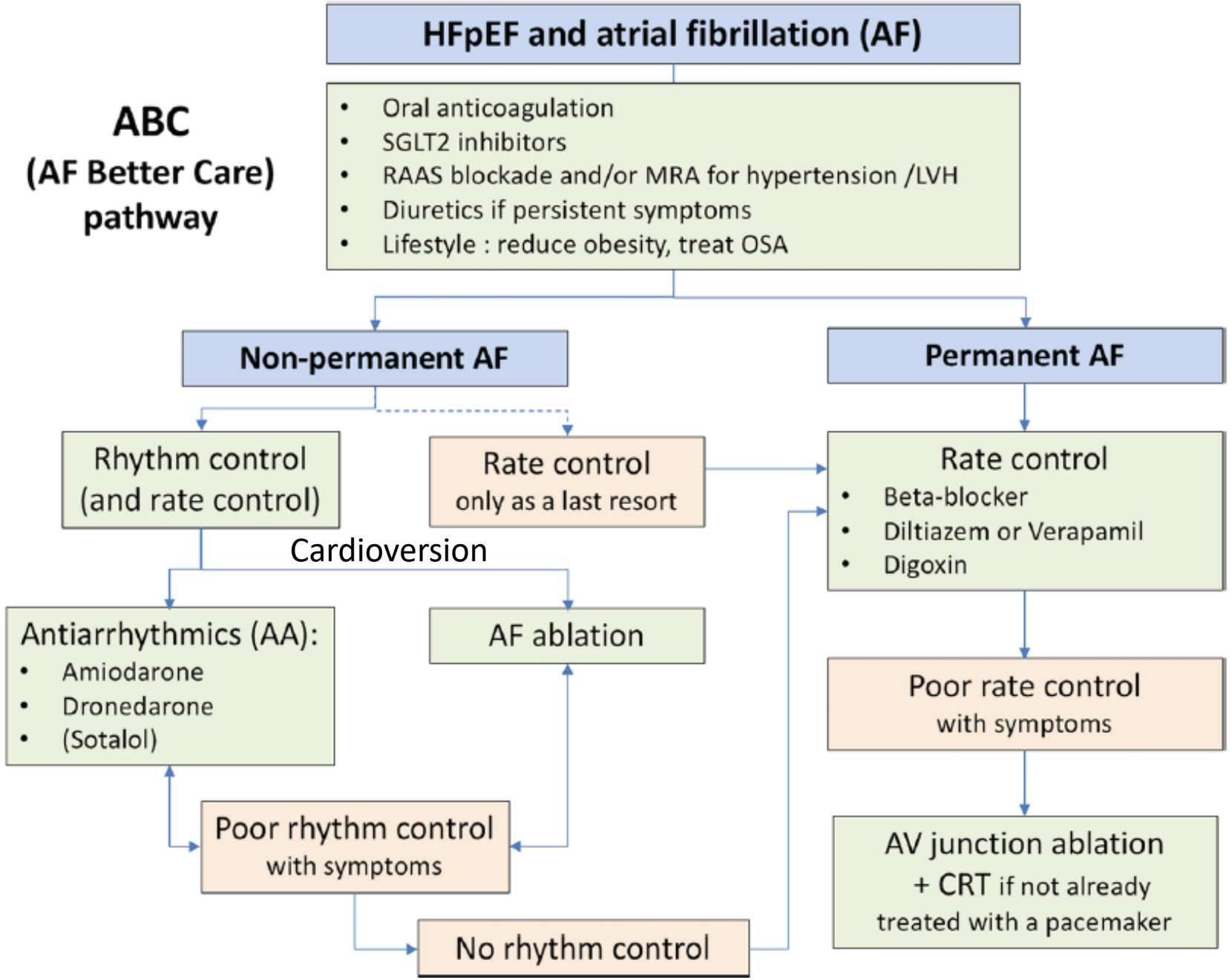
Rate control drugs | Cardioversion | Antiarrhythmic drugs | Catheter ablation | Endoscopic/hybrid ablation | Surgical ablation | Ablate and pace

Rhythm control favored in patients with paroxysmal AF, low atrial damage

Rate control favored in patients with permanent AF, enlarged LA, many comorbidities

AF➔ HF : better outcome / HF➔ AF : worse outcome


Patient with permanent AF
Follow AF-CARE for [C] comorbidity and risk factor management & [A] avoid stroke and thromboembolism
LVEF ≤40%
LVEF >40%
Severely symptomatic and HF hospitalization
Initiate beta-blocker or digoxin (Class I)
Initiate beta-blocker, digoxin, diltiazem or verapamil (Class I)
Atrioventricular node ablation and CRT (Class IIa)
Evaluation and dynamic reassessment
Evaluation and dynamic reassessment
Rate control target = resting heart rate <110 b.p.m. (lenient control), with stricter control with continuing symptoms (Class IIa)
Rate control target = resting heart rate <110 b.p.m. (lenient control), with stricter control with continuing symptoms (Class IIa)
Y
Y
N
N
Continue beta-blocker or digoxin (Class I)
Combination beta-blocker with digoxin, avoiding bradycardia (Class IIa)
Continue beta-blocker, digoxin, diltiazem or verapamil (Class I)
Combination beta-blocker with digoxin, or diltiazem/ verapamil with digoxin; avoiding bradycardia (Class IIa)[a]
Rate control target = resting heart rate <110 b.p.m. (lenient control), with stricter control with continuing symptoms (Class IIa)



Fauchier et al. BMC Medicine 2023

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CAD management in HFPEF

Prevalence of Coronary Artery Disease and Coronary Microvascular Dysfunction in Patients With Heart Failure With Preserved Ejection Fraction

Christopher J. Rush, MB, ChB, PhD[1,2]; Colin Berry, MB, ChB, PhD[1,2]; Keith G. Oldroyd, MB, ChB, MD[1,2]; et al

» Author Affiliations | Article Information

JAMA Cardiol. 2021;6(10):1130-1143. doi:10.1001/jamacardio.2021.1825

51% of HFPEF patients with significant coronary artery disease

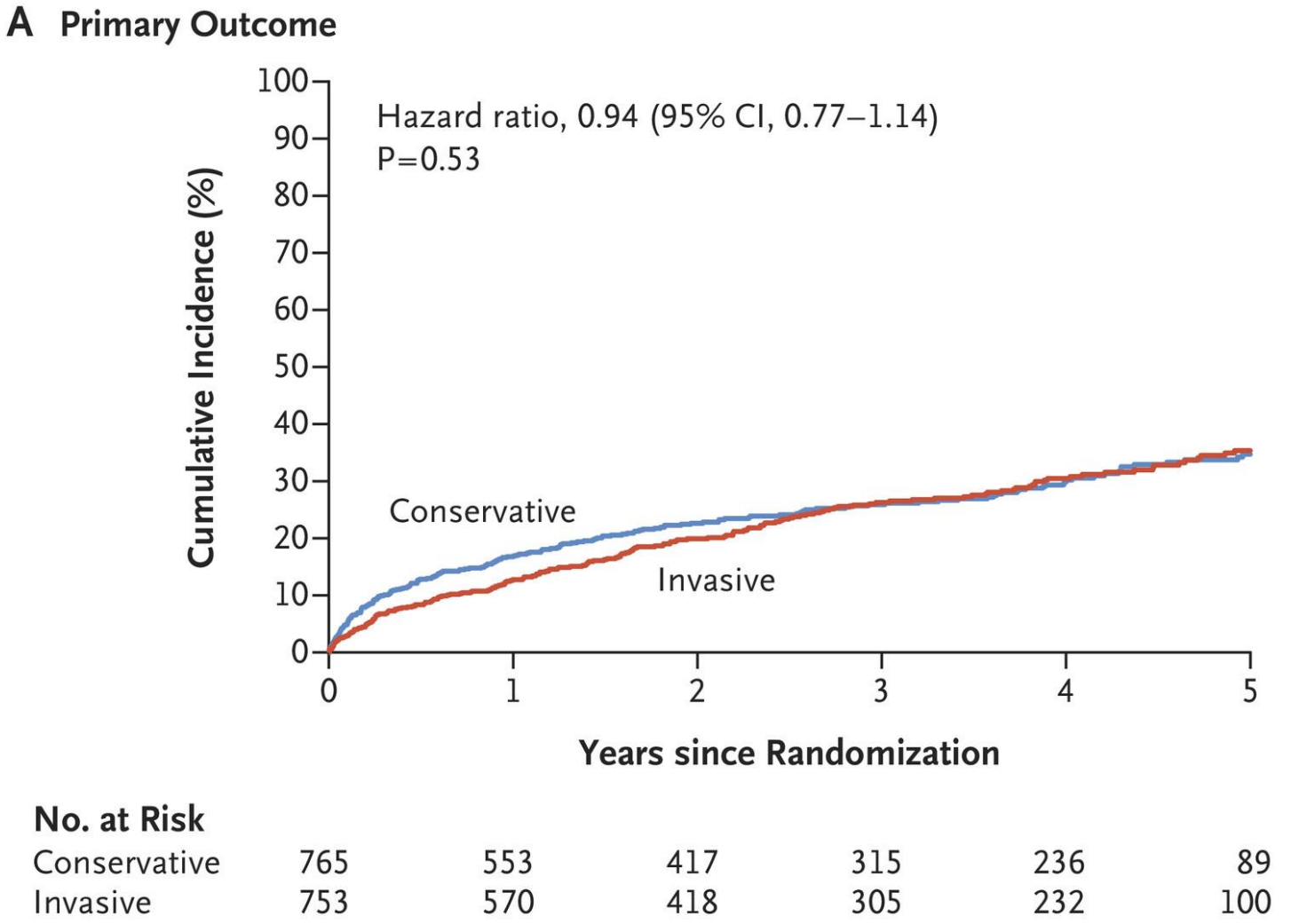
±75% of HFPEF patients have cardiac microvascular disease (CMD)

91% with CAD or CMD

Systematic rule-out of CAD is performed by 37% of doctors, while 35 % look for CAD only if symptoms or hIgh CAD risk .

Saldarriaga et al. Curr Probl Cardiol 2024

The SENIOR-RITA trial : prospective, multicenter, open-label, randomized controlled trial.



1518 NSTEMI patients >75 yrs randomized to an invasive strategy compared to a conservative treatment strategy.

No difference in primary endpoint between invasive strategy & conservative strategy.

No difference in HF Hospitalization between groups (11%)

No RCTs on invasive strategy in HFPEF patients

Kunadian NEJM 2024

Recommendations for management of chronic coronary syndrome patients with chronic heart failure (1)

Recommendations	Class	Level
Managing CCS in heart failure patients		
In HF patients with LVEF >35% and suspected CCS with low or moderate (>5%–50%) pre-test likelihood of obstructive CAD, CCTA or functional imaging is recommended.	I	C
In HF patients with LVEF >35% and suspected CCS with very high (>85%) pre-test likelihood of obstructive CAD, ICA (with FFR, iFR, or QFR when needed) is recommended.	I	C
In patients with HFpEF with persistent angina or equivalent symptoms and normal or non-obstructive epicardial coronary arteries, PET or CMR perfusion or invasive coronary functional testing should be considered to detect or rule out coronary microvascular dysfunction.	IIa	B

2024 ESC Guidelines for the management of chronic coronary syndromes
(European Heart Journal; 2024 – doi: 10.1093/eurheartj/ehae177)

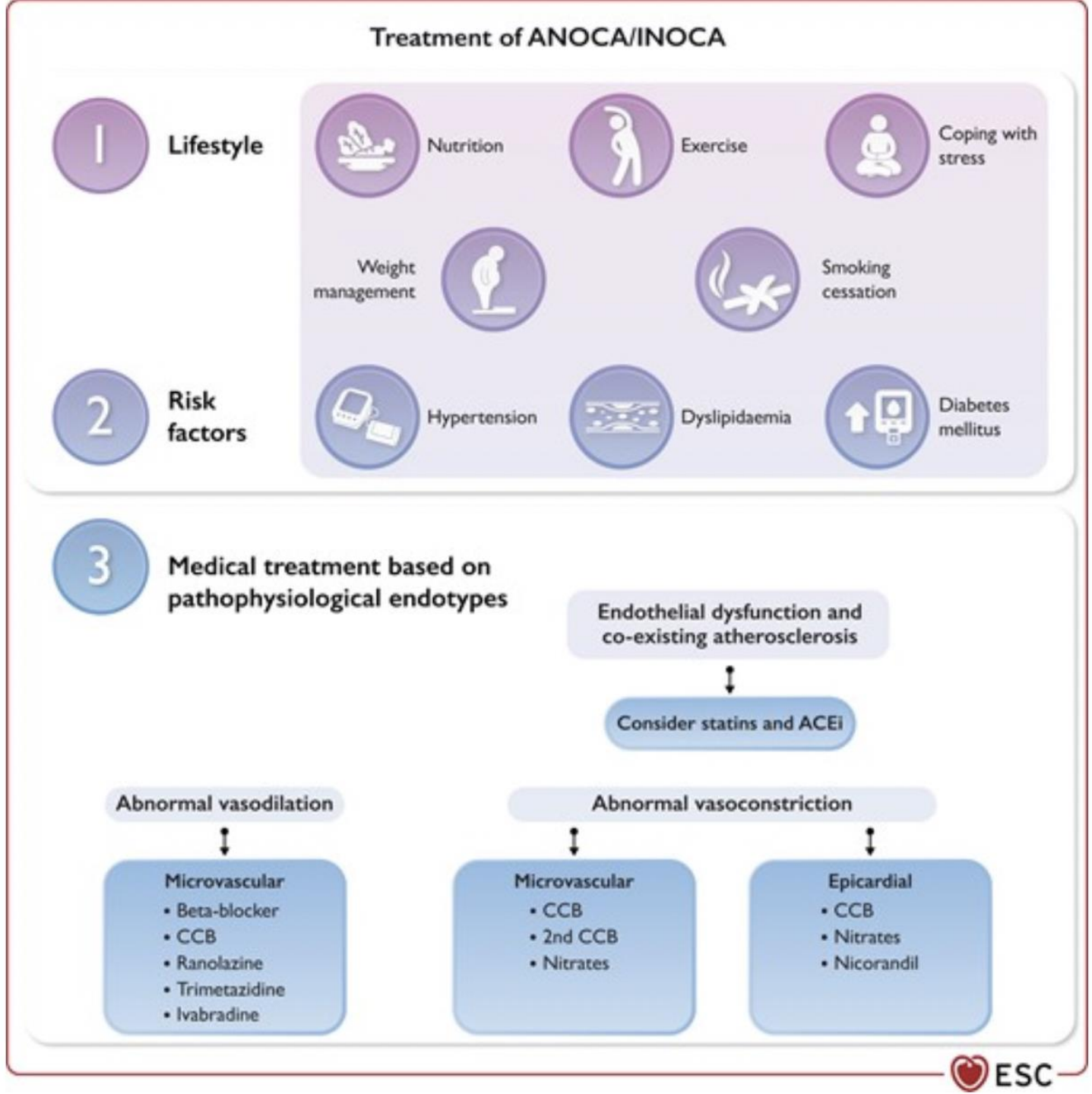
Recommendations for management of chronic coronary syndrome patients with chronic heart failure (2)

Recommendations	Class	Level
Managing heart failure in CCS patients		
It is recommended that CCS patients with HF be enrolled in a multidis… …ent programme to reduce the risk of HF hospitalization and to impr…	I	A
An ACE-I, an MRA, an SGLT2 inhibitor (dapagliflozin or em… …nditions, a beta-blocker are recommended for CCS patients … …or HF hospitalization and death.	I	A
An SGLT2 inhibitor (dapagliflozin or em… …in patients with Heart Failure with mildly reduced Ejec… …pEF to reduce the risk of HF hospitalization or cardiov…	I	A
An ARB is recomm… …s with CCS and HFrEF unable to tolerate an ACE-I or ARN… …pitalization and cardiovascular death.	I	B
Sacubitril/… …d as a replacement for an ACE-I or ARB in CCS patients with HFrEF to re… …nospitalization and of cardiovascular and all-cause death.	I	B
Diuretics are… …nded in CCS patients with HF and signs and/or symptoms of congestion to alleviate sy…ptoms, improve exercise capacity, and reduce HF hospitalizations.	I	B

Optimal HF drugs GDMT recommended for all HF patients with CCS IA

Microvascular Disease Management in HFPEF

ESC CCS 2024 Guidelines



Take Home Messages

-AF and CAD (& CMD) are present in more than 2/3 of HFPEF patients

-In both conditions, **global management** of the patient with **HF drugs and health style change** are **first line** treatments ➔ **first treat HF !!!**

-If AF appears as a driver of the HF in case of moderate atrial cardiomyopathy features : rhythm control should be considered (cardioversion, ablation, amiodarone)

-If AF is permanent with significant atrial damage : rate control to be preferred

-In both AF & CAD conditions, personalized management targeted with the patient using tools/therapies at your disposal is the best management