Insuffisance cardiaque: Maladie et Prise en charge médicamenteuse

Dr Legrand Lise

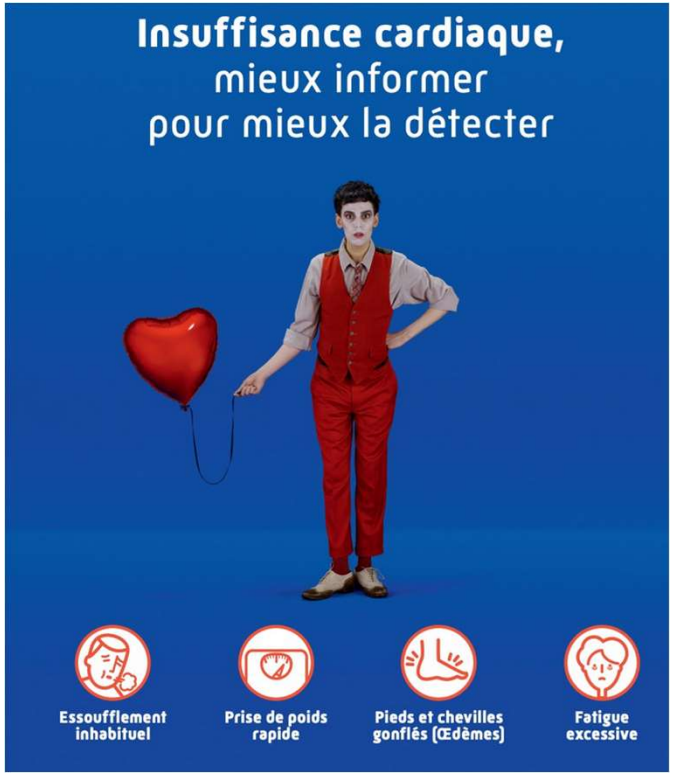
Insuffisance cardiaque: Définition

Définitions

L'insuffisance cardiaque (IC) est définie comme l'**incapacité du cœur à délivrer un débit suffisant aux besoins de l'organisme**

L' IC est définie cliniquement comme des **symptômes et des signes physiques secondaires à un dysfonctionnement cardiaque** (dysfonction systolique ou diastolique) le plus souvent objectivée par échocardiographie.

On distingue deux types d'IC liés à un dysfonctionnement du VG:
- **l'IC à fonction systolique altérée**
- **l'IC à fonction systolique préservée** (IC « diastolique »).



PHYSIOPATHOLOGIE

1/IC à FEVG altérée

- IC liée au dysfonctionnement de la systole VG

- Dysfonctionnement secondaire à un dommage myocardique (infarctus, lésion toxique, altération génétique de la contractilité…)

- Compensation:

des **phénomènes locaux (remodelage)** et **systémiques (système neuro hormonal**) vont être mis en œuvre pour compenser la défaillance cardiaque

=> Objectif: maintenir le débit cardiaque, MAIS délétères à moyen/long terme,
-augmentent le travail et la consommation en oxygène du cœur
-à terme les signes d'IC apparaissent.

PHYSIOPATHOLOGIE

*Activation des systèmes neuro hormonaux

*Activation du **système sympathique**: Inotropisme et chronotropisme

-une tachycardie dont l'objectif est de maintenir le DC (DC=FC X VES).
-une vaso constriction artérielle avec pour objectif l'augmentation de la pression artérielle et le maintien de la perfusion des organes. Effet délétère : augmentation de la post charge VG.

***Activation du SRAA =>**une rétention hydrosodée avec pour objectif l'augmentation de la pré charge VG et du DC. Effet délétère : signes congestifs cliniques (oedèmes)

PHYSIOPATHOLOGIE

2/IC à FEVG préservée

- Liée à un **trouble de remplissage du VG** (IC diastolique).
- Se rencontre dans les pathologies occasionnant une élévation de la post charge du VG (HTA, sténose valvulaire aortique)
- La surcharge chronique en pression du VG induit une **hypertrophie** compensatrice des parois myocardiques qui s'associe à une altération de la qualité de la diastole.

Epidémiologie Insuffisance cardiaque

- Maladie chronique grave
- >1,5 millions de patients en France, 2-3% de la population française ++ après 60 ans
- 10% des >75 ans
- En augmentation avec le vieillissement de la population et l'amélioration des PEC
- Taux de mortalité: 50% à 5 ans à partir de l'apparition des premiers symptômes
- Durée d'hospitalisation moyenne en Europe lors d'une poussée d'insuffisance cardiaque > dix jours
- Le taux de ré hospitalisation pour la même pathologie dans les six mois est de l'ordre de 20%

Epidémiologie

1 décès toutes les **7** minutes

Soit plus de **70 000** morts par an

C'est **2 X** plus que les cancers et
14 X plus que les accidents de la route

1,5 millions  de Français touchés par l'insuffisance cardiaque

120 000 nouveaux cas dépistés chaque année
Et ce chiffre augment de **25%** tous les 4 ans

165 000 hospitalisations par an

Plus de **2,5 milliards** d'euros dépensés chaque année en frais d'hospitalisation

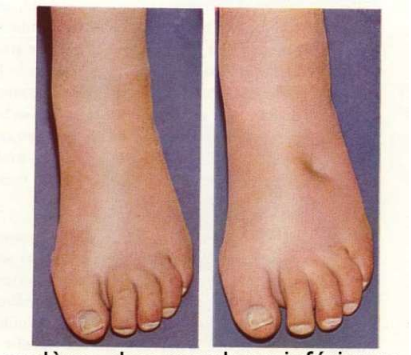
Après une hospitalisation :

45% des patients seront réhospitalisés dans l'année et

29% décèderont dans l'année

Vaincre
L'INSUFFISANCE CARDIAQUE

Symptômes/ Signes physiques


oedème des membres inférieurs
signe du godet

Insuffisance cardiaque : les 4 signes d'alerte

ESSOUFFLEMENT INHABITUEL
Des difficultés à reprendre son souffle après un simple effort ou au repos ?

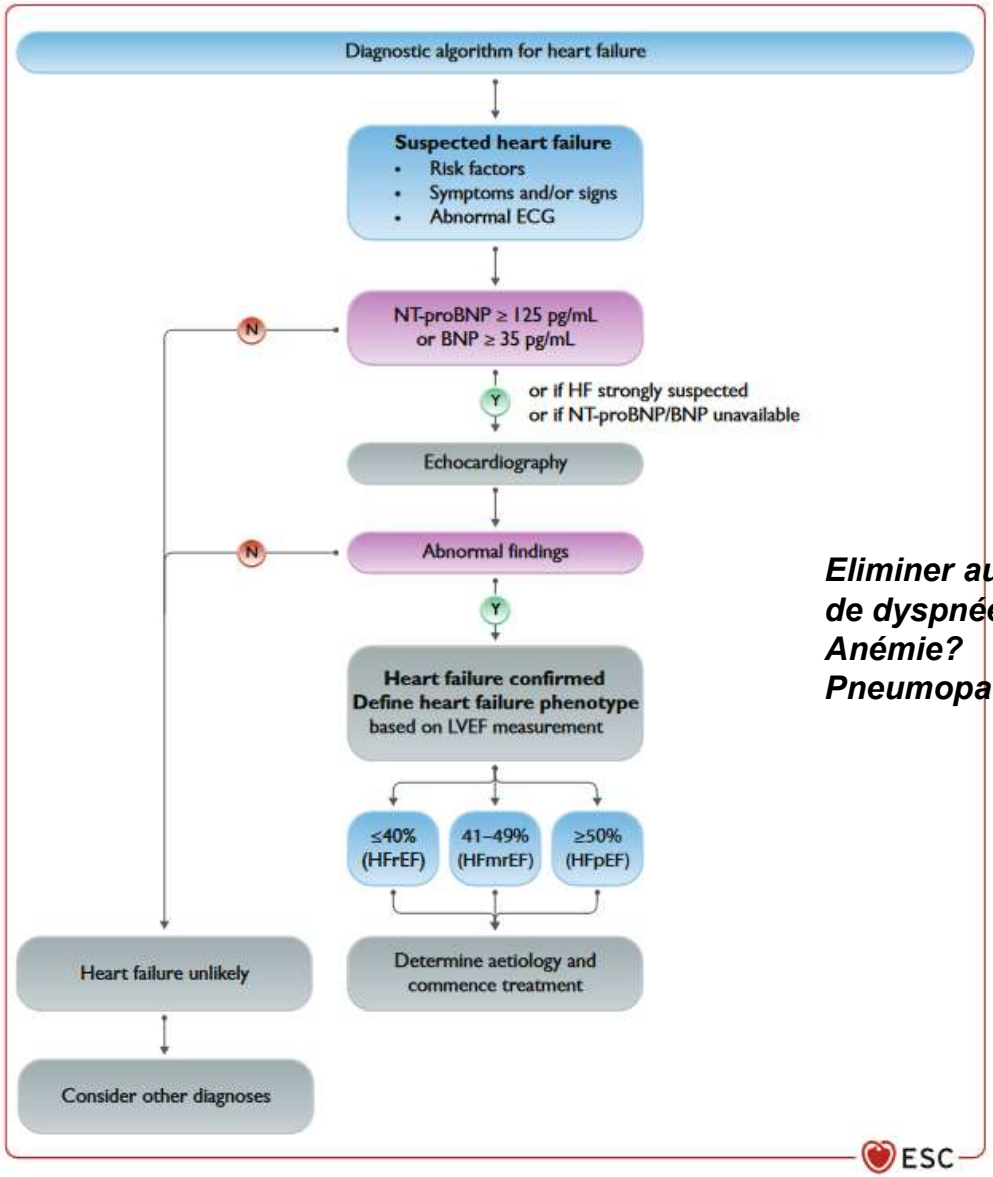
PRISE DE POIDS RAPIDE
2 à 3 kilos supplémentaires en quelques jours et sans explication ?

PIEDS ET CHEVILLES GONFLÉS
Des œdèmes qui apparaissent sur les pieds et les chevilles, laissant visible la marque de l'élastique des chaussettes ?

FATIGUE EXCESSIVE
Une sensation de fatigue importante lors de la réalisation des activités quotidiennes, comme la marche, la montée des escaliers ou encore le port de charges ?

Lire la transcription textuelle de l'infographie

Diagnostic



Recommended diagnostic tests in all patients with suspected chronic heart failure

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

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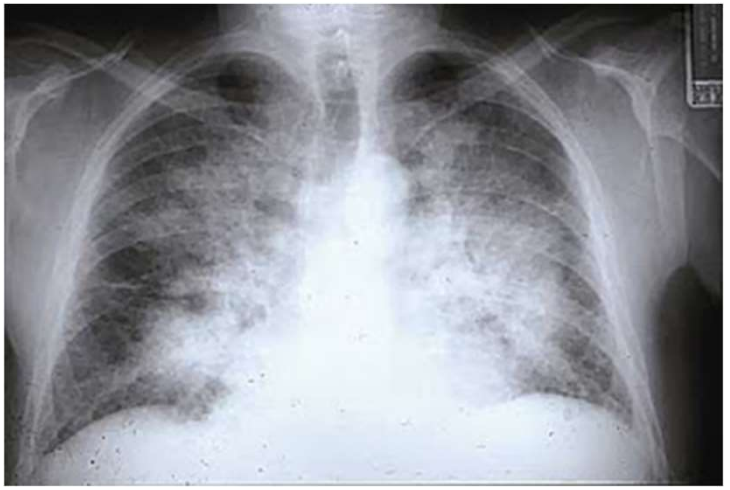
Eliminer autres causes de dyspnée
Anémie?
Pneumopathie ?



Echographie cardiaque

- **Diagnostic d'IC**

-Fonction VG :

- Analyse de la **fonction systolique** par la Fraction d'Ejection du Ventricule Gauche : une FEVG > 50% est considérée normale)
- Analyse de la **fonction diastolique** (évaluation des pressions de remplissage du VG)
- -Autres causes d'insuffisance cardiaque : valvulopathies sévères, épanchement péricardique…
- **Evaluation du débit cardiaque**
- **Evaluation du pronostic** (dilatation du ventricule gauche, de l'oreillette gauche, du ventricule droit)

Diagnostic

Type of HF		IC FE réduite	IC FE modérément réduite	IC FE PRESERVEE
CRITERIA	1	Symptoms ± Signs[a]	Symptoms ± Signs[a]	Symptoms ± Signs[a]
	2	LVEF ≤40%	LVEF 41–49%[b]	LVEF ≥50%
	3	–	–	

IC FEV REDUITE

Augmentation masse VG
Augmentation de la taille de l'OG
Augmentation du BNP / NT ProBNP
Augmentation des pressions de remplissage en écho
Augmentation de la PAP en écho

ESC European Society of Cardiology
European Heart Journal (2021) **42**, 3599–3726
doi:10.1093/eurheartj/ehab368

ETIOLOGIES

2.5 Rechercher des maladies nécessitant un traitement propre ou des situations potentiellement réversibles ayant déclenché/favorisé l'IC

2.5.1 Cardiopathies sous-jacentes nécessitant un traitement propre

- cardiopathie ischémique, valvulaire, rythmique, congénitale, hypertensive.
- cardiotoxicité : consommation excessive d'alcool, antécédent de chimiothérapie (anthracyclines) de radiothérapie thoracique, atteinte infectieuse.
- maladie générale se compliquant d'IC : phéochromocytome, maladies de système, hyperthyroïdie, acromégalie.

Examens complémentaires:

-coronarographie/coro TDM
-IRM cardiaque
-Analyse génétique/ biologique

HAS
HAUTE AUTORITÉ DE SANTÉ

Facteurs déclenchants la décompensation

HAUTE AUTORITÉ DE SANTÉ

Les causes les plus fréquentes sont :

- mauvaise observance du traitement ou prise hydrosodée excessive ;
- fibrillation atriale (FA), trouble du rythme ventriculaire ;
- ischémie myocardique, HTA non contrôlée, embolie pulmonaire ;
- valvulopathie et CMNO
- ajout récent de médicaments tels que : AINS, corticoïdes, inhibiteurs calciques (vérapamil, diltiazem), antiarythmiques de classe I (cibenzoline, disopyramide, flecainide, hydroquinidine, propafenone), trastuzumab, inhibiteurs de la tyrosine kinase, monoxidine (forme retard) ;
- intoxication digitalique, abus d'alcool ;
- anémie ;
- infections intercurrentes (bronchopneumopathie, infection virale) ;
- apparition d'une insuffisance rénale, déshydratation intracellulaire avec hypernatrémie;
- hyperthyroïdie, hypothyroïdie.

Facteurs de risque / comorbidités (à prendre en charge)

- Tabac/ Diabète/ obésité/dyslipidémie
- Dénutrition/ insuffisance rénale
- Syndrome apnée du sommeil 

- ➔ A corriger pour éviter les décompensations

ESC
European Society
of Cardiology

HAS
HAUTE AUTORITÉ DE SANTÉ

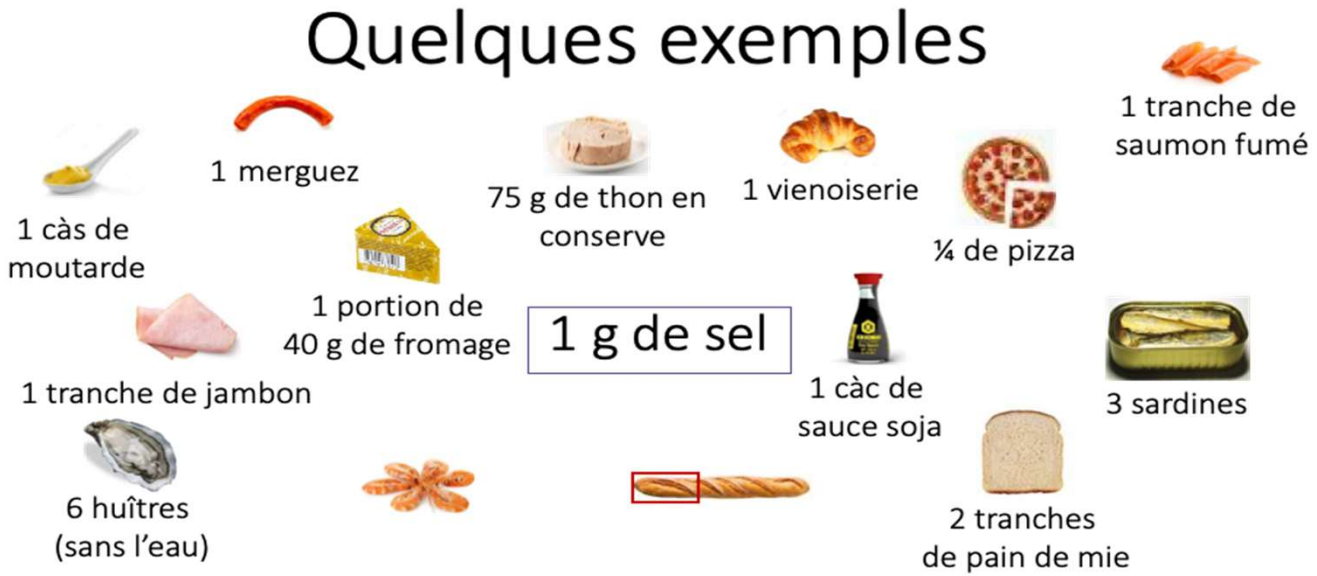
- Prise en charge du patient insuffisant cardiaque

Société
Française de
Cardiologie

American
Heart
Association®

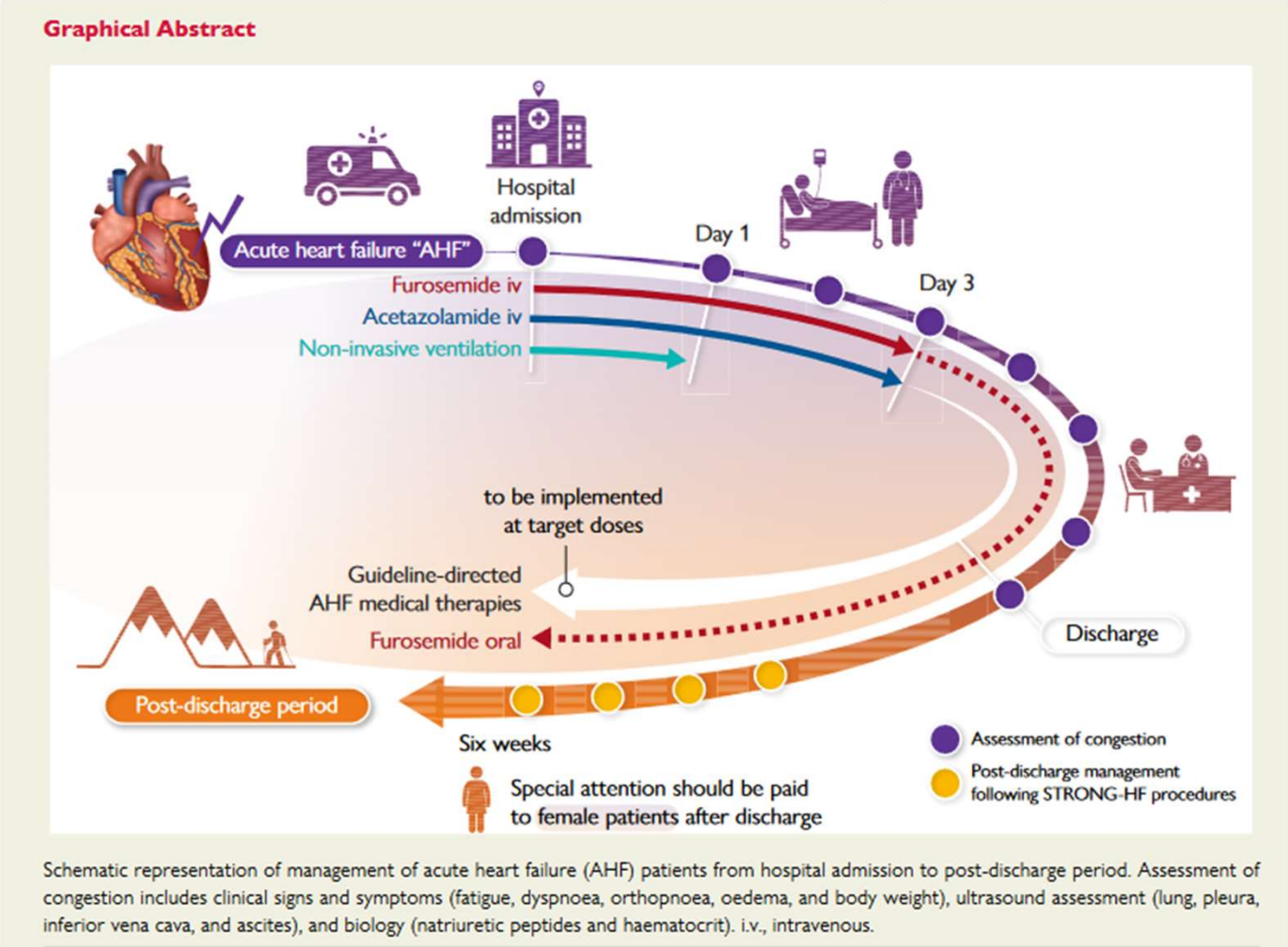
Prise en charge non médicamenteuse

- Education Thérapeutique
  - Observance médicamenteuse
  - Education au régime limité en sel
  - Activité physique



- Prise en charge médicamenteuse de l'insuffisance cardiaque

« Quelque soit la cause »



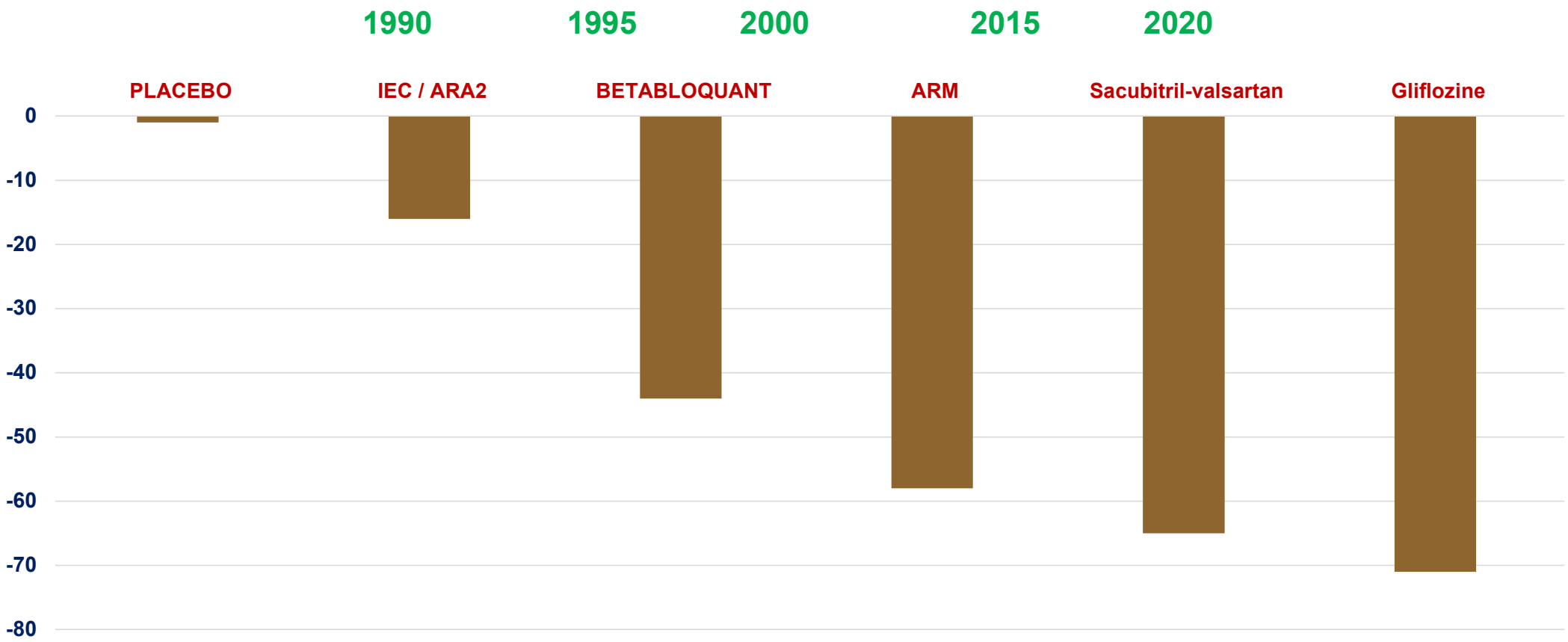
Schematic representation of management of acute heart failure (AHF) patients from hospital admission to post-discharge period. Assessment of congestion includes clinical signs and symptoms (fatigue, dyspnoea, orthopnoea, oedema, and body weight), ultrasound assessment (lung, pleura, inferior vena cava, and ascites), and biology (natriuretic peptides and haematocrit). i.v., intravenous.

- **Les diurétiques**
- Lutter contre la congestion
- Amélioration des symptômes
  - Diurétique de l'anse : Furosémide/ Bumétanide
  - Supplémentation potassique si nécessaire

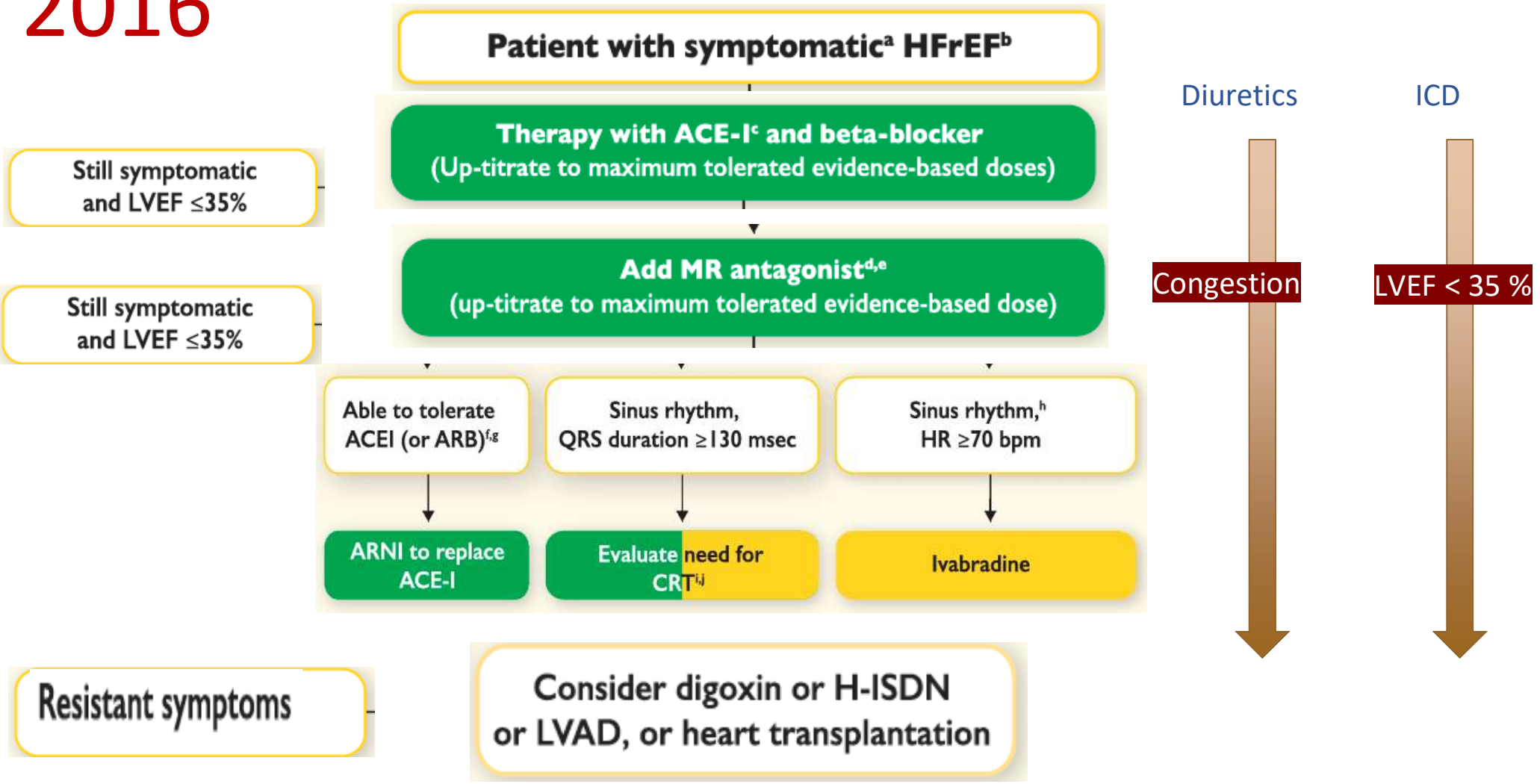
- Insuffisance cardiaque à FEVG réduite

Le traitement médical de l'IC chronique depuis 30 ans

BAISSE THEORIQUE EN POURCENTAGE* DES DIFFERENTES CLASSES THERAPEUTIQUES SUR LA MORTALITE DANS L'ICFER



2016



ESC Guidelines for the diagnosis and treatment of acute and chronic heart failure, Eur Heart J 2016

CHAMP-HF: Fréquence d'utilisation des médicaments

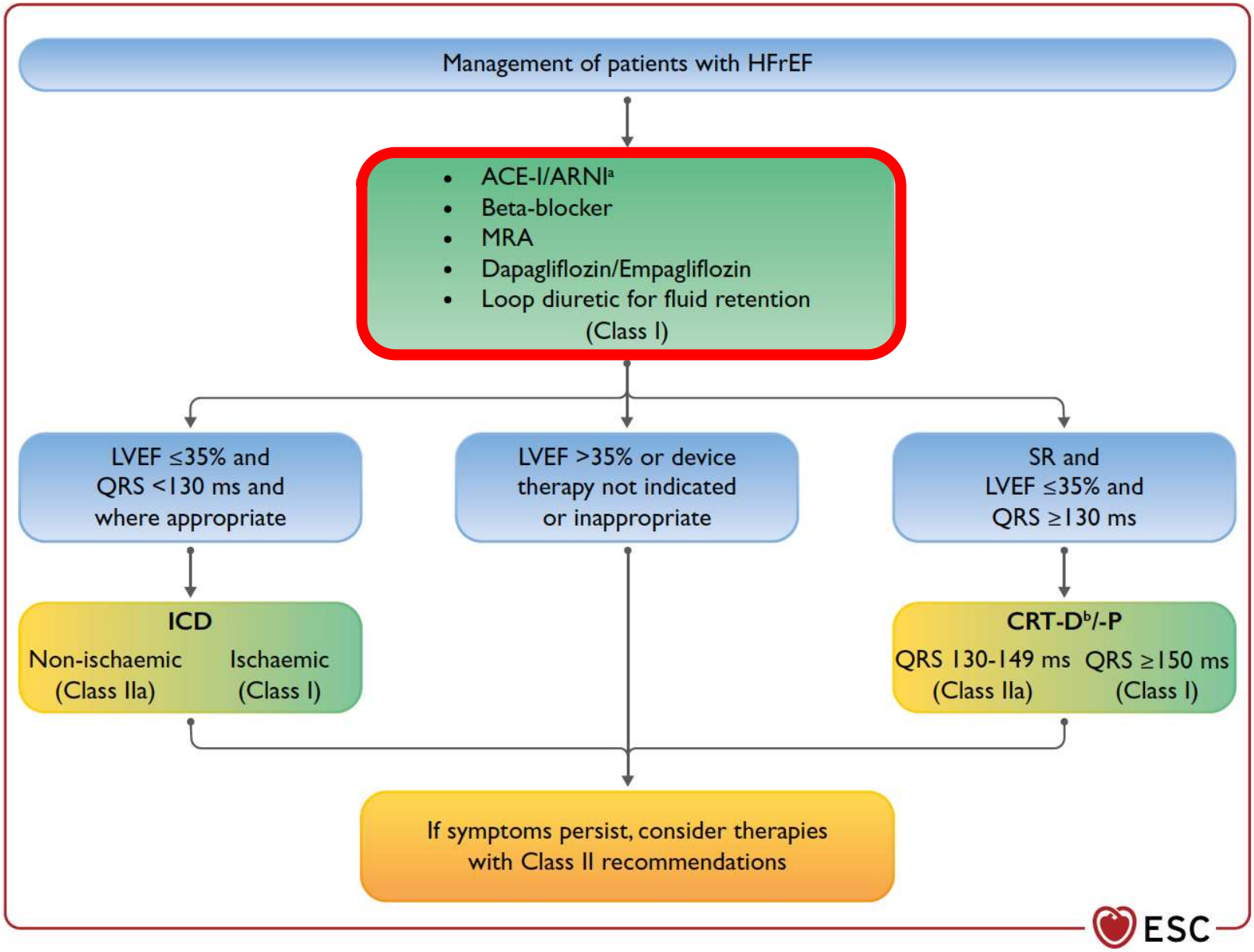
3,518 patients from 150 primary care and cardiology practices

CENTRAL ILLUSTRATION Use and Dosing of Guideline-Directed Medical Therapy Among Patients With Chronic HFrEF in Contemporary U.S. Outpatient Practice

	ACEI/ARB	ARNI	ACEI/ARB/ ARNI	Beta-Blocker	MRA
Without Contraindication and Not Treated	1374	3029	920	1159	2317
Treated	2107	452	2536	2351	1163
With Contraindication	37	37	62	8	38

Greene , JACC 2018

2021


Management of patients with HFrEF
ACE-I/ARNI[a]
Beta-blocker
MRA
Dapagliflozin/Empagliflozin
Loop diuretic for fluid retention
(Class I)
LVEF ≤35% and QRS <130 ms and where appropriate
LVEF >35% or device therapy not indicated or inappropriate
SR and LVEF ≤35% and QRS ≥130 ms
ICD
Non-ischaemic (Class IIa)
Ischaemic (Class I)
CRT-D[b]/-P
QRS 130-149 ms (Class IIa)
QRS ≥150 ms (Class I)
If symptoms persist, consider therapies with Class II recommendations
ESC

- ACE-I/ARNI[a]
- Beta-blocker
- MRA
- Dapagliflozin/Empagliflozin
- Loop diuretic for fluid retention

(Class I)

2021 "stratégie thérapeutique : Les 4 à la fois !"

Recommendations	Class[a]	Level[b]
An ACE-I is recommended for patients with HFrEF to reduce the risk of HF hospitalization and death.[110–113]	I	A
A beta-blocker is recommended for patients with stable HFrEF to reduce the risk of HF hospitalization and death.[114–120]	I	A
An MRA is recommended for patients with HFrEF to reduce the risk of HF hospitalization and death.[121,122]	I	A
Dapagliflozin or empagliflozin are recommended for patients with HFrEF to reduce the risk of HF hospitalization and death.[108,109]	I	A
Sacubitril/valsartan is recommended as a replacement for an ACE-I in patients with HFrEF to reduce the risk of HF hospitalization and death.[105]	I	B
Loop diuretics		
Diuretics are recommended in patients with HFrEF with signs and/or symptoms of congestion to alleviate HF symptoms, improve exercise capacity, and reduce HF hospitalizations.[137]	I	C
ARB		
An ARB[c] is recommended to reduce the risk of HF hospitalization and CV death in symptomatic patients unable to tolerate an ACE-I or ARNI (patients should also receive a beta-blocker and an MRA).[138]	I	B

Sacubitril / valsartan as first line therapy
In ACE-I naive (de novo) patients

IIb	B

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

GLIFLOZINE

Dapagliflozin in Patients with Heart Failure and Reduced Ejection Fraction

J.J.V. McMurray, S.D. Solomon, S.E. Inzucchi, L. Køber, M.N. Kosiborod, F.A. Martinez, P. Ponikowski, M.S. Sabatine, I.S. Anand, J. Bělohlávek, M. Böhm, C.-E. Chiang, V.K. Chopra, R.A. de Boer, A.S. Desai, M. Diez, J. Drozdz, A. Dukát, J. Ge, J.G. Howlett, T. Katova, M. Kitakaze, C.E.A. Ljungman, B. Merkely, J.C. Nicolau, E. O'Meara, M.C. Petrie, P.N. Vinh, M. Schou, S. Tereshchenko, S. Verma, C. Held, D.L. DeMets, K.F. Docherty, P.S. Jhund, O. Bengtsson, M. Sjöstrand, and A.-M. Langkilde, for the DAPA-HF Trial Committees and Investigators*

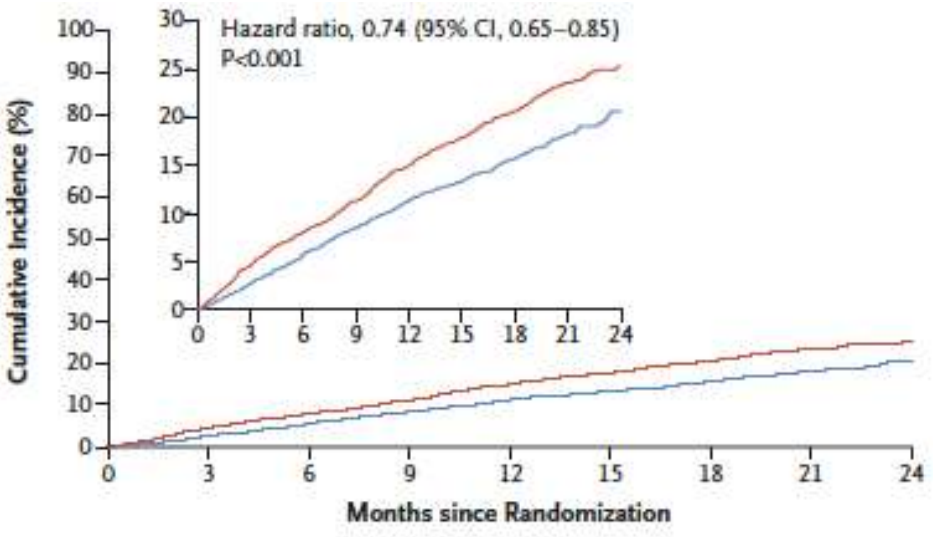
The NEW ENGLAND JOURNAL of MEDICINE

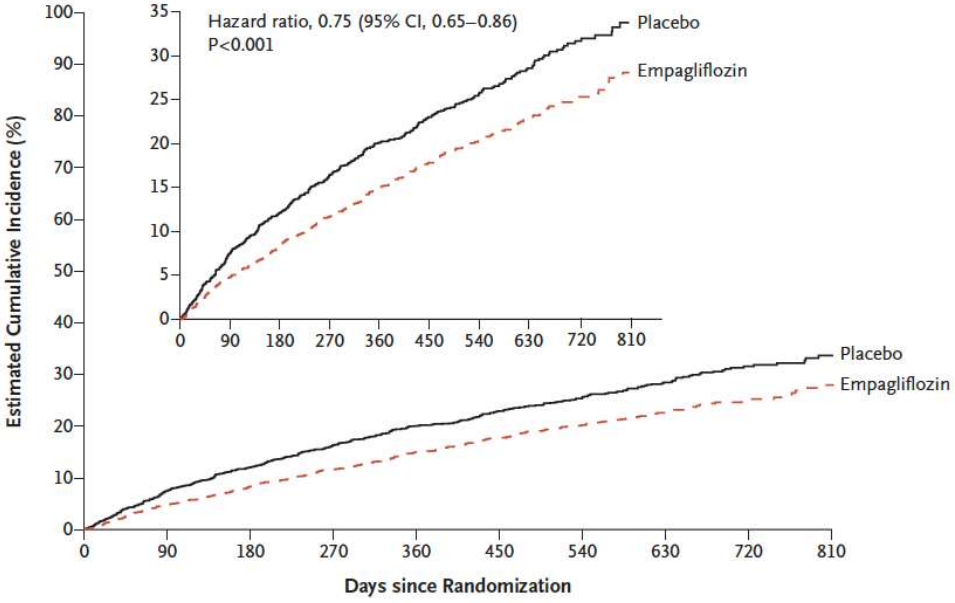
ORIGINAL ARTICLE

Cardiovascular and Renal Outcomes with Empagliflozin in Heart Failure

M. Packer, S.D. Anker, J. Butler, G. Filippatos, S.J. Pocock, P. Carson, J. Januzzi, S. Verma, H. Tsutsui, M. Brueckmann, W. Jamal, K. Kimura, J. Schnee, C. Zeller, D. Cotton, E. Bocchi, M. Böhm, D.-J. Choi, V. Chopra, E. Chuquiure, N. Giannetti, S. Janssens, J. Zhang, J.R. Gonzalez Juanatey, S. Kaul, H.-P. Brunner-La Rocca, B. Merkely, S.J. Nicholls, S. Perrone, I. Pina, P. Ponikowski, N. Sattar, M. Senni, M.-F. Seronde, J. Spinar, I. Squire, S. Taddei, C. Wanner, and F. Zannad, for the EMPEROR-Reduced Trial Investigators*

Cardiovascular death or hospitalisation for heart failure

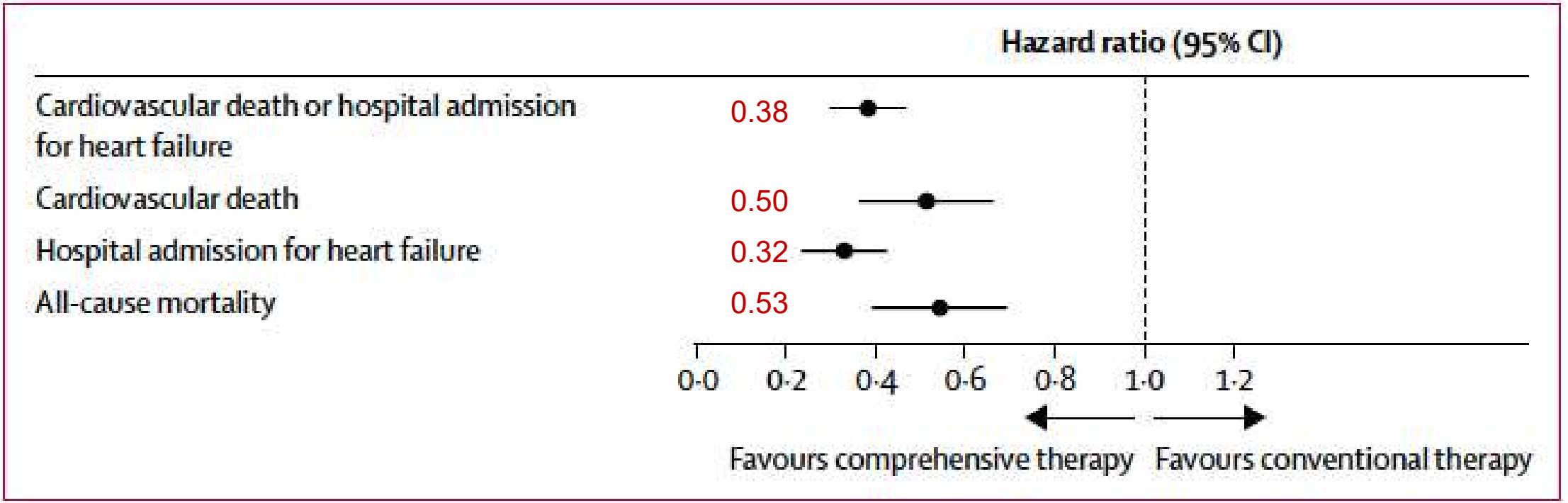




McMurray, N Engl J Med 2019

Packer, N Engl J Med 2020

EMPHASIS-HF (éplerenone), PARADIGM-HF (sacubitril/vasartan) and DAPA-HF (dapagliflozin)



COMPARAISON DES 2 STRATEGIES

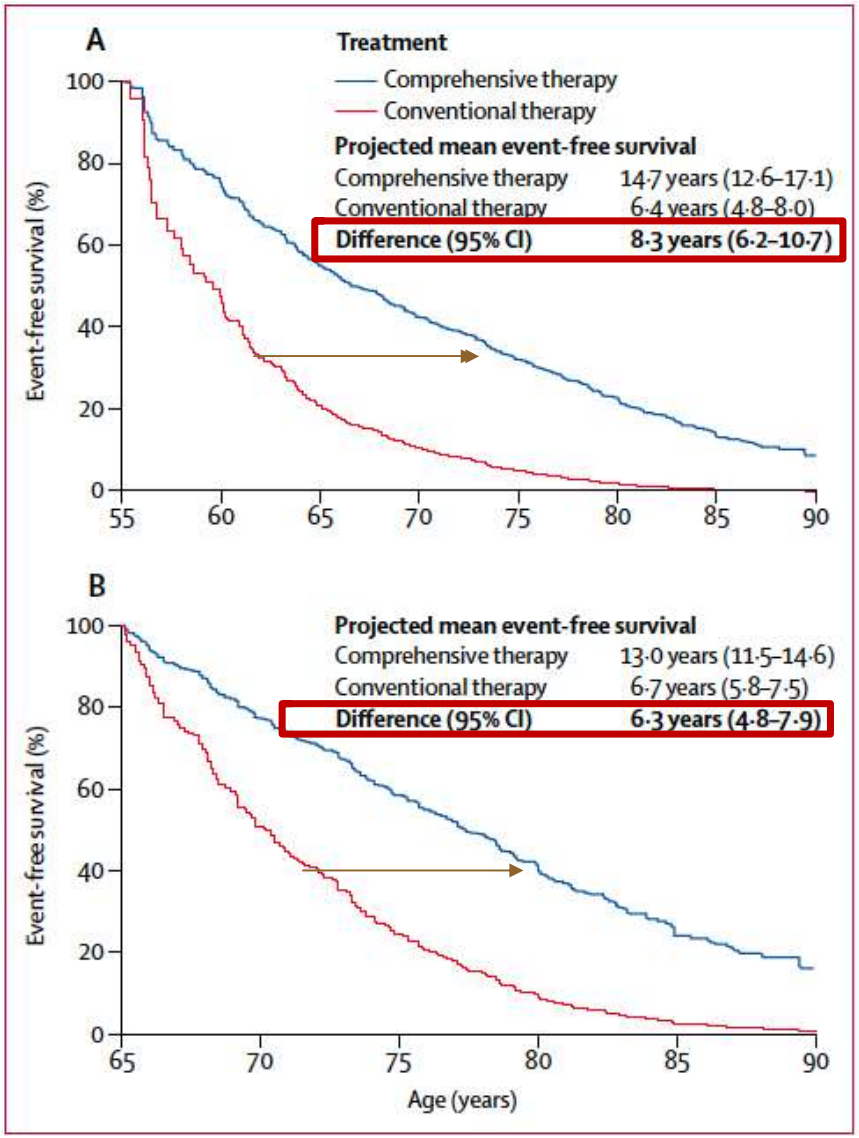
Conventional therapy: ACE-I or ARB + BETABLOCKERS

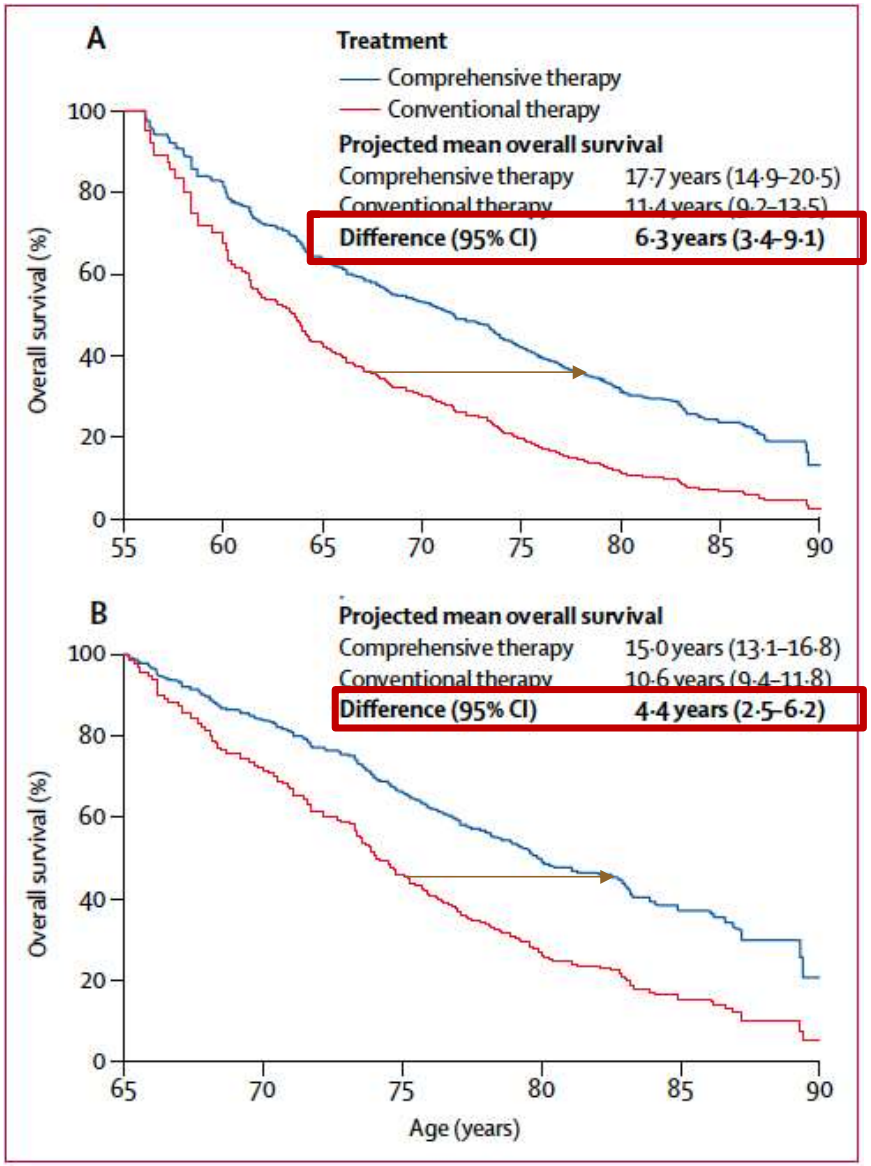
Comprehensive therapy: ARNi + BETABLOCKERS + MRA + GLIFLOZIN

Vaduganathan, Lancet 2020

>55 ans

>65 ans





Vaduganathan, Lancet 2020

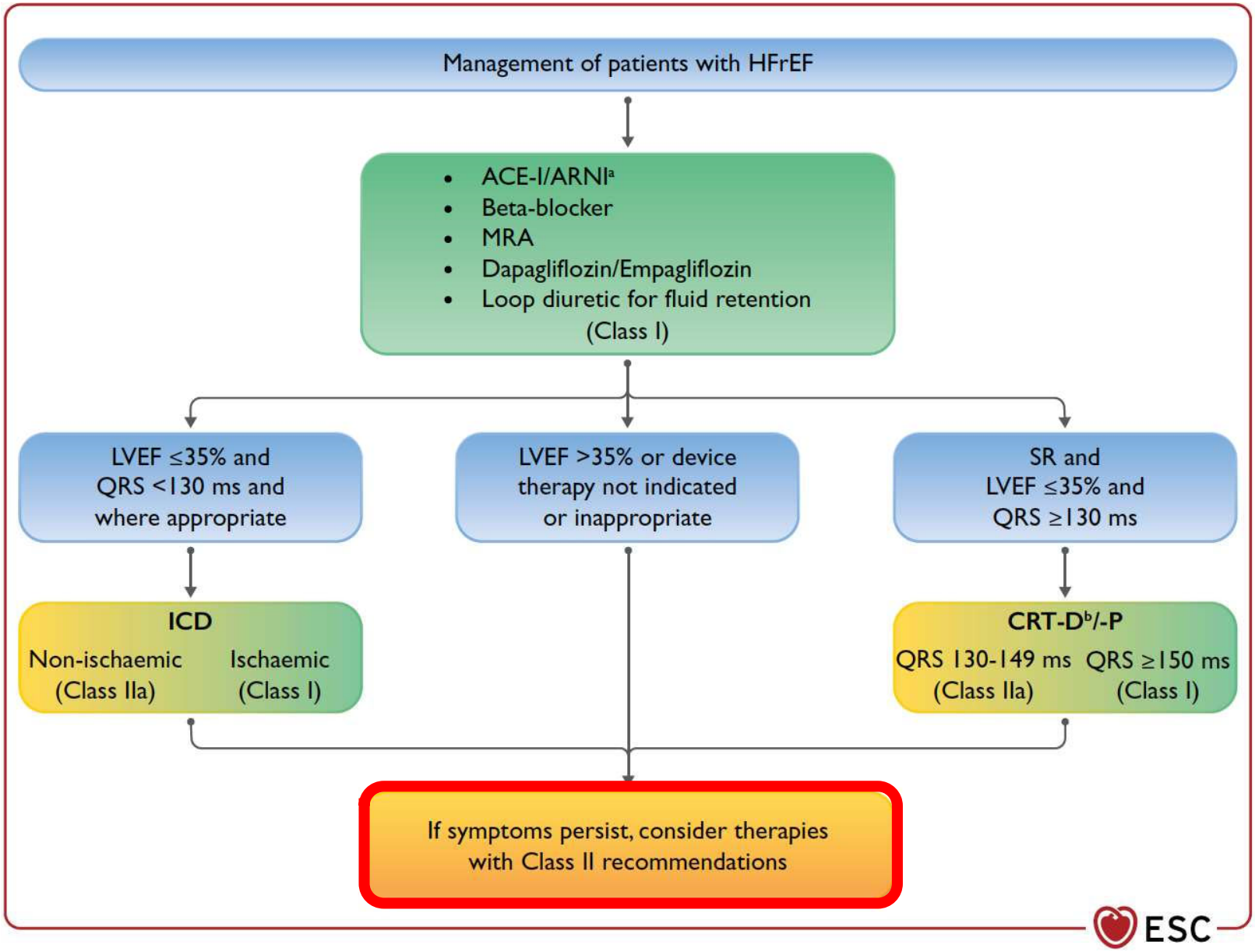
Safety, tolerability, and efficacy of up-titration of guideline-directed medical therapies for acute heart failure (STRONG-HF): a multinational, open-label, randomised, trial

Alexandre Mebazaa, Beth Davison, Ovidiu Chioncel, Alain Cohen-Solal, Rafael Diaz, Gerasimos Filippatos, Marco Metra, Piotr Ponikowski, Karen Sliwa, Adriaan A Voors, Christopher Edwards, Maria Novosadova, Koji Takagi, Albertino Damasceno, Hadiza Saidu, Etienne Gayat, Peter S Pang, Jelena Celutkiene, Gad Cotter

Efficacité et tolérance d'une Titration des traitements de l'insuffisance cardiaque rapide =Jusqu'à la dose maximale tolérée clinique et biologique ! En 6/8 semaines

	High-intensity care group (n=542)	Usual care group (n=536)	Adjusted treatment effect (95% CI)	Adjusted risk ratio (95% CI)	p value
Primary endpoint					
All-cause death or heart failure readmission by day 180*	74/506 (15·2%)	109/502 (23·3%)	8·1 (2·9 to 13·2)	0·66 (0·50 to 0·86)	0·0021
Secondary endpoints					
Change from baseline to day 90 in EQ-5D VAS†	10·72 (0·88)	7·22 (0·90)	3·49 (1·74 to 5·24)	NA	<0·0001
All-cause death by day 180*	39/506 (8·5%)	48/502 (10·0%)	1·6 (−2·3 to 5·4)	0·84 (0·56 to 1·26)	0·42
All-cause death or heart failure readmission by day 90*	55 (10·4%)	72 (13·8%)	3·4 (−0·4 to 7·3)	0·73 (0·53 to 1·02)	0·081
Prespecified exploratory endpoints					
Cardiovascular death by day 180*	32/506 (6·9%)	44/502 (9·3%)	2·4 (−1·2 to 6·1)	0·74 (0·47 to 1·16)	0·19
Cardiovascular death by day 90*	17 (3·3%)	28 (5·4%)	2·1 (−0·3 to 4·6)	0·60 (0·33 to 1·09)	0·086
All-cause death by day 90*	23 (4·3%)	30 (5·7%)	1·4 (−1·2 to 4·0)	0·76 (0·45 to 1·29)	0·28
Heart failure readmission by day 180*	47/506 (9·5%)	74/502 (17·1%)	7·6 (3·0 to 12·1)	0·56 (0·38 to 0·81)	0·0011
Heart failure readmission by day 90*	36 (6·9%)	48 (9·5%)	2·5 (−0·8 to 5·8)	0·67 (0·43 to 1·04)	0·13
Finkelstein-Schoenfeld hierarchical composite‡	..	..	1·28 (1·13 to 1·46)	NA	0·0002
Proportion of comparisons where group is superior§	40·4%	29·4%	..	..	..
Proportion of comparisons where groups are tied	30·2%	NA	..	..	..
Sensitivity analyses					
All-cause death or heart failure readmission by day 180, excluding COVID-19 deaths*	69/506 (14·1%)	108/502 (23·0%)	8·9 (3·9 to 14·0)	0·61 (0·46 to 0·82)	0·0005
All-cause death by day 180, excluding COVID-19 deaths*	33/506 (7·1%)	47/502 (9·8%)	2·7 (−1·0 to 6·4)	0·72 (0·47 to 1·12)	0·15

Baisse de 34% CJP


Management of patients with HFrEF
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Beta-blocker
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Loop diuretic for fluid retention
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LVEF >35% or device therapy not indicated or inappropriate
SR and LVEF ≤35% and QRS ≥130 ms
ICD
Non-ischaemic (Class IIa)
Ischaemic (Class I)
CRT-D[b]/-P
QRS 130-149 ms (Class IIa)
QRS ≥150 ms (Class I)
If symptoms persist, consider therapies with Class II recommendations
ESC

I_f-channel inhibitor		
Ivabradine should be considered in symptomatic patients with LVEF ≤35%, in SR and a resting heart rate ≥70 b.p.m. despite treatment with an evidence-based dose of beta-blocker (or maximum tolerated dose below that), ACE-I/(or ARNI), and an MRA, to reduce the risk of HF hospitalization and CV death.[139]	IIa	B
Ivabradine should be considered in symptomatic patients with LVEF ≤35%, in SR and a resting heart rate ≥70 b.p.m. who are unable to tolerate or have contraindications for a beta-blocker to reduce the risk of HF hospitalization and CV death. Patients should also receive an ACE-I (or ARNI) and an MRA.[140]	IIa	C

Table 7.2 Evidence-based doses of disease-modifying drugs in key randomized trials in heart failure with reduced ejection fraction (or after myocardial infarction)

	Starting dose (mg)	Target dose (mg)
ACE-I		
Captopril[a]	6.25 *t.i.d.*	50 *t.i.d.*
Enalapril	2.5 *b.i.d.*	10–20 *b.i.d.*
Lisinopril[b]	2.5–5.0 *o.d.*	20–35 *o.d.*
Ramipril	2.5 *o.d.*	10 *o.d.*
Trandolapril[a]	0.5 *o.d.*	4 *o.d.*
Beta-blockers		
Bisoprolol	1.25 *o.d.*	10 *o.d.*
Carvedilol	3.125 *b.i.d.*	25 *b.i.d.*[d]
Metoprolol succinate (CR/XL)	12.5–25 *o.d.*	200 *o.d.*
Nebivolol[c]	1.25 *o.d.*	10 *o.d.*
ARBs		
Candesartan	4–8 *o.d.*	32 *o.d.*
Valsartan	40 *b.i.d.*	160 *b.i.d.*
Losartan[b,c]	50 *o.d.*	150 *o.d.*
MRAs		
Eplerenone	25 *o.d.*	50 *o.d.*
Spironolactone	25 *o.d.*	50 *o.d.*
ARNI		
Sacubitril/valsartan	49/51 *b.i.d.*	97/103 *b.i.d.*
***If*-channel blocker**		
Ivabradine	5 *b.i.d.*	7.5 *b.i.d.*

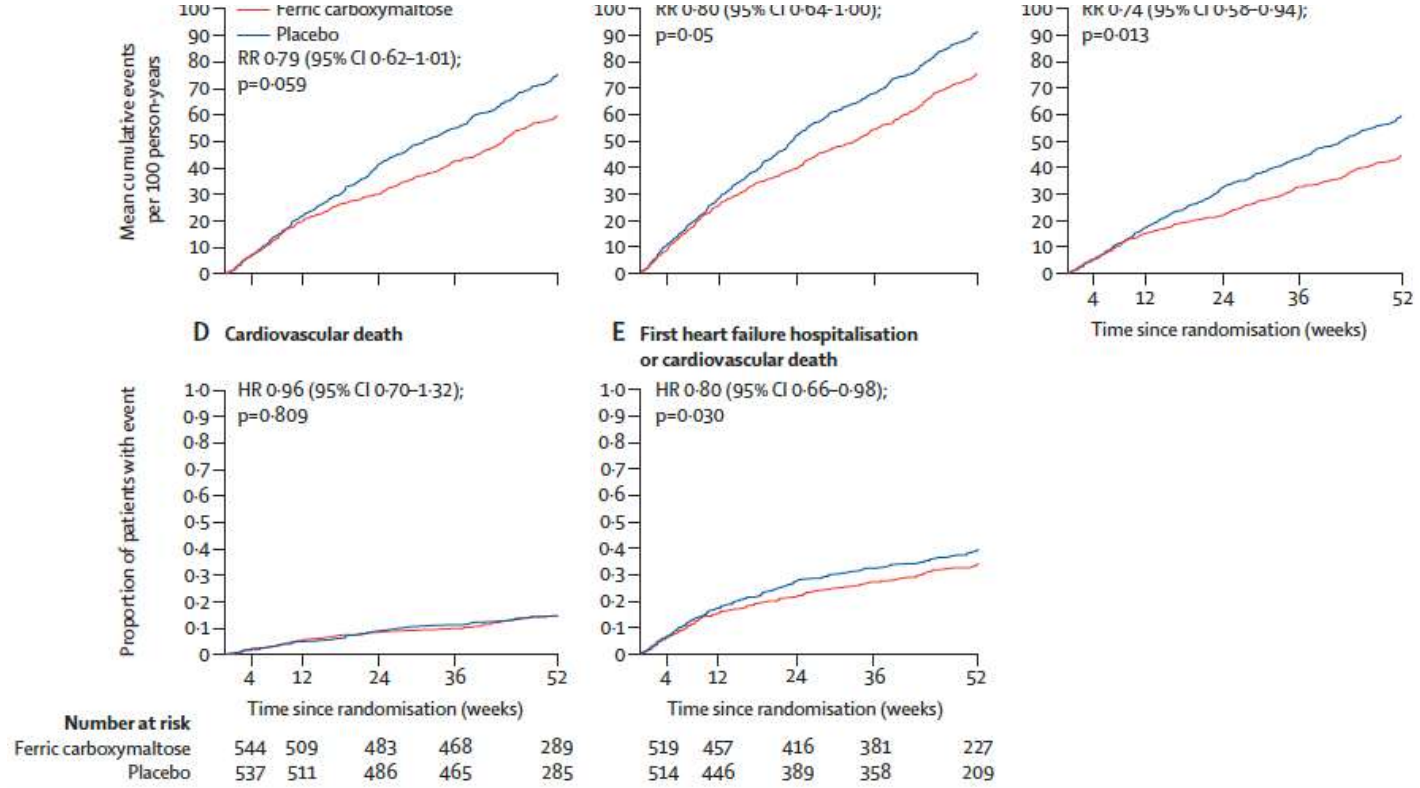
Table 7.3 Doses of diuretics commonly used in patients with heart failure

Diuretics	Initial dose (mg)		Usual daily dose (mg)	
Loop diuretics[a]				
Furosemide	20–40		40–240	
Bumetanide	0.5–1.0		1–5	
Torasemide	5–10		10–20	
Thiazides[b]				
Bendroflumethiazide	2.5		2.5–10	
Hydrochlorothiazide	25		12.5–100	
Metolazone	2.5		2.5–10	
Indapamide[c]	2.5		2.5–5	
Potassium-sparing diuretics[d]				
	+ACE-I/ ARB	-ACE-I/ ARB	+ACE-I/ ARB	-ACE-I/ ARB
Spironolactone/ eplerenone	12.5–25	50	50	100–200
Amiloride	2.5	5	5–10	10–20
Triamterene	25	50	100	200

En BREF Sortie d'une hospitalisation

Recommendations	Class[a]	Level[b]
It is recommended that patients hospitalized for HF be carefully evaluated to exclude persistent signs of congestion before discharge and to optimize oral treatment.[427,472]	I	C
It is recommended that evidence-based oral medical treatment be administered before discharge.[103,513]	I	C
An early follow-up visit is recommended at 1–2 weeks after discharge to assess signs of congestion, drug tolerance and start and/or uptitrate evidence-based therapy.[517,518]	I	C
Ferric carboxymaltose should be considered for iron deficiency, defined as serum ferritin <100 ng/mL or serum ferritin 100–299 ng/mL with TSAT <20%, to improve symptoms and reduce rehospitalizations.[512]	IIa	B

Ferric carboxymaltose for iron deficiency at discharge after acute heart failure: a multicentre, double-blind, randomised, controlled trial



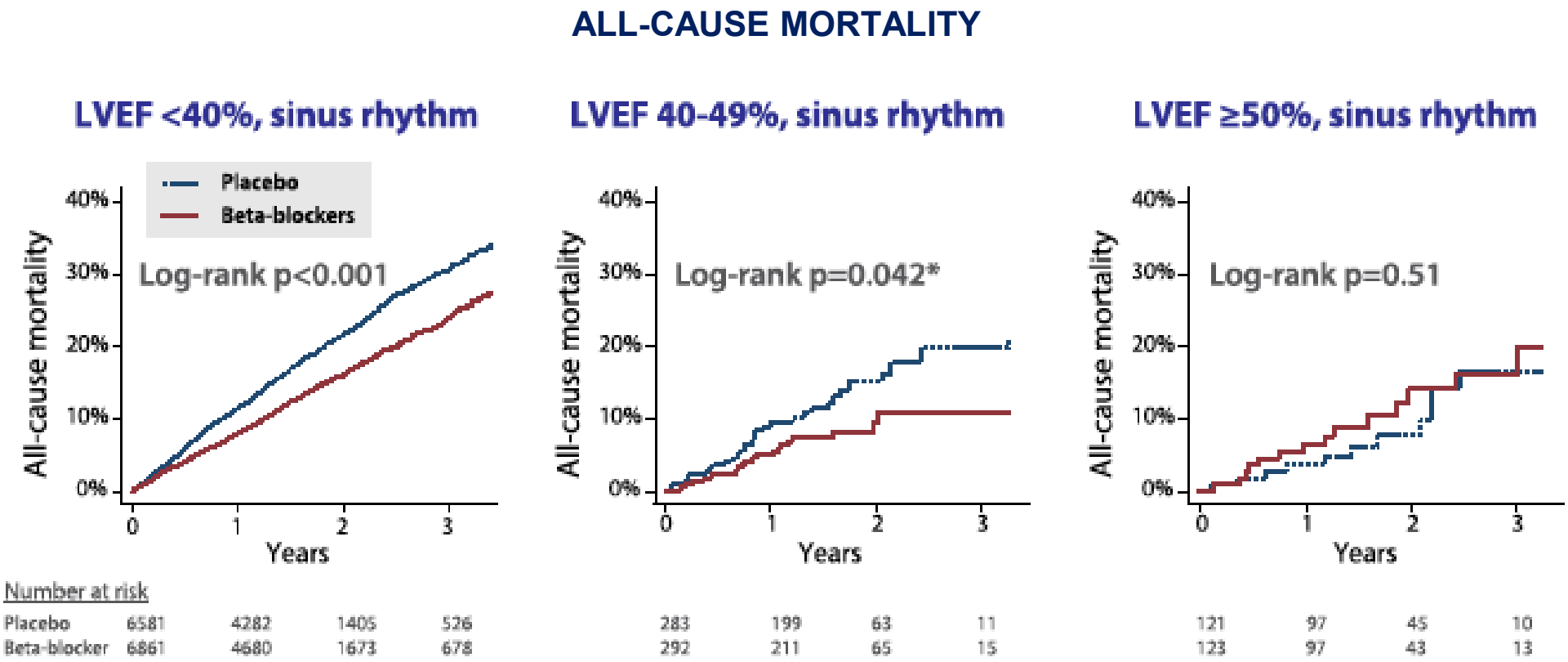
COVID-19 sensitivity analysis‡						
Total heart failure hospitalisations* and cardiovascular death	274	55·24	363	73·48	0·75 (0·59–0·96)	0·024
Total cardiovascular hospitalisations* and cardiovascular death	350	75·07	440	97·35	0·77 (0·62–0·97)	0·024
Total heart failure hospitalisations*	202	31·19	287	44·30	0·70 (0·55–0·90)	0·005

Ponikowski, Lancet 2020

IC à FE modérément réduite (40-49 %)

Diuretics are recommended in patients with congestion and HFmrEF in order to alleviate symptoms and signs.[137]	I	C
An ACE-I may be considered for patients with HFmrEF to reduce the risk of HF hospitalization and death.[11]	IIb	C
An ARB may be considered for patients with HFmrEF to reduce the risk of HF hospitalization and death.[245]	IIb	C
A beta-blocker may be considered for patients with HFmrEF to reduce the risk of HF hospitalization and death.[12,119]	IIb	C
An MRA may be considered for patients with HFmrEF to reduce the risk of HF hospitalization and death.[246]	IIb	C
Sacubitril/valsartan may be considered for patients with HFmrEF to reduce the risk of HF hospitalization and death.[13,247]	IIb	C

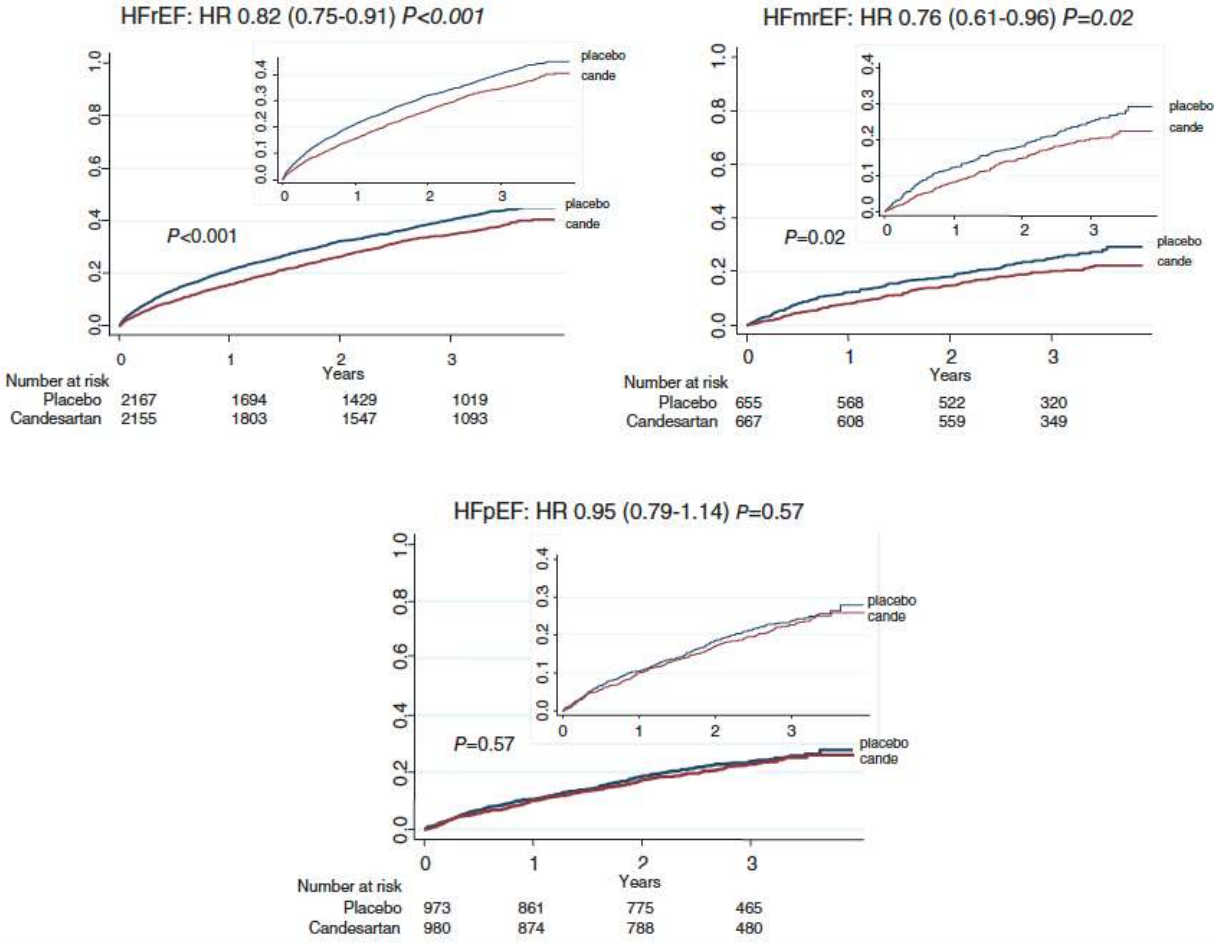
Effets des béta bloquants sur la mortalité en fonction de la FEVG

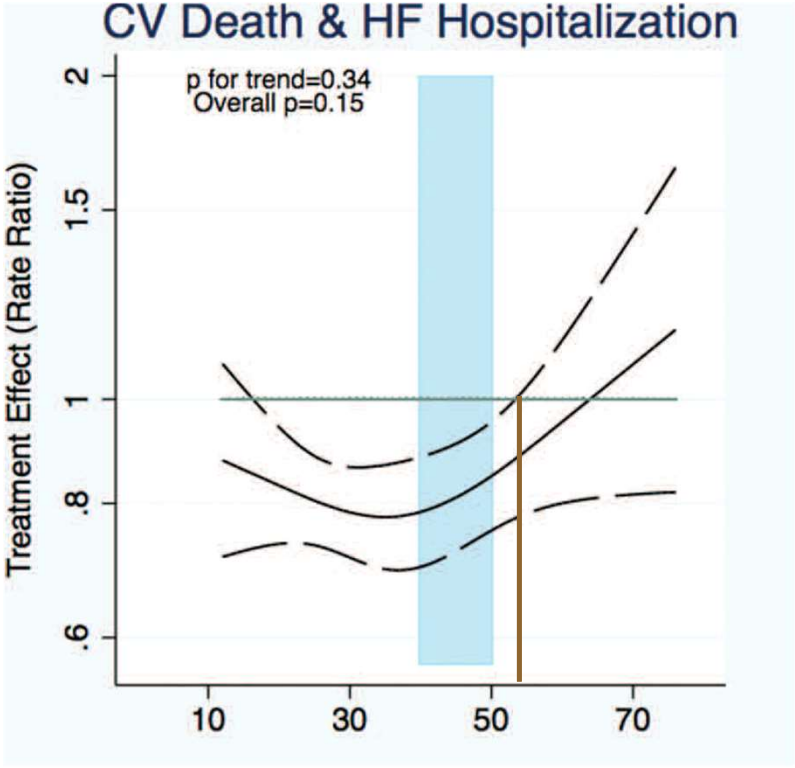


Metaanalysis (11 trials)

Cleland, Eur Heart J 2018

Effets du CANDESARTAN en fonction de la FEVG

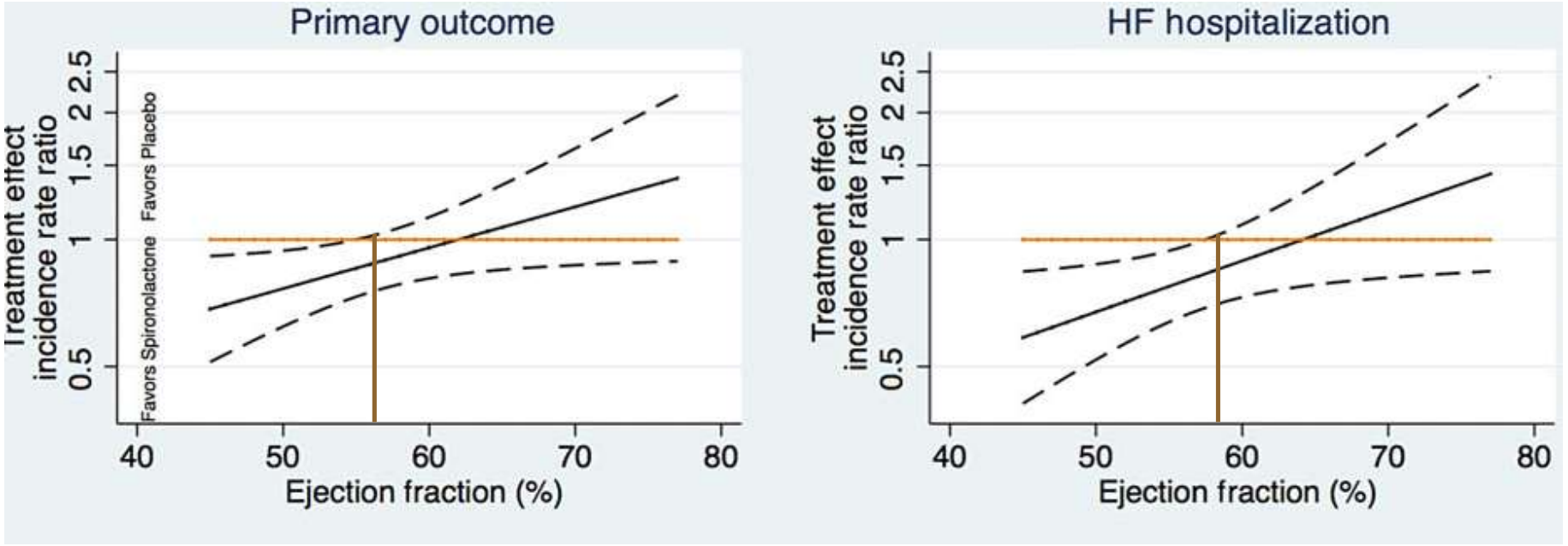




CHARM trial

Lund Eur J Heart Fail 2018

Effets de la spironolactone selon la FEVG



TOPCAT

Solomon , Eur Heart J 2016

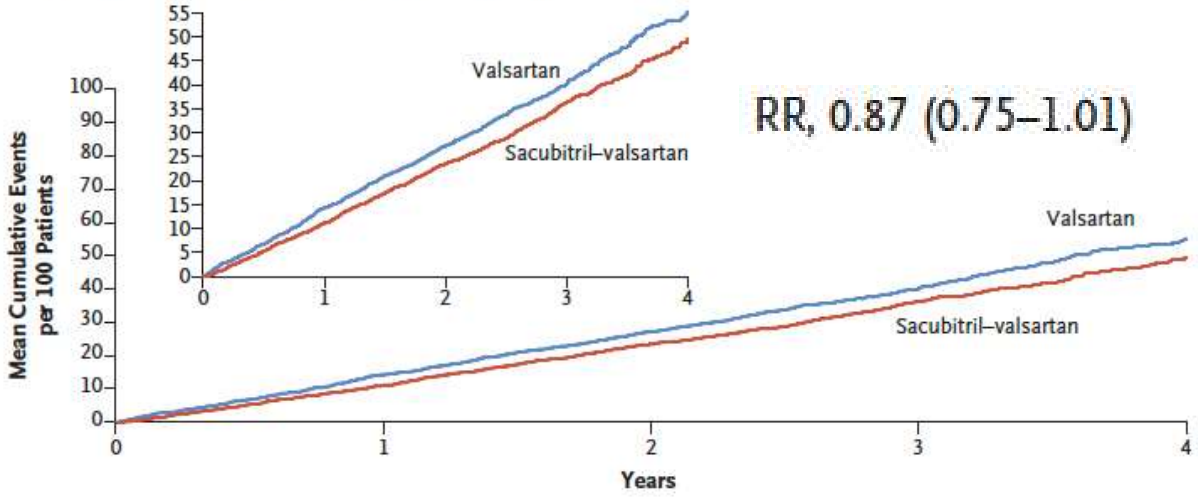
The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

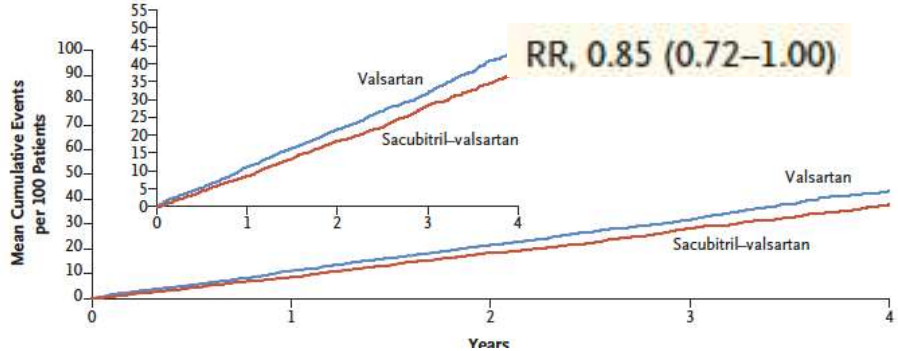
Angiotensin–Neprilysin Inhibition in Heart Failure with Preserved Ejection Fraction

PARAGON

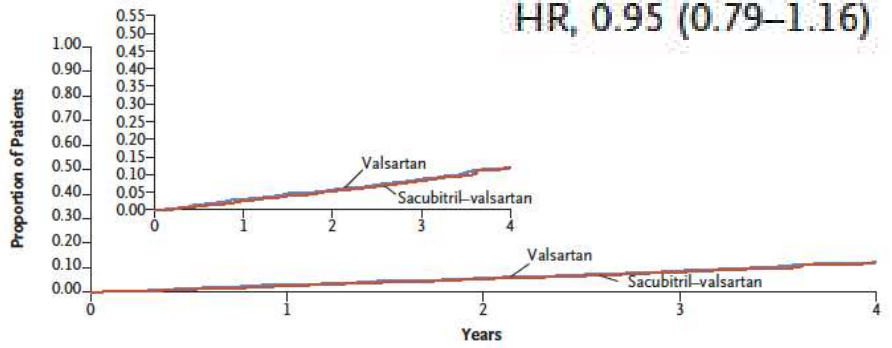
Total Hospitalizations for Heart Failure and Death from Cardiovascular Causes



Total Hospitalizations for Heart Failure



Death from Cardiovascular Causes



Solomon, N Engl J Med 2019

Type of HF		IC FE réduite	IC FE modérément réduite	IC FE PRESERVEE
CRITERIA	1	Symptoms ± Signs[a]	Symptoms ± Signs[a]	Symptoms ± Signs[a]
	2	LVEF ≤40%	LVEF 41–49%[b]	LVEF ≥50%
	3	–	–	ANOMALIE STRUCTURALE OU FONCTIONNELLE Augmentation masse VG Augmentation de la taille de l'OG Augmentation du BNP / NT ProBNP Augmentation des pressions de remplissage en écho Augmentation de la PAP en écho

Insuffisance cardiaque à FE VG préservée

8.4 Treatment of heart failure with preserved ejection fraction

Aucun traitement n'a réduit la mortalité et la morbidité des patients ayant une ICFEP.

These include PEP-CHF (perindopril),[...] CHARM-Preserved (candesartan),[245] I-PRESERVE (irbesartan),[278] TOPCAT (spironolactone),[246] DIG-Preserved (digoxin),[279] and PARAGON-HF (sacubitril/valsartan)[13] (see *Supplementary Table 12* for the details about these and additional trials). Hospitalizations for HF were reduced by candesartan and spironolactone and there was a trend towards reduction with sacubitril/valsartan, although as these trials were neutral for their primary endpoints, these are hypothesis-generating findings only. Although nebivolol significantly reduced the combined primary endpoint of all-cause mortality or CV hospital admission in the SENIORS trial, this trial included only 15% with an LVEF >50%.[119,249] Trials targeting the nitric oxide-cyclic guanosine monophosphate pathway have also failed to improve exercise capacity or QOL in HFpEF, e.g. NEAT-HFpEF,[280] INDIE-HFpEF,[281] VITALITY-HFpEF,[282] and CAPACITY-HFpEF (praliciguat).[283]

Despite the lack of evidence for specific disease-modifying therapies in HFpEF, as the vast majority of HFpEF patients have underlying hypertension and/or CAD, many are already treated with ACE-I/ARB, beta-blockers, or MRAs. In the PARAGON-HF study at baseline, more than 86% of patients were on ACE-I/ARBs, 80% were on beta-blockers, and more than 24% were on MRAs.[13]

The Task Force acknowledge that the treatment options for HFpEF are being revised as this guideline is being published. We note that the Food and Drug Administration (FDA) has endorsed the use of sacubitril/valsartan and spironolactone in those with an LVEF 'less than normal'. These statements relate to patients within both the HFmrEF and HFpEF categories. For sacubitril/valsartan, this decision was based on the subgroup analysis from the PARAGON-HF study, which showed a reduction in HF hospitalizations in those with an LVEF <57%, and a meta-analysis of the PARADIGM-HF and PARAGON-HF studies, showing a reduction in CV death and HF hospitalization in those with an LVEF below the normal range.[247] Regarding spironolactone, the subgroup of individuals in the TOPCAT study recruited in the Americas had a significant reduction in the primary endpoint of CV death and HF hospitalization,

Les traitements doivent cibler la réduction des symptômes congestifs (diurétiques) et le contrôle de l'HTA . + réduction du poids + exercice

therapies, treatment should be aimed at reducing symptoms of congestion with diuretics. Loop diuretics are preferred, although thiazide diuretics may be useful for managing hypertension. Reducing body weight in obese patients and increasing exercise may further improve symptoms and exercise capacity and should therefore be considered in appropriate patients.[284,285]

Il est important de traiter les FDR, l'étiologie & les co-morbidités

[...] Undoubtably, treatment of some of the underlying phenotypes of the the HFpEF syndrome leads to improved outcomes.

ESC Guidelines 2021

Recommendations for the treatment of patients with heart failure with preserved ejection fraction

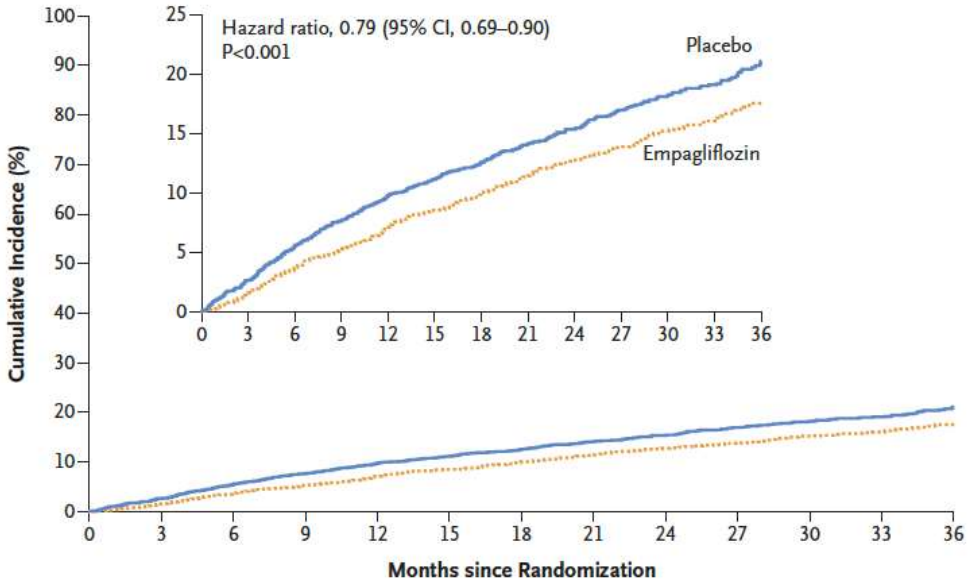
Recommendations	Class[a]	Level[b]
Screening for, and treatment of, aetiologies, and cardiovascular and non-cardiovascular comorbidities is recommended in patients with HFpEF (see relevant sections of this document).	I	C
Diuretics are recommended in congested patients with HFpEF in order to alleviate symptoms and signs.[137]	I	C

* Hypertension / CAD / AF / amyloidosis

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Empagliflozin in Heart Failure with a Preserved Ejection Fraction



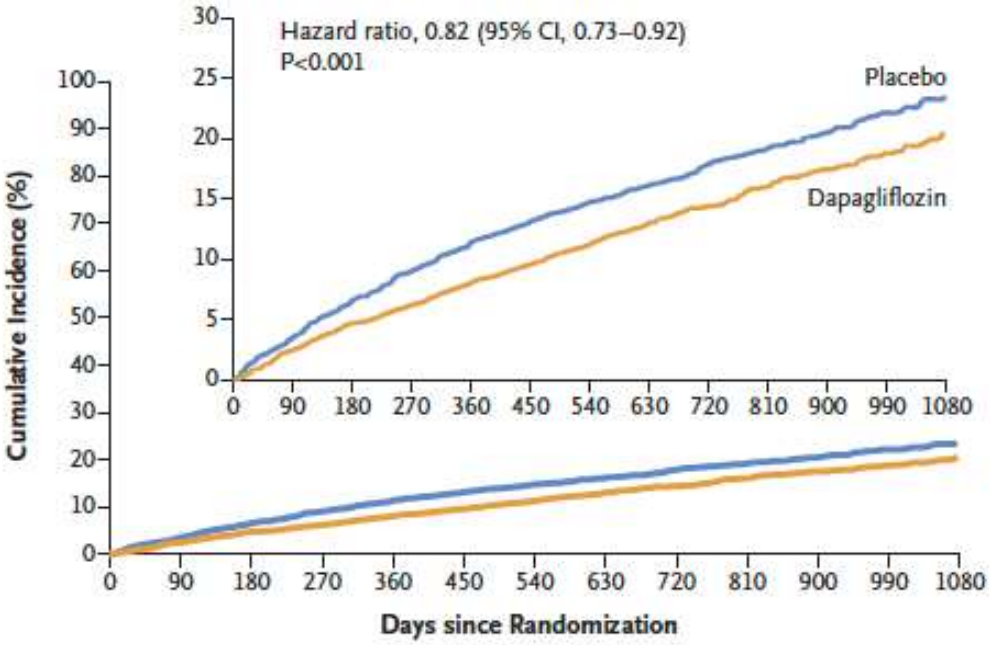
Anker, N Engl J Med 2021

GLIFLOZINE

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Dapagliflozin in Heart Failure with Mildly Reduced or Preserved Ejection Fraction



Solomon, N Engl J Med 2022

EMPEROR PRESERVED

Variable	Empagliflozin (N=2997)		Placebo (N=2991)		Hazard Ratio or Difference (95% CI)	P Value
		events per 100 patient-yr		*events per 100 patient-yr*		
Primary composite outcome — no. (%)	415 (13.8)	6.9	511 (17.1)	8.7	0.79 (0.69–0.90)	<0.001
Hospitalization for heart failure	259 (8.6)	4.3	352 (11.8)	6.0	0.71 (0.60–0.83)	
Cardiovascular death	219 (7.3)	3.4	244 (8.2)	3.8	0.91 (0.76–1.09)	

Anker, N Engl J Med 2021

DELIVER

Variable	Dapagliflozin (N=3131)		Placebo (N=3132)		Hazard or Rate Ratio or Win Ratio (95% CI)	P Value
	values	*events/ 100 patient-yr*	*values*	*events/ 100 patient-yr*		
Efficacy outcomes						
Primary composite outcome — no. (%)	512 (16.4)	7.8	610 (19.5)	9.6	0.82 (0.73–0.92)	<0.001
Hospitalization for heart failure or an urgent visit for heart failure	368 (11.8)	5.6	455 (14.5)	7.2	0.79 (0.69–0.91)	NA
Hospitalization for heart failure	329 (10.5)	5.0	418 (13.3)	6.5	0.77 (0.67–0.89)	NA
Urgent visit for heart failure	60 (1.9)	0.9	78 (2.5)	1.1	0.76 (0.55–1.07)	NA
Cardiovascular death†	231 (7.4)	3.3	261 (8.3)	3.8	0.88 (0.74–1.05)	NA

Solomon, N Engl J Med 2022

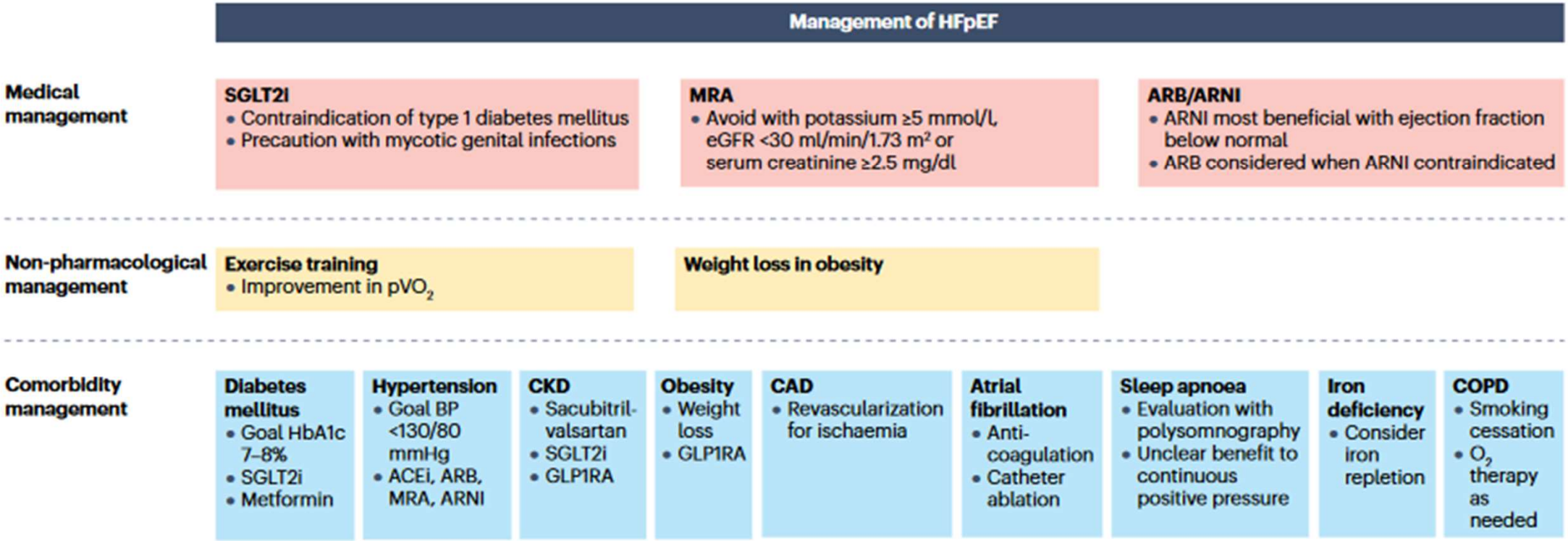


Fig. 5 | Management of HFpEF. Management of heart failure with preserved ejection fraction (HFpEF) includes medical therapies, non-pharmacological devices and exercise training as well as the management of comorbidities. ACEi, angiotensin-converting enzyme inhibitor; ARB, angiotensin receptor blocker; ARNI, angiotensin receptor–neprilysin inhibitor; BP, blood pressure; CAD, coronary artery disease; CKD, chronic kidney disease; COPD, chronic obstructive pulmonary disease; eGFR, estimated glomerular filtration rate; GLP1RA, glucagon-like peptide 1 receptor agonist; HbA1c, haemoglobin A1c; MRA, mineralocorticoid receptor antagonist; pVO_2, peak oxygen uptake; SGLT2i, sodium–glucose co-transporter 2 inhibitor.

IC avancée: Quand les médicaments ne suffisent plus

Table 13 Criteria for definition of advanced heart failure

All the following criteria must be present despite optimal medical treatment:
1. Severe and persistent symptoms of heart failure [NYHA class III (advanced) or IV].
2. Severe cardiac dysfunction defined by at least one of the following: • LVEF ≤30% • Isolated RV failure (e.g., ARVC) • Non-operable severe valve abnormalities • Non-operable severe congenital abnormalities • Persistently high (or increasing) BNP or NT-proBNP values and severe LV diastolic dysfunction or structural abnormalities (according to the definitions of HFpEF).
3. Episodes of pulmonary or systemic congestion requiring high-dose i.v. diuretics (or diuretic combinations) or episodes of low output requiring inotropes or vasoactive drugs or malignant arrhythmias causing >1 unplanned visit or hospitalization in the last 12 months.
4. Severe impairment of exercise capacity with inability to exercise or low 6MWT distance (<300 m) or pVO_2 <12 mL/kg/min or <50% predicted value, estimated to be of cardiac origin.

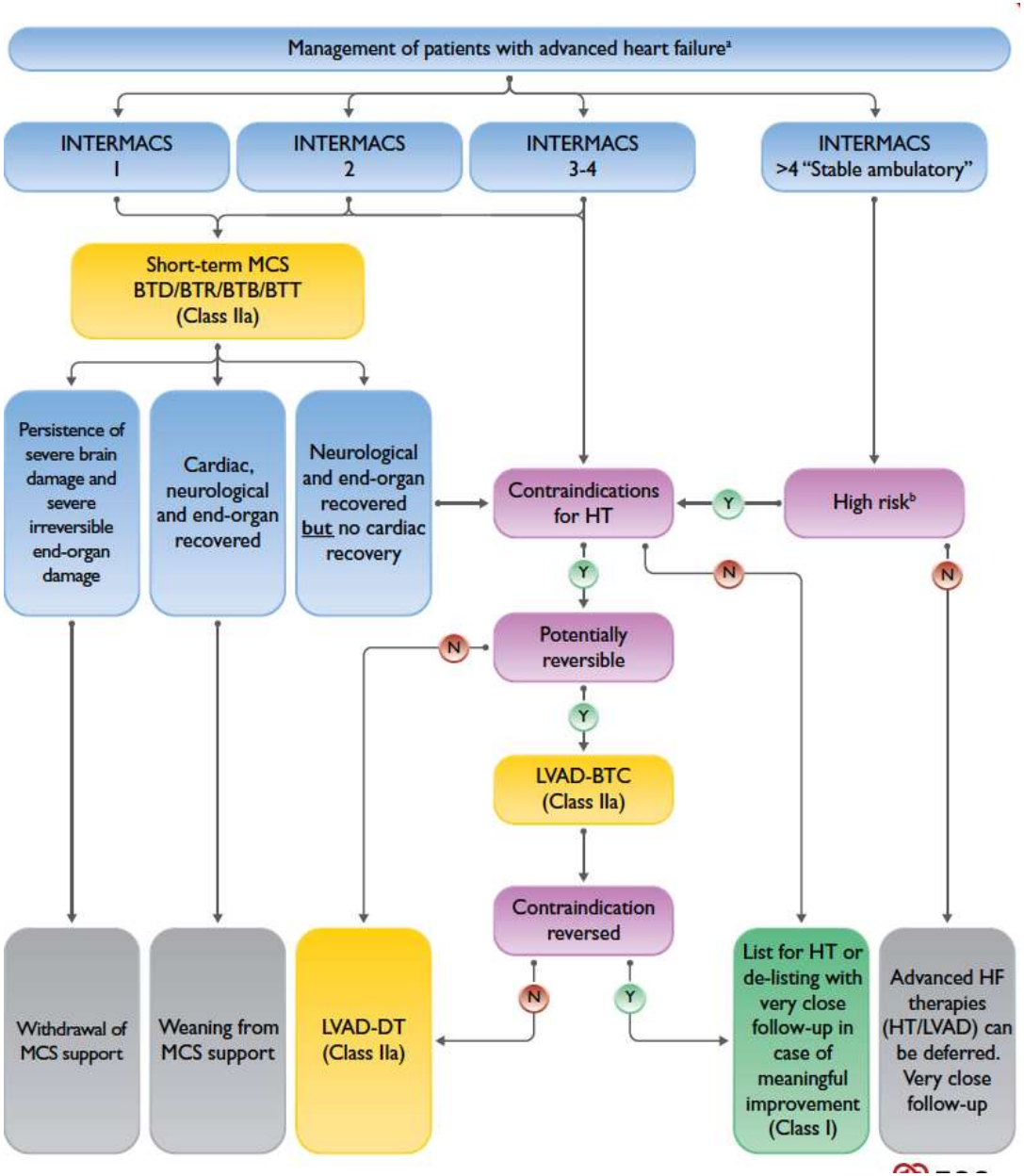
Sous traitement médical optimal persistance d'une des anomalies ci dessus

Classification INTERMACS

Profile	Time frame for intervention
Profile 1. Critical cardiogenic shock Patient with life-threatening hypotension despite rapidly escalating inotropic support, critical organ hypoperfusion, often confirmed by worsening acidosis and/or lactate levels. "Crash and burn."	Definitive intervention needed within hours.
Profile 2. Progressive decline Patient with declining function despite i.v. inotropic support, may be manifest by worsening renal function, nutritional depletion, inability to restore volume balance. "Sliding on inotropes." Also describes declining status in patients unable to tolerate inotropic therapy.	Definitive intervention needed within few days.
Profile 3. Stable on inotrope or inotrope-dependent Patient with stable blood pressure, organ function, nutrition, and symptoms on continuous i.v. inotropic support (or a temporary circulatory support device or both) but demonstrating repeated failure to wean from support due to recurrent symptomatic hypotension or renal dysfunction. "Dependent stability."	Definitive intervention elective over a period of weeks to few months.

Classification INTERMACS (suite)

Profile 4. Frequent Flyer Patient can be stabilized close to normal volume status but experiences daily symptoms of congestion at rest or during activities of daily living. Doses of diuretics generally fluctuate at very high levels. More intensive management and surveillance strategies should be considered, which may in some cases reveal poor compliance that would compromise outcomes with any therapy. Some patients may shuttle between 4 and 5.	Definitive intervention elective over a period of weeks to few months.
Profile 5. Housebound Comfortable at rest and with activities of daily living but unable to engage in any other activity, living predominantly within the house. Patients are comfortable at rest without congestive symptoms, but may have underlying refractory elevated volume status, often with renal dysfunction. If underlying nutritional status and organ function are marginal, patients may be more at risk than INTERMACS 4, and require definitive intervention.	Variable urgency, depends upon maintenance of nutrition, organ function, and activity.
Profile 6. Exertion limited Patient without evidence of fluid overload, comfortable at rest and with activities of daily living and minor activities outside the home but fatigues after the first few minutes of any meaningful activity. Attribution to cardiac limitation requires careful measurement of peak oxygen consumption, in some cases with haemodynamic monitoring, to confirm severity of cardiac impairment. "Walking wounded."	Variable, depends upon maintenance of nutrition, organ function, and activity level.
Profile 7. Advanced NYHA class III symptoms Patient without current or recent episodes of unstable fluid balance, living comfortably with meaningful activity limited to mild physical exertion.	Heart transplantation or MCS may not be currently indicated.


Management of patients with advanced heart failure[a]
INTERMACS 1
INTERMACS 2
INTERMACS 3-4
INTERMACS >4 "Stable ambulatory"
Short-term MCS BTD/BTR/BTB/BTT (Class IIa)
Persistence of severe brain damage and severe irreversible end-organ damage
Cardiac, neurological and end-organ recovered
Neurological and end-organ recovered but no cardiac recovery
Contraindications for HT
High risk[b]
Y
N
Potentially reversible
LVAD-BTC (Class IIa)
Contraindication reversed
Withdrawal of MCS support
Weaning from MCS support
LVAD-DT (Class IIa)
List for HT or de-listing with very close follow-up in case of meaningful improvement (Class I)
Advanced HF therapies (HT/LVAD) can be deferred. Very close follow-up

Recommendations for telemonitoring

Recommendations	Class[a]	Level[b]
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.[374]	IIb	B
Monitoring of pulmonary artery pressure using a wireless haemodynamic monitoring system may be considered in symptomatic patients with HFrEF (LVEF ≤35%) in order to improve clinical outcomes.[372]	IIb	B

CECICS
Cellules d'Expertise et de Coordination de l'Insuffisance Cardiaque Sévère

Cellule d'expertise et de coordination du patient IC sévère (APHP)

OBJECTIF : Mise en place une cellule d'expertise et de coordination pour la PEC de IC sévère, pour assurer la coordination, la télésurveillance et l'optimisation thérapeutique des patients par transfert de compétence (ISPIC)

Art. 51 Innovation En santé

EXPÉRIMENTATEURS 5 GHU – 9 sites APHP **:** (initiative Mondor)

MISSIONS :

- Mise à disposition d'un service d'expertise à distance
- Coordination du parcours intra-hospitalier
- Evaluation de la situation du patient
- Mise en œuvre de certains modules proposés (HAD, cs° urgence, télésurveillance rythmo, titration médicamenteuse, évaluation gériatrique, télésurveillance)
- Contribution, en lien avec les autres acteurs du territoire, à l'initiation du DMP
- Coordination avec les médecins référents du patient

Mise en place d'un logiciel commun

- **ISPIC = Infirmier Spécialisé en Insuffisance Cardiaque: spécificité**

Missions et activités principales :

L'IDE Spécialisé en Insuffisance Cardiaque (I.S.P.I.C.) exerce dans le cadre du protocole de coopération national suivant : ***Arrêté du 27 décembre 2019*** relatif à l'autorisation du protocole de coopération « Télésurveillance, consultation de titration et consultation non programmée, avec ou sans télémédecine, des patients traités pour insuffisance cardiaque, par un infirmier ».

Formation :
- D.I.U. insuffisance cardiaque

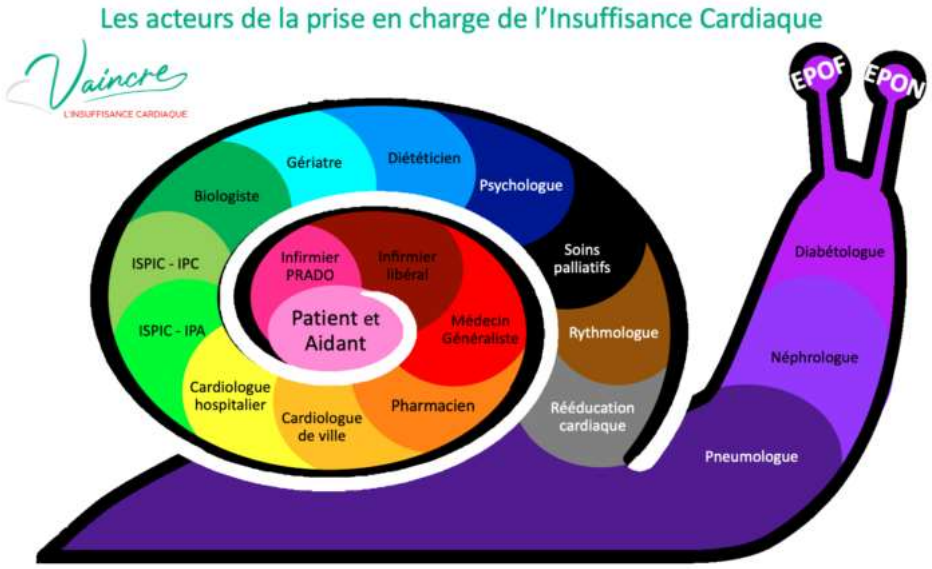
Actes dérogatoires :

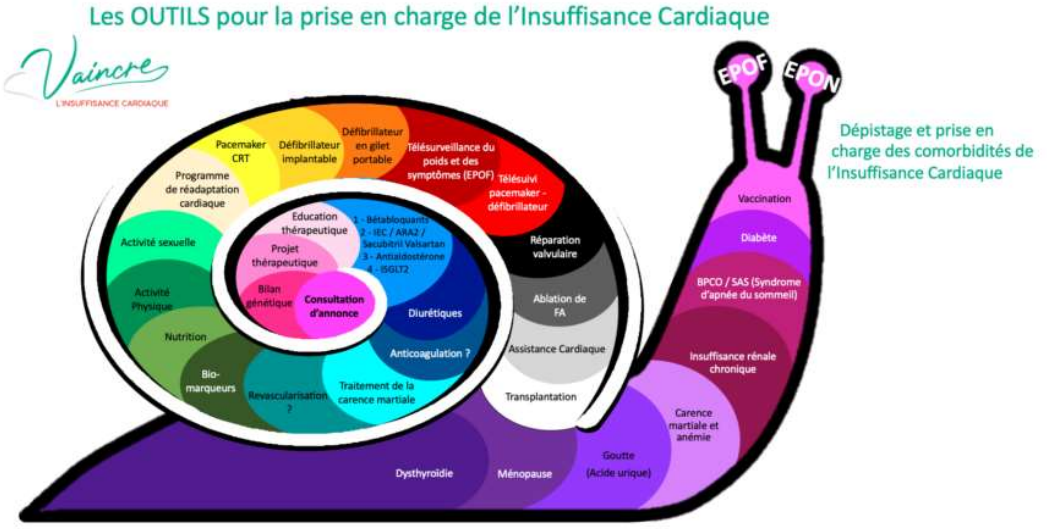
Les actes réalisés par les infirmiers spécialisés en Insuffisance Cardiaque du Protocole de Coopération (ISPIC-IPC):

- Consultations de suivi de l'IC, titration des médicaments de l'IC systolique en présentiel ou pour gestion de décompensation cardiaque, en présentiel ou téléconsultation
- Télésurveillance : présentation de la solution, prescription, repérage et gestion des alertes.
- Orientation des patients.

- **Infirmières de pratique avancée**

Prise en charge holistique





- Maladie Chronique et grave,
- Nécessité d'un réseau de soin autour du patient

MERCI DE VOTRE ATTENTION