Noves guies d'insuficiència cardíaca de l'ESC-HFA: reptes i necessitats no cobertes
IC avançada i comorbiditats

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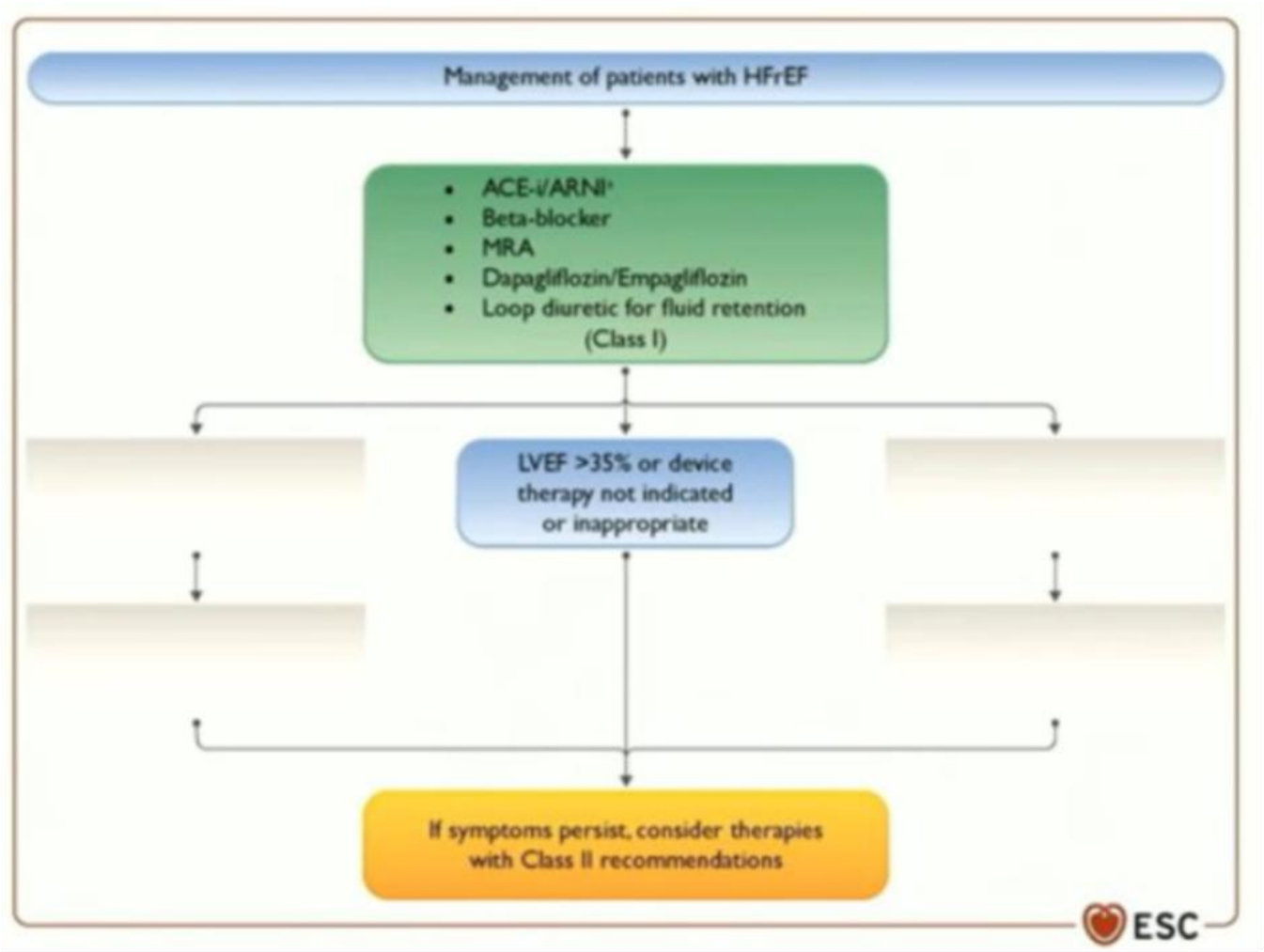
SANT PAU

Què aporten de nou les guies a la IC avançada ?

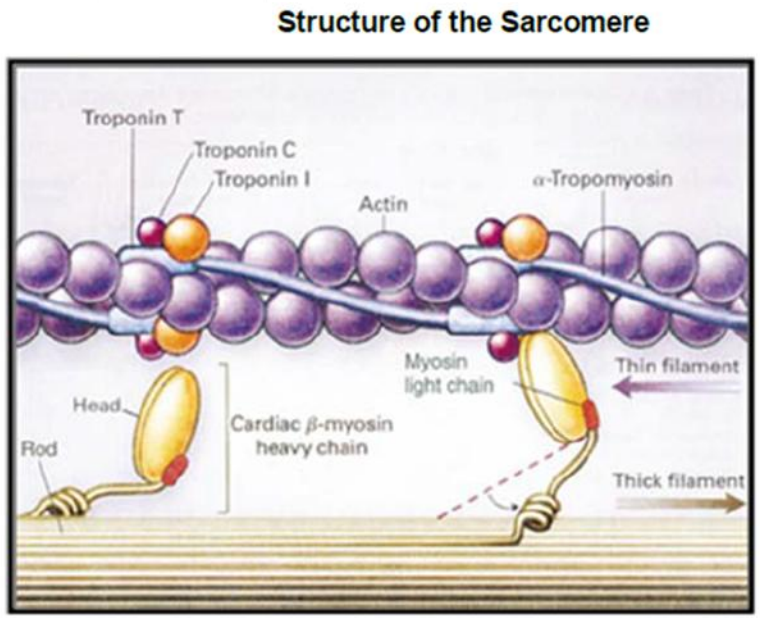


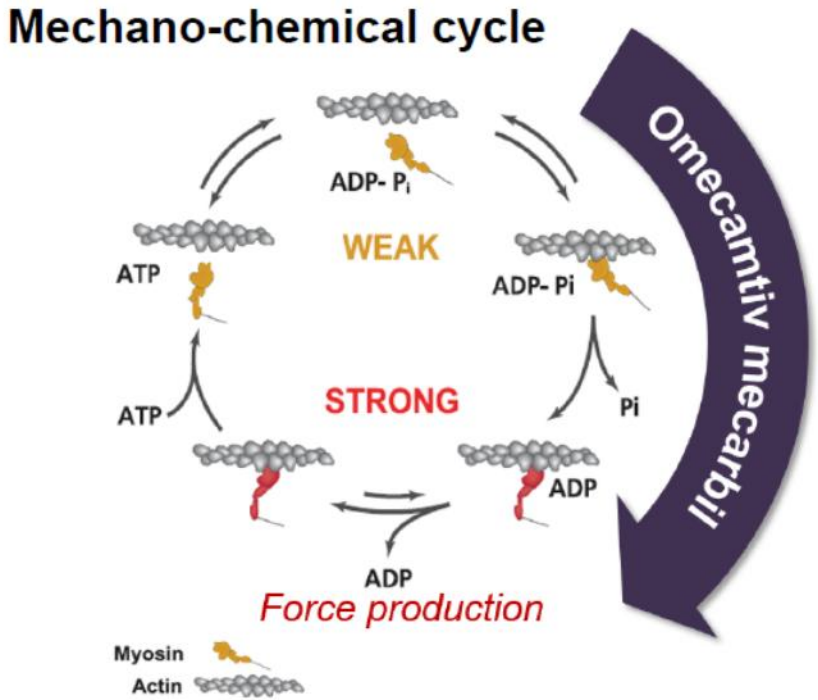
Omecamtiv mecarbil

Recommendations	Class[a]	Level[b]
Soluble Guanylate Cyclase Receptor Stimulator		
Vericiguat may be considered in patients in NYHA Class II–IV who have had worsening HF despite treatment with an ACE-I (or ARNI), a beta-blocker and an MRA to reduce the risk of CV mortality or HF hospitalization.[141]	IIb	B

Currently, omecamtiv mecarbil is not licensed for use in HF. However, in the future it may be able to be considered, in addition to standard therapy for HFrEF to reduce the risk of CV mortality and hospitalization for HF

Omecamtiv Mecarbil (activador de la miosina)





OM increases the entry rate of myosin into the tightly-bound, force-producing state with actin

"More hands pulling on the rope"

- Increases duration of systole
- Increases stroke volume
- No increase in myocyte calcium
- No change in dP/dt_{max}
- No increase in MVO_2

Estabilitza la miosina i incrementa la transició cap a l'estat de generació de força amb l'actina

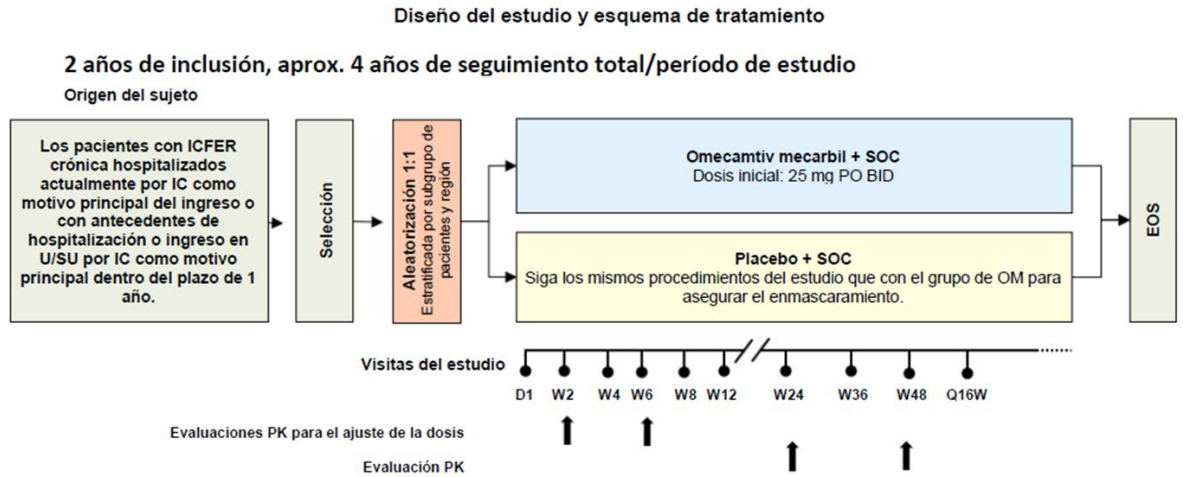
Malik et al. Science 2011;331:1439-43

Inclusió

- 18 - 85 anys, CF II-IV, FE <35%
- Hospitalitzats per IC o ambulatoris però amb una consulta a urgencies o hospitalització en els darrers 12 mesos per IC ; GDMT
- NT-proBNP> 400 pg/mL (>1200 pg/mL en FA) o BNP>125 pg/mL (> 375 pg/mL en FA)

Exclusió

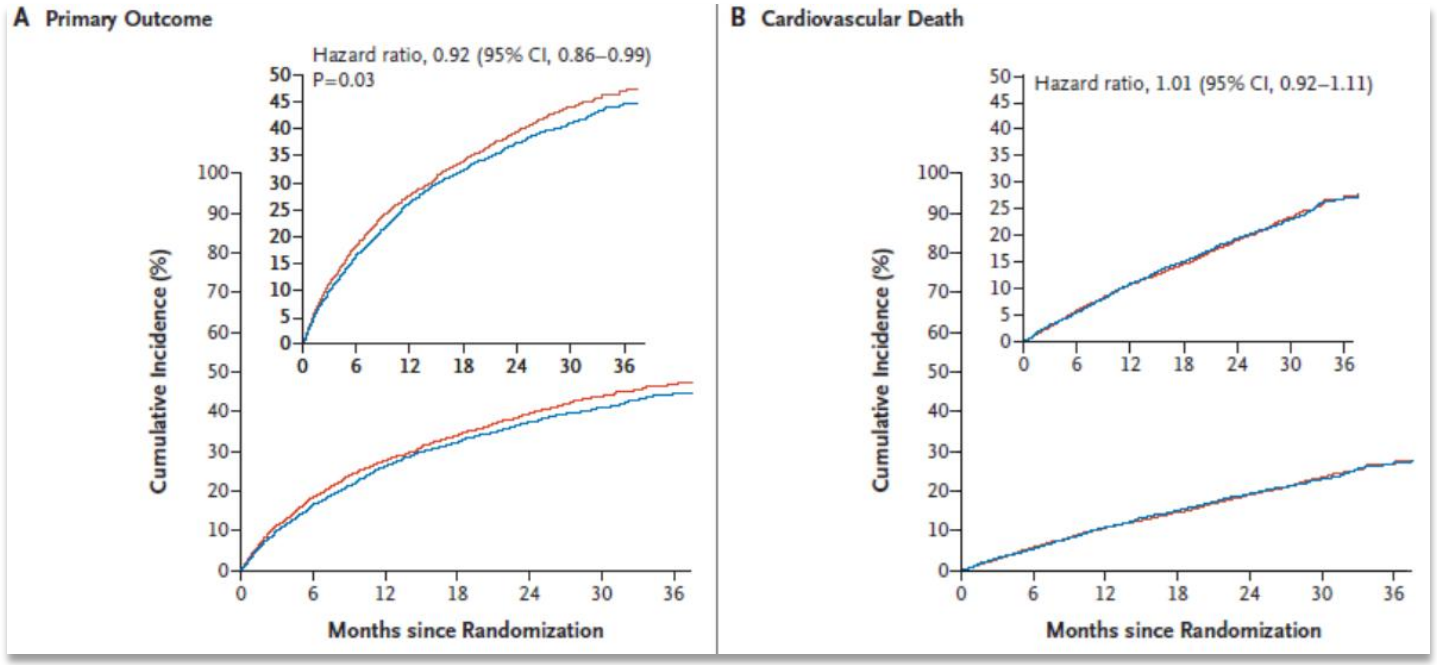
- TAs <85 mmHg , GFR <20 l/min/ 1.73 m2
- Sdme coronari agut recent o procediment cardiovascular recent

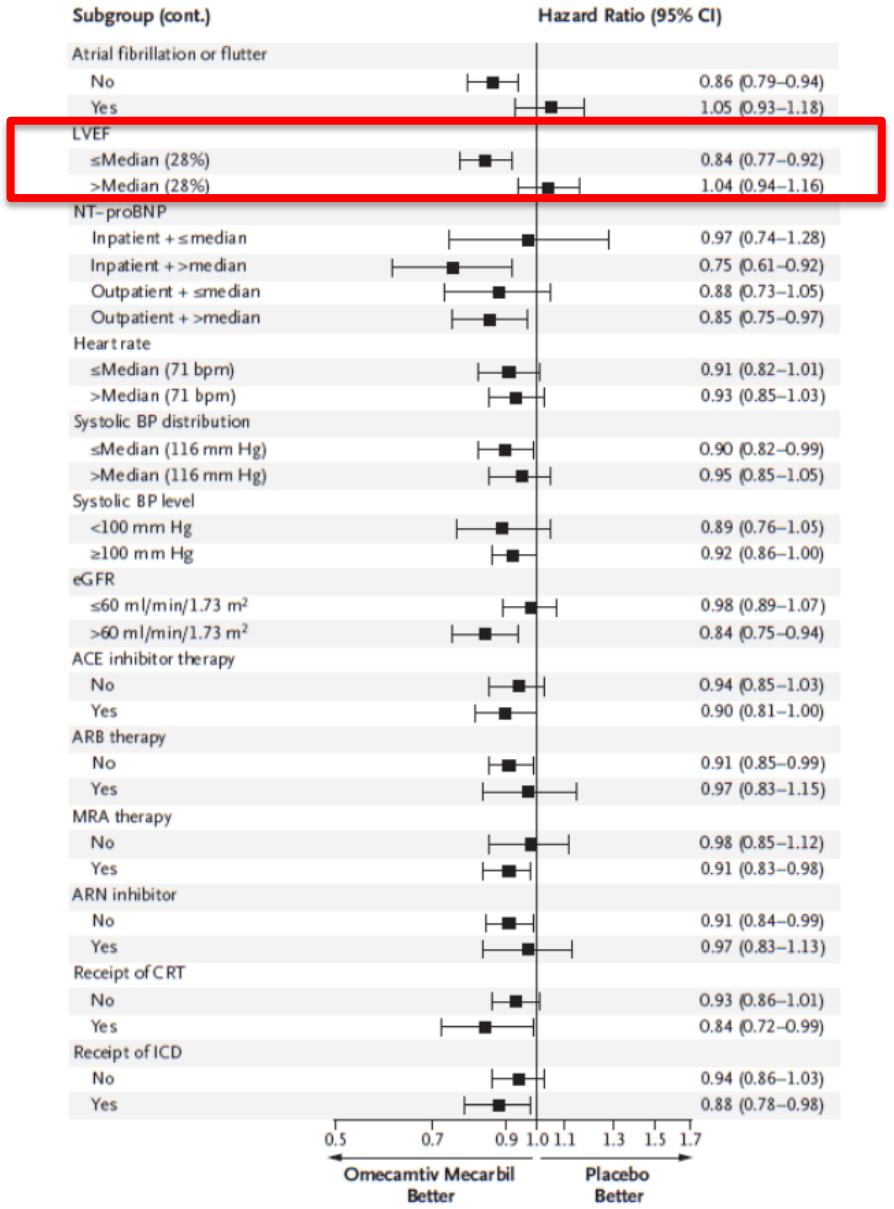


Teerlink et al . NEJM 2020

8000 pacients

Endpoint primari : mort cardiovascular o event clínic d'IC (visita anticipada, urgències, ingrés amb furosemida iv)



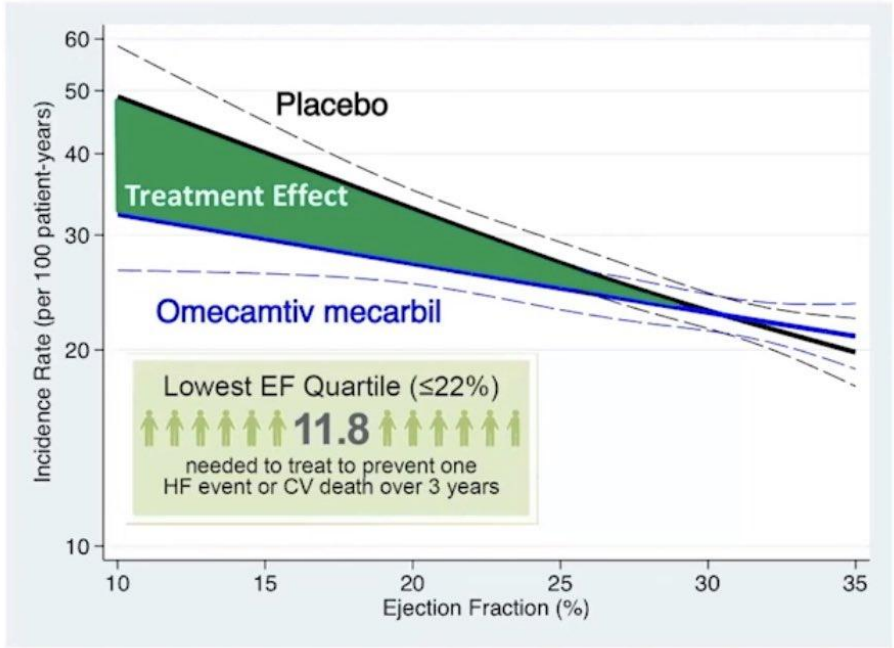


Teerlink et al . NEJM 2020

Conclusions

GALACTIC-HF

- In patients with HFrEF, omecamtiv mecarbil reduced the 1° composite outcome (first HF event or CV death)
- The treatment effect of omecamtiv mecarbil increased with decreasing EF
- There was no difference in Serious Adverse, Ischemic or Arrhythmic Events compared to Placebo across the range of EF
- There was no adverse effect on heart rate, blood pressure, potassium homeostasis or renal function



Teerlink JR, *et al. J Am Coll Cardiol* 2021; DOI: 10.1016/j.jacc.2021.04.065

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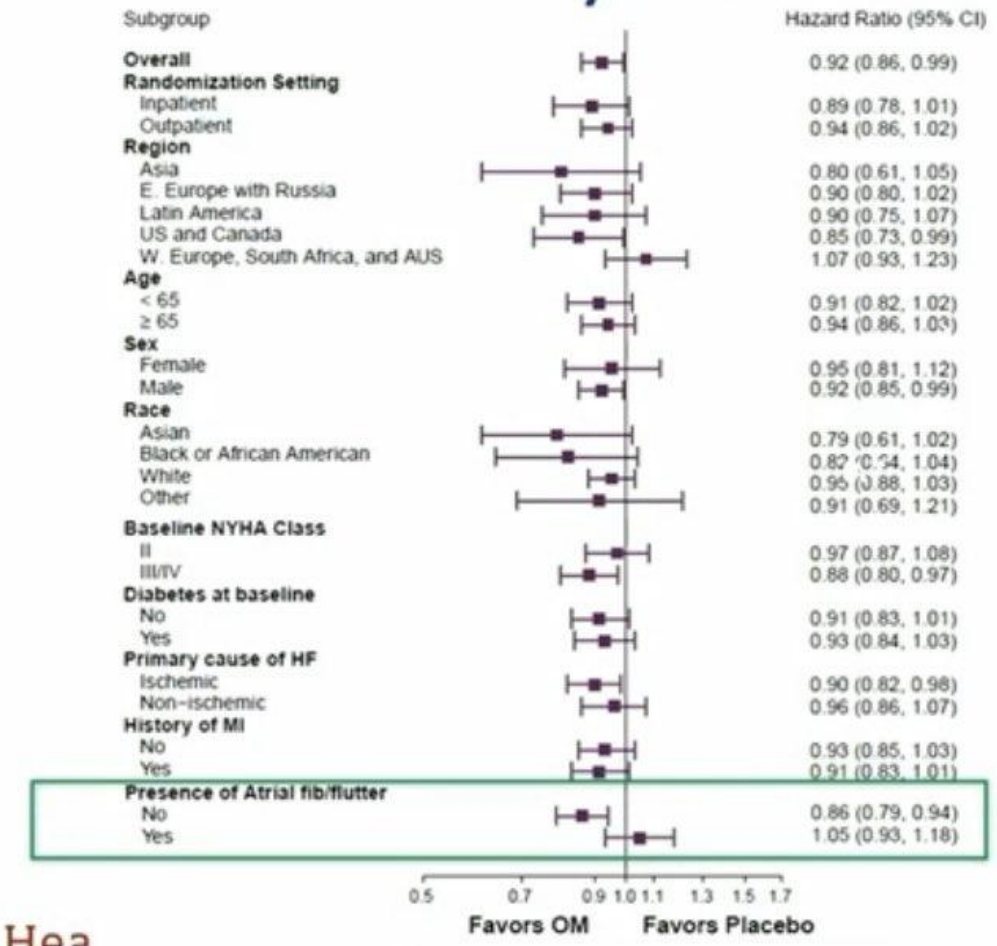
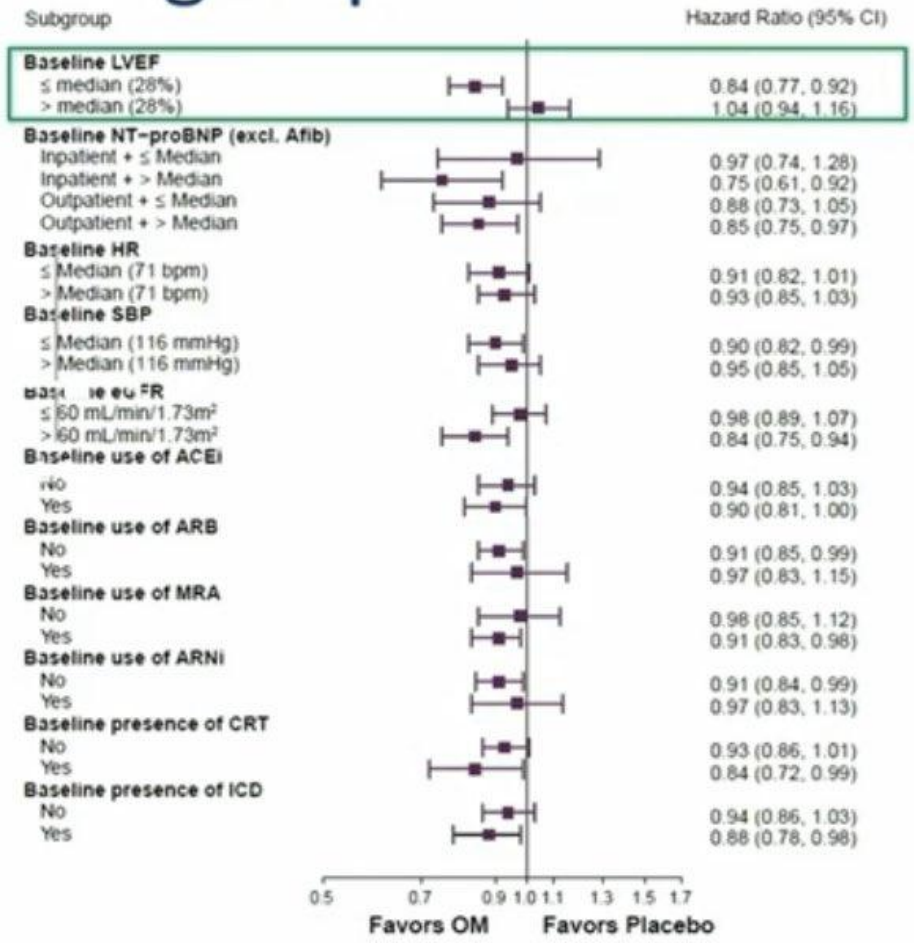
Primary Outcome: Subgroup Results





Hea World Congress on Acute Heart Failure 2021

Teerlink JR, *et al. N Engl J Med* 2021;384:105-116.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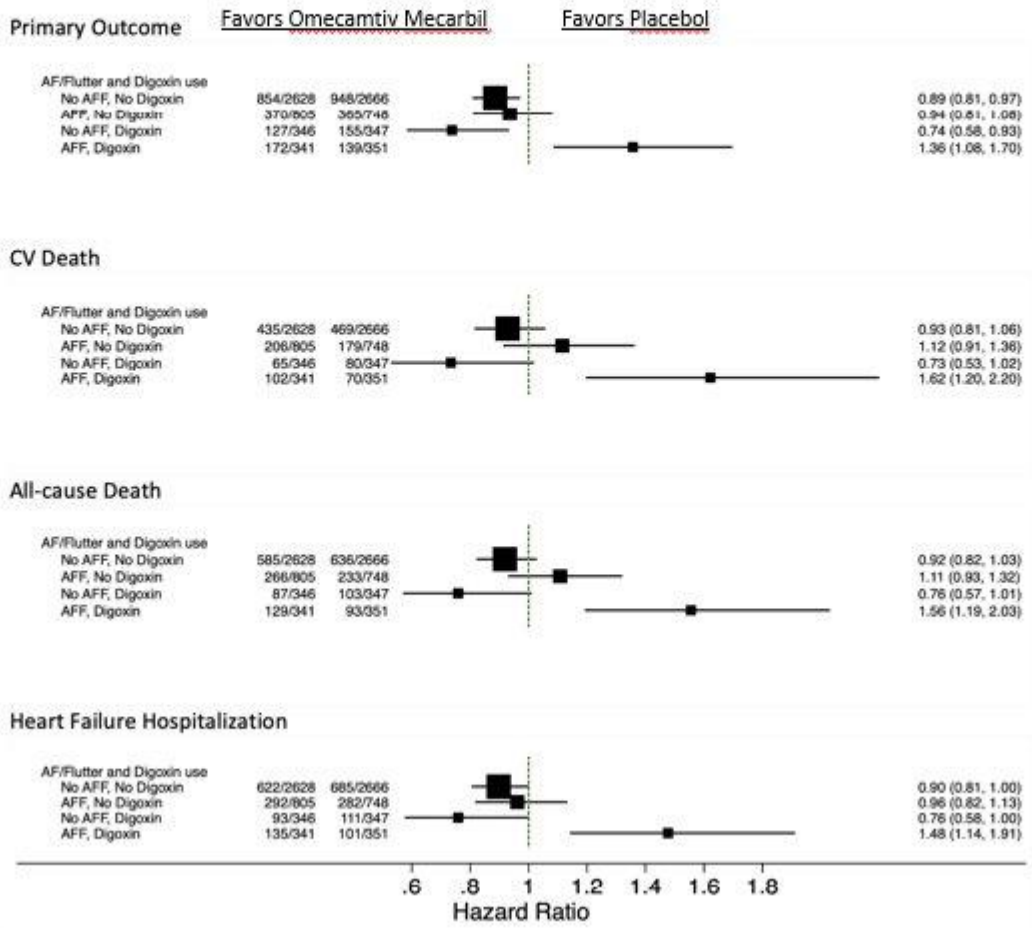
Effect Modification for Atrial Fibrillation most Prominent in Patients using Digoxin



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Advanced Heart Failure Recomendations

New recommendations for the treatment of patients with advanced heart failure

Recommendations	Class[a]
Recommendations for management of patients with advanced HF	
—	
—	
Continuous inotropes and/or vasopressors may be considered in patients with low cardiac output and evidence of organ hypoperfusion as bridge to MCS or heart transplantation.	IIb

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

Gaps in evidence

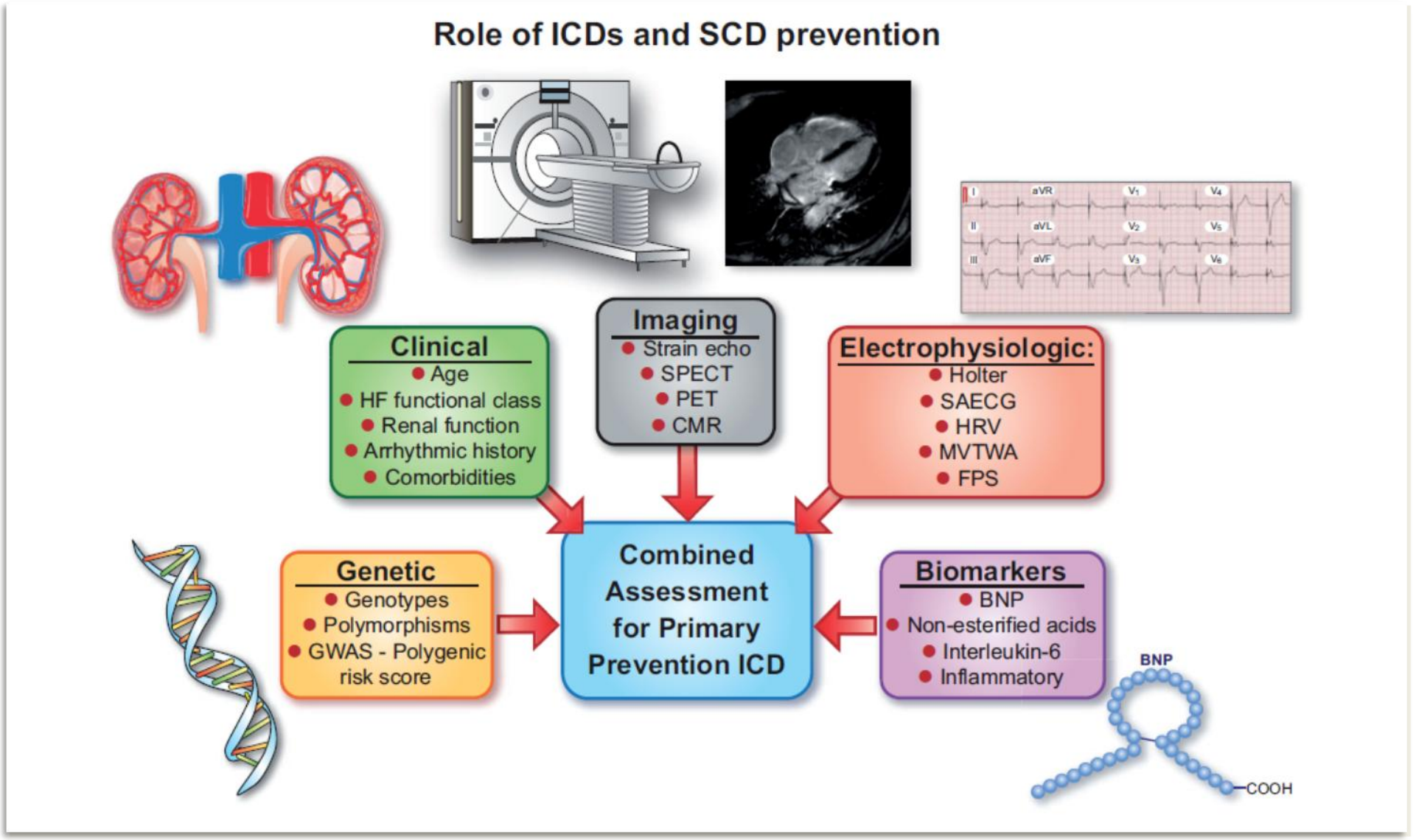
4. Devices and interventions

- Indications for ICDs in specific subgroups (e.g. ARVC and HFmrEF/HFpEF) and optimal selection of ICD candidates
- QRS morphology or duration as a predictor of response to CRT
- CRT in patients with AF
- Efficacy of PV ablation as a rhythm-control strategy in patients with AF
- Interventional approach to recurrent, life-threatening ventricular tachyarrhythmias
- The role of remote monitoring strategies in HF
- Non-surgical (percutaneous) correction of functional mitral and tricuspid regurgitations
- Identification of indications for coronary angiography/revascularization in patients with HF and chronic stable CAD
- Effects of novel LVADs as destination therapy and bridge to transplantation

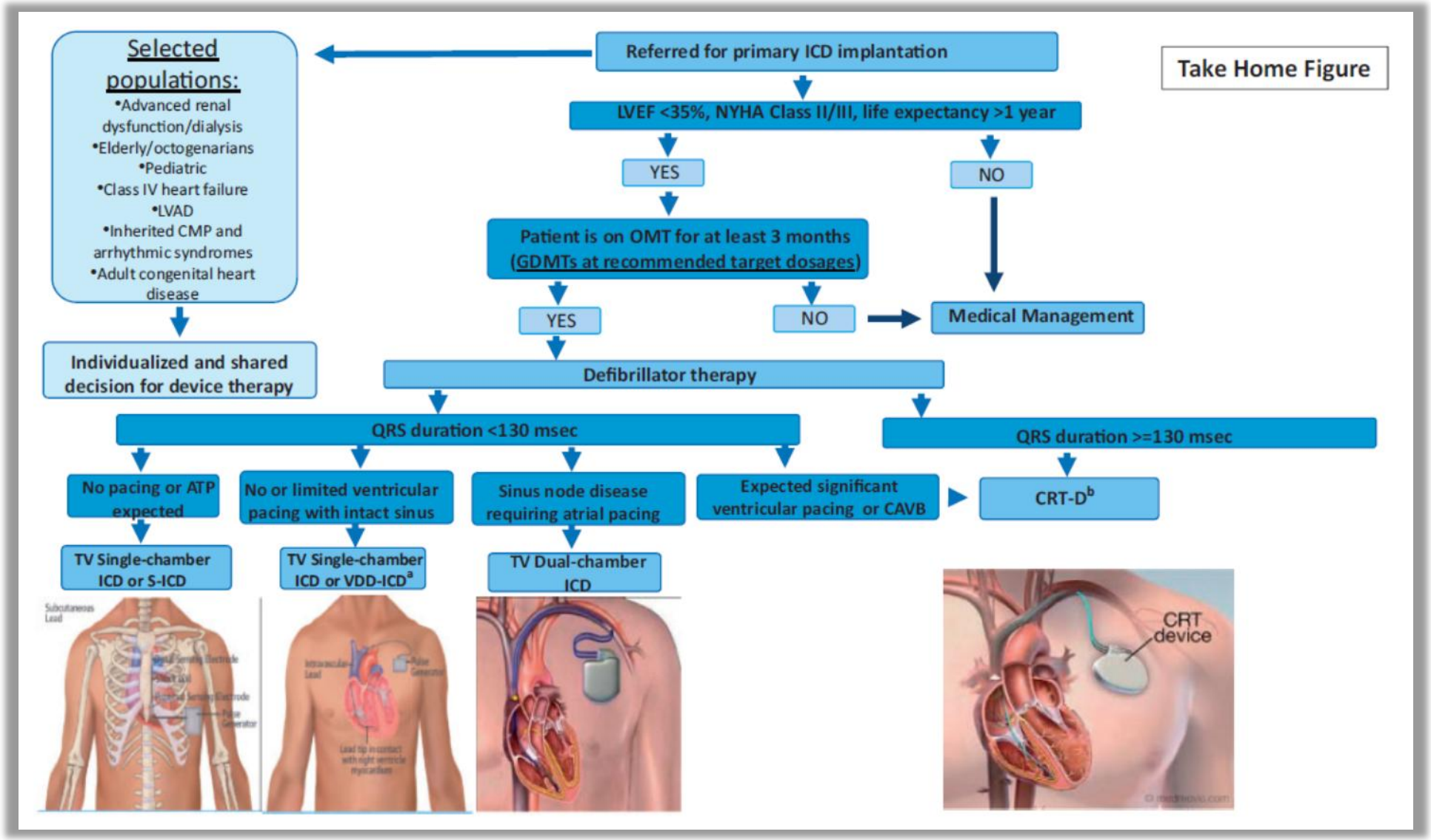
2016 ESC Guidelines for the diagnosis and treatment of acute and chronic heart failure

Recommendations for implantable cardioverter-defibrillator in patients with heart failure

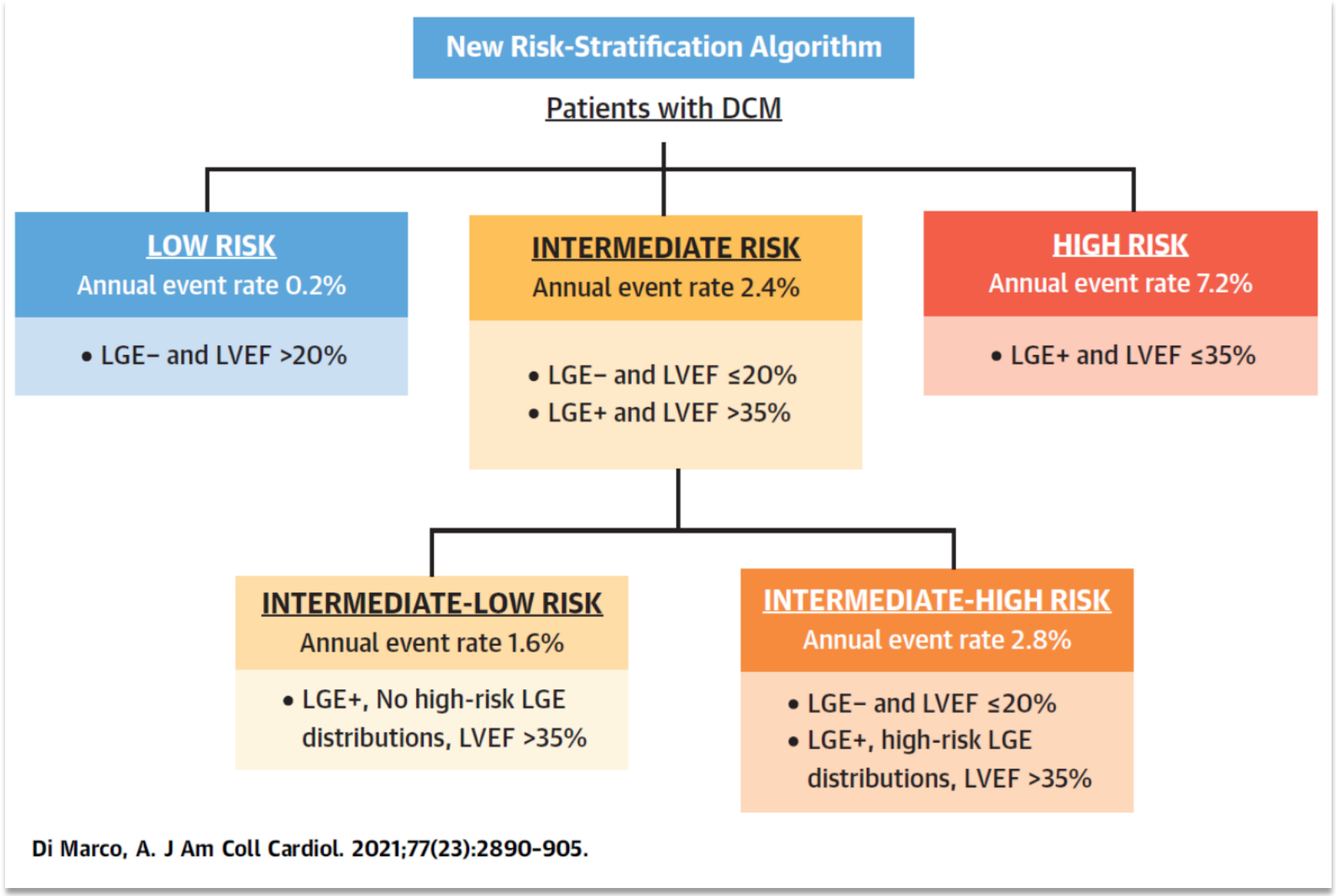
Recommendations	Class [a]	Level [b]	Ref [c]
Secondary prevention An ICD is recommended to reduce the risk of sudden death and all-cause mortality in patients who have recovered from a ventricular arrhythmia causing haemodynamic instability, and who are expected to survive for >1 year with good functional status.	I	A	223–226
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	149, 156, 227
• DCM.	I	B	156, 157, 227
ICD implantation is not recommended within 40 days of an MI as implantation at this time does not improve prognosis.	III	A	158, 228
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	229–233
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	234–238
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	239–241



Goldenberg et al. Eur Heart J 2019

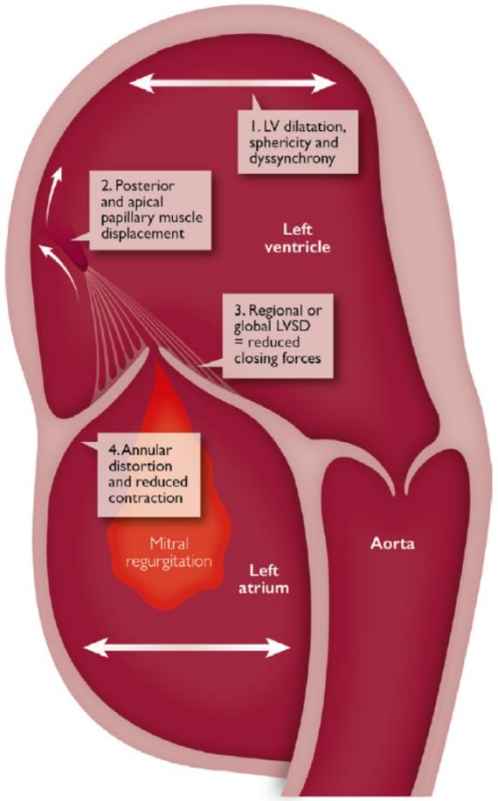


Goldenberg et al. Eur Heart J 2019



Di Marco, A. J Am Coll Cardiol. 2021;77(23):2890-905.

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



Recommendations for treatment of valvular diseases in patients with heart failure

Recommendations	Class [a]	Level [b]	Ref [c]
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	495, 496, 509
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	497, 498
In patients with severe aortic regurgitation, aortic valve repair or replacement is recommended in all symptomatic patients and in asymptomatic patients with resting LVEF ≤50%, who are otherwise fit for surgery.	I	C	317
Evidence-based medical therapy in patients with HFrEF is recommended in order to reduce functional mitral regurgitation.	I	C	
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	

What is new in the 2017 Valvular Heart Disease Guidelines?

Changes in recommendations	
2012	**2017**
Indications for mitral valve intervention in secondary mitral regurgitation	
IIa C Surgery should be considered in patients with moderate secondary mitral regurgitation undergoing CABG	**Taken out**
IIb C When revascularization is not indicated, surgery may be considered in patients with severe secondary mitral regurgitation and LVEF >30%,who remain symptomatic despite optimal medical management (including CRT if indicated).	**IIb C (modified)** When revascularization is not indicated, surgery may be considered in patients with severe secondary mitral regurgitation and LVEF >30%, who remain symptomatic despite optimal medical management (including CRT if indicated) and have a low surgical risk.

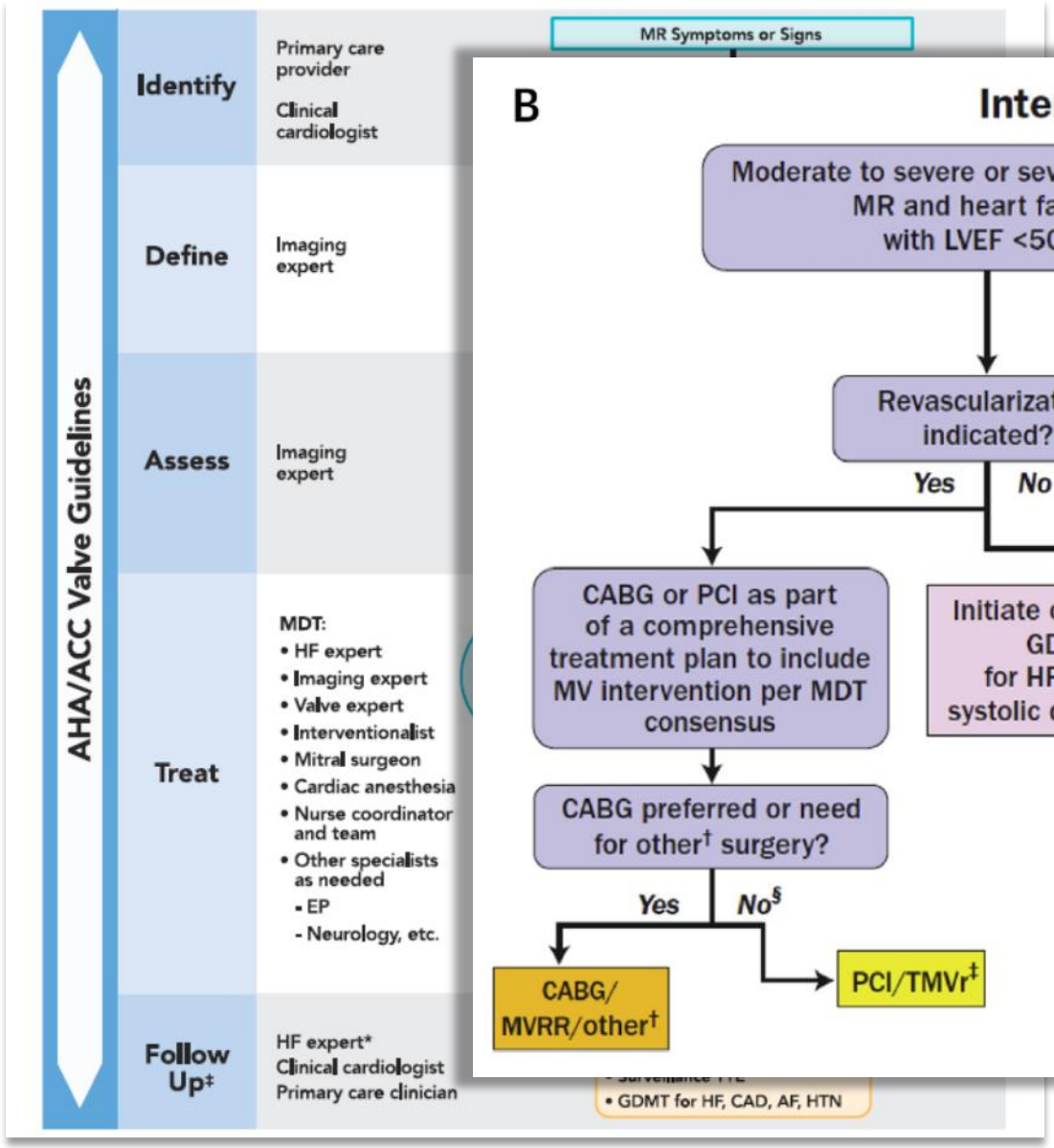
2017 ESC/EACTS Guidelines for the Management of Valvular Heart Disease
(European Heart Journal 2017 - doi:10.1093/eurheartj/ehx391)

What is new in the 2017 Valvular Heart Disease Guidelines?

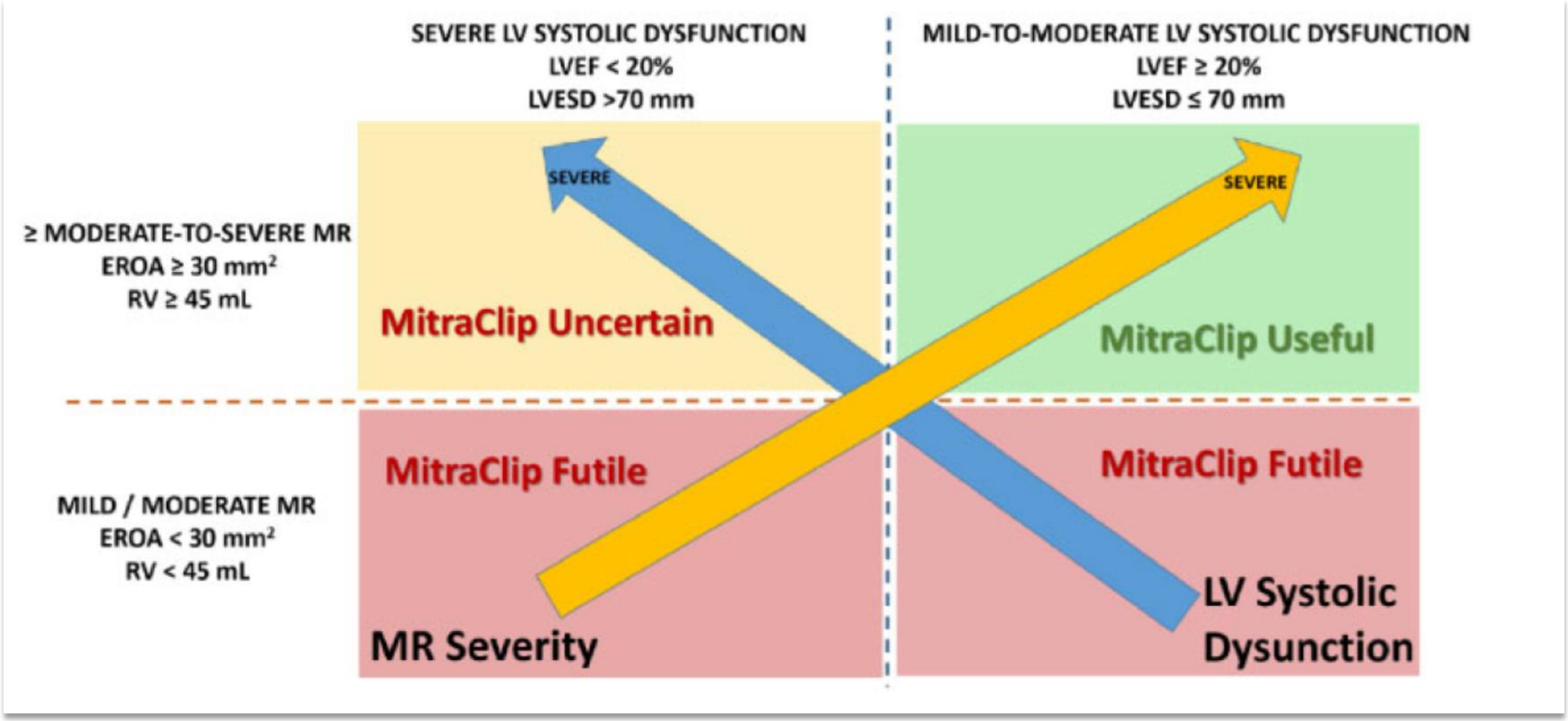
Changes in recommendations	
2012	**2017**
Indications for mitral valve intervention in secondary mitral regurgitation *(continued)*	
	IIb C (modified) *(continued)* When revascularization is not indicated and surgical risk is not low, a percutaneous edge-to-edge procedure may be considered in patients with severe secondary mitral regurgitation and LVEF >30%, who remain symptomatic despite optimal medical management (including CRT if indicated) and who have a suitable valve morphology by echocardiography, avoiding futility.

What is new in the 2017 Valvular Heart Disease Guidelines?

Changes in recommendations	
2012	**2017**
Indications for mitral valve intervention in secondary mitral regurgitation *(continued)*	
	IIb C (modified*) (continued)* In patients with severe secondary mitral regurgitation and LVEF <30% who remain symptomatic despite optimal medical management (including CRT if indicated) and who have no option for revascularization, the Heart Team may consider percutaneous edge-to-edge procedure or valve surgery after careful evaluation for ventricular assist device or heart transplant according to individual patient characteristics.



Bonow et al. JACC 2020



Pibarot P, et al. ;Eur Heart J Cardiovasc Imaging. 2019 Jun 1;20(6):620-624

- **Reparació Percutània de la Tricúspide**

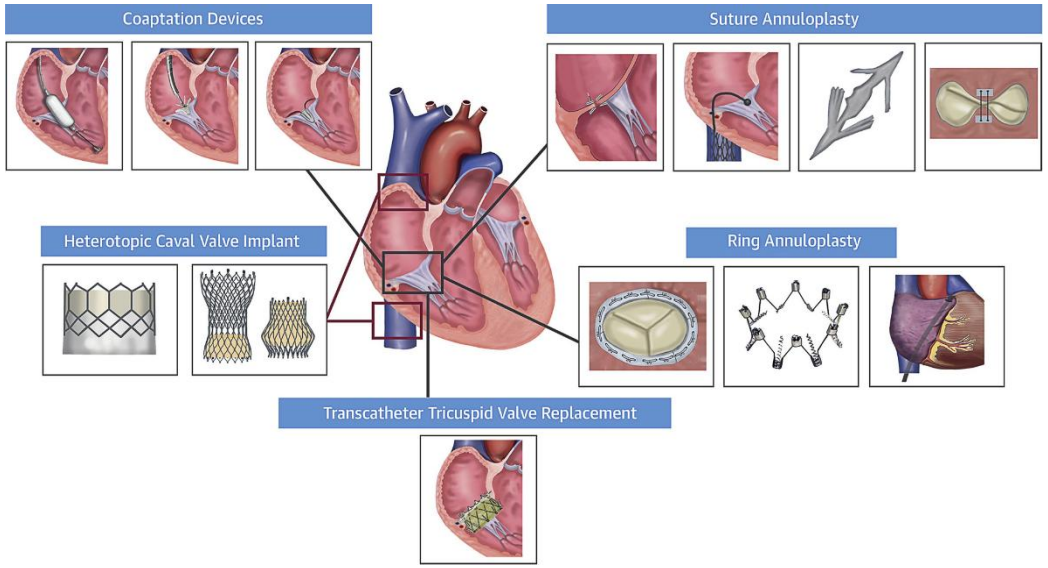
TRILUMINATE

85 pacients amb IT severa.

Milloria de la CF , increment dels m en el test de 6 min,

millora en el qüestionari KCCQ i del remodelat del VD

Mortalitat global i events adversos 7,1 % a l'any



- **Shunt interauricular RELIEVE**

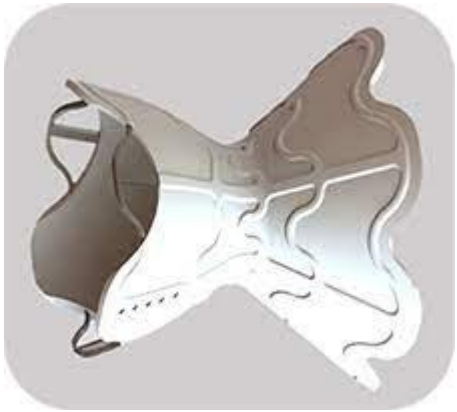
Preliminar 32 pacients

Als 3 i 12 mesos millora de lCF, de la qualitat de vida, dels m en el test de 6 min.

Als 12 mesos el 14% dels shunts estaven oclosos i el 36% tenien estenosi

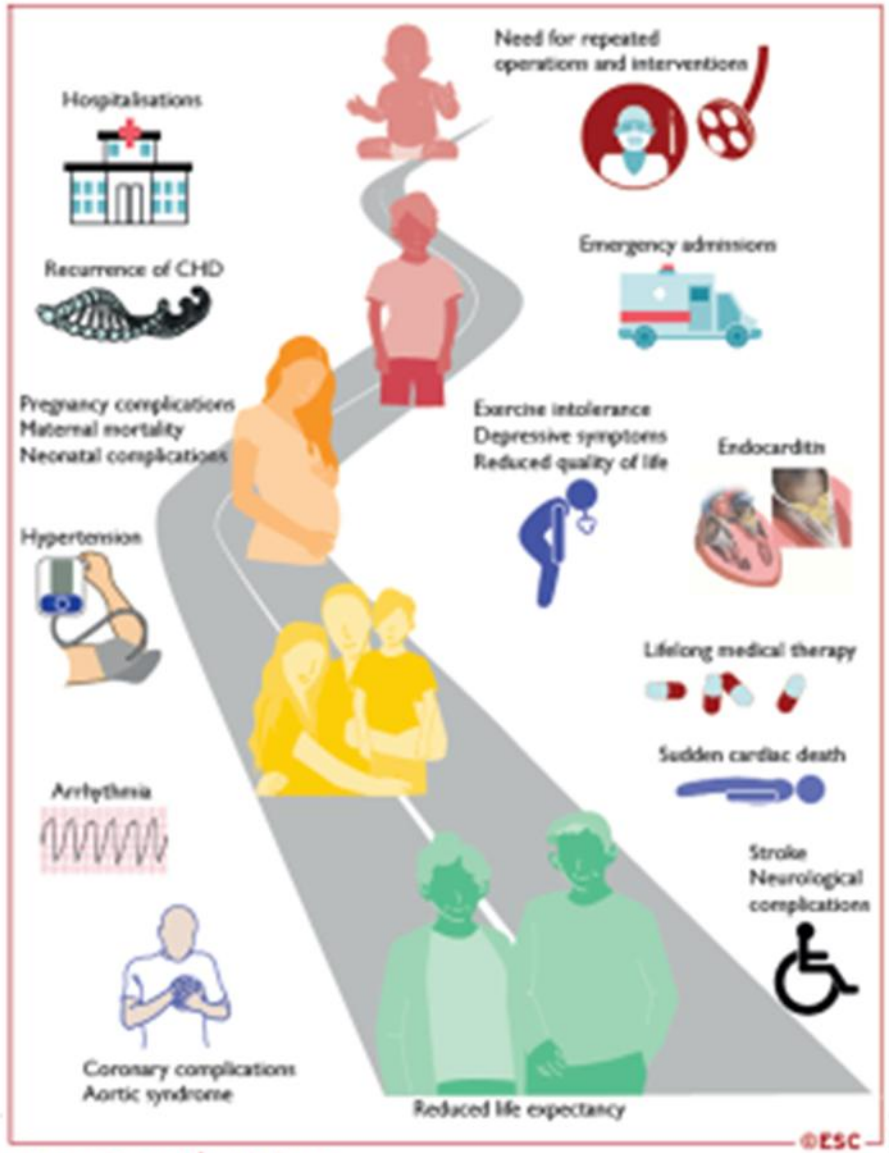
Els pacients amb sgunt patent menys mortalitat, menys necessitat de LVAD

o trasplantament i hospitalització per IC i disminució de la PCP



Lurz et al. J Am Coll Cardiol. 2021 Jan, 77 (3) 229–239.

Rodes Cabau et al. JACC Cardiovasc Interv. 2018;11(22):2300-231



www.escardio.org/guidelines

ESC European Society of Cardiology

Congenital heart disease
A lifelong chronic condition

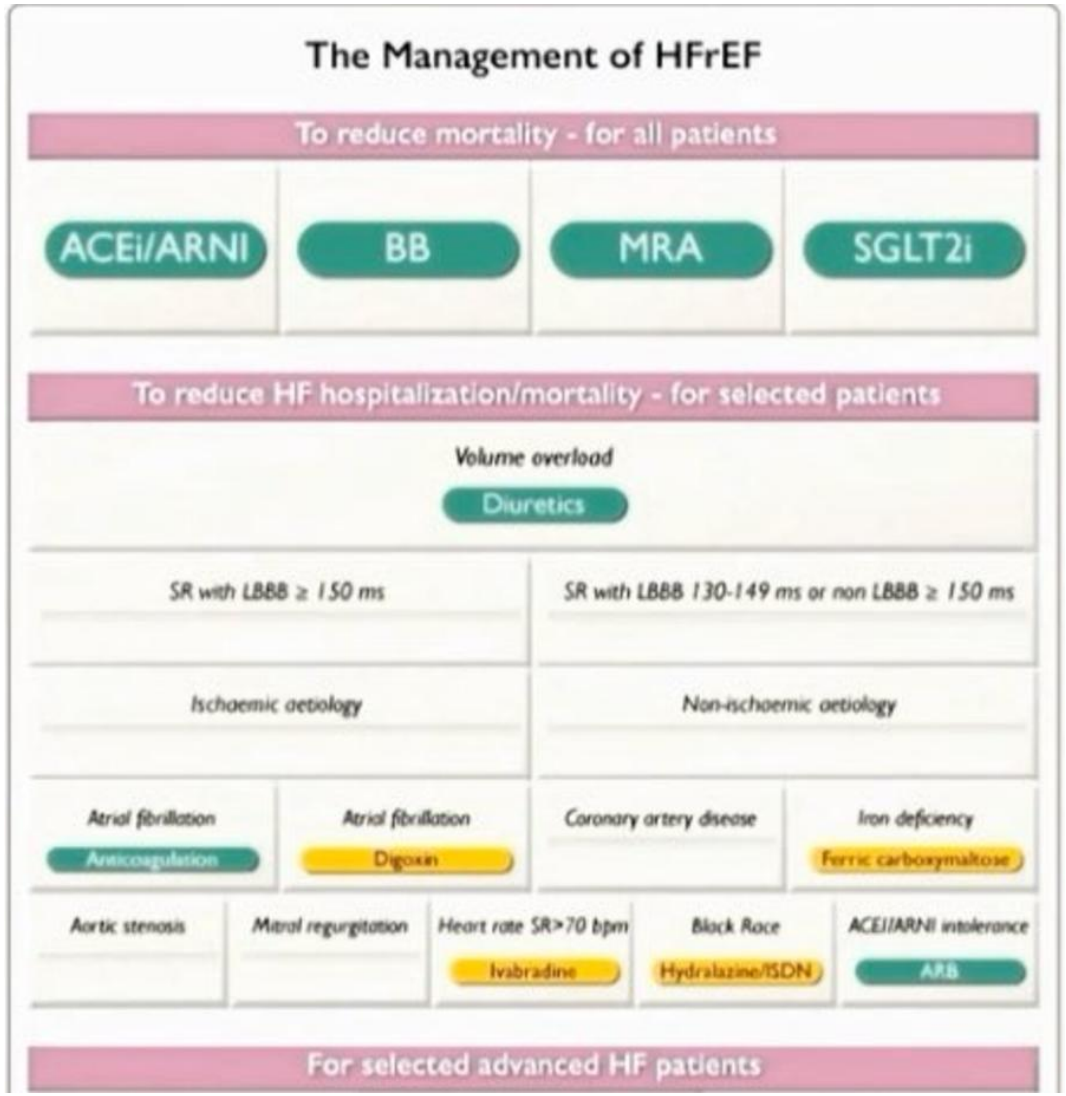
2020 ESC Guidelines for the management of adult congenital heart disease (ACHD)
(European Heart Journal 2020 - doi/10.1093/eurheartj/ehaa554)

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

Gaps in evidence

5. Co-morbidities

- A better understanding of pathophysiology and potential treatments in specific HF populations, including the
  - very elderly,
  - young patients,
  - eGFR <30 mL/min,
  - diabetic patients,
  - cardiotoxic chemotherapy-induced HF,
  - muscular dystrophies,
  - cachexia and depression.
- Therapies for HF-related sleep-disordered breathing in HFrEF/HFpEF/HFmrEF.



What's new in medical treatment in the ESC HF Guidelines 2021

- A simplified treatment algorithm for HFrEF based on the early administration of four major classes of drugs: ACEi/ARNI, BBs, MRA, SGLT2i
- Recommendations for the treatment of HFmrEF
- A classification of acute HF
- Treatment algorithms based on phenotypes
  - QRS duration and morphology
  - Aetiology (ischaemic / not ischaemic)
  - Cardiac rhythm, valvular heart disease
  - Diabetes, iron deficiency, electrolyte abnormalities (hyperkaelemia)
  - Cancer
  - Amyloidosis and other cardiomyopathies

Heart Failure 2021

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Cardiooncologia

Recommendations	Class[a]	Level[b]
It is recommended that cancer patients at increased risk for cardiotoxicity, defined by a history or risk factors of CV disease, previous cardiotoxicity or exposure to cardiotoxic agents, undergo CV evaluation before scheduled anticancer therapy, preferably by a cardiologist with experience/interest in Cardio-Oncology.	I	C
Treatment with an ACE-I and a beta-blocker (preferably carvedilol) should be considered in cancer patients developing systolic LV dysfunction, defined as a 10% or more decrease in LVEF and to a value lower than 50%, during anthracycline chemotherapy.	IIa	B
A baseline CV risk assessment should be considered in all cancer patients scheduled to receive a cancer treatment with the potential to cause heart failure.	IIa	C

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IC i Fibril.lació auricular

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the diagnosis and
hronic heart failure

Recommendations for the prev … th symptomatic heart failure (NYHA Class II–IV) and paroxysmal or persiste…

Recommendations	Class [a]	Level [b]	Ref [c]

2021	Class a	2016	Class*
Recommendations for management of patients with HF and atrial fibrillation			
DOACs are recommended in preference to VKAs in patients with HF, except in those with moderate or severe mitral stenosis or mechanical prosthetic heart valves.	I	For patients with HF and non-valvular AF eligible for anticoagulation based on a CHA_2DS_2-VASc score, NOACs rather than warfarin should be considered for anticoagulation as NOACs are associated with a lower risk of stroke, intracranial haemorrhage and mortality, which outweigh the increased risk of gastrointestinal haemorrhage.	IIa

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COMORBILITATS: Dèficit de ferro

Recommendations for the treatment of other co-morbidities in patients with heart failure

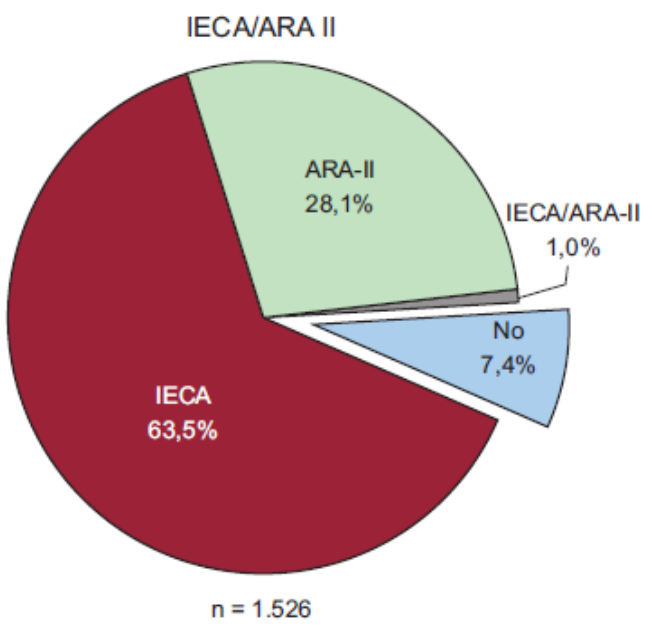
Recommendations	Class [a]	Level [b]	Ref [c]
Iron deficiency			
Intravenous FCM sh considered in symp with HFrEF and iro (serum ferritin <10 ferritin between 10 transferrin saturati order to alleviate H and improve exerci quality of life.			
Diabetes			
Metformin should b a first-line treatmer control in patients and HF, unless cont			

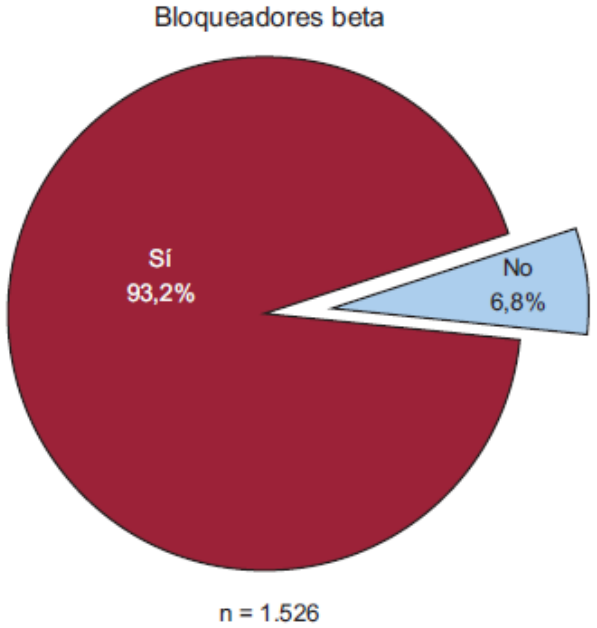
Recommendations	New!	
It is recommended that all patients with HF be periodically screened for anaemia and iron deficiency with a full blood count, serum ferritin concentration and TSAT.	I	C
Intravenous iron supplementation with ferric carboxymaltose should be considered in symptomatic patients with LVEF ≤45% and iron deficiency, defined as serum ferritin <100 ng/mL or serum ferritin 100-299 ng/mL with TSAT <20%, to alleviate HF symptoms, improve exercise capacity and QOL.	IIa	A
	New!	
Intravenous iron supplementation with ferric carboxymaltose should be considered in symptomatic HF patients recently hospitalized for HF and with LVEF < 50% and iron deficiency, defined as serum ferritin <100 ng/mL or serum ferritin 100-299 ng/mL with TSAT <20%, to reduce the risk of heart failure hospitalization.	IIa	B

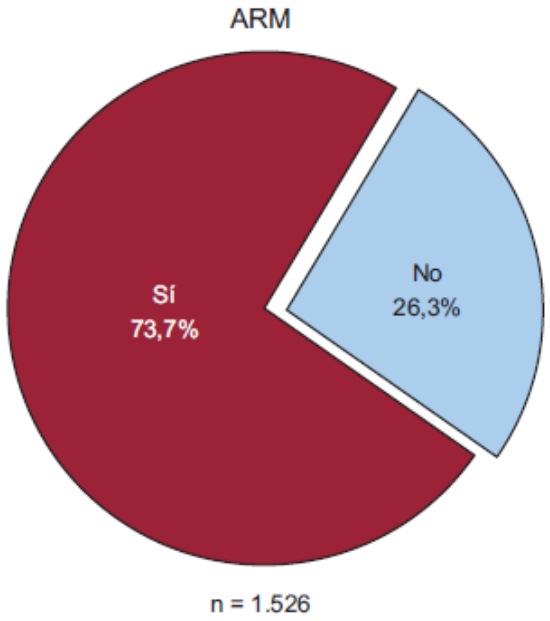
Diabetes Recomendations

Recommendations	Class[a]	Level[b]
SGLT2 inhibitors (canagliflozin, dapagliflozin, empagliflozin, ertuglifozin, sotaglifozin) are recommended in patients with T2DM at risk of CV events to reduce hospitalizations for HF, major CV events, end-stage renal dysfunction and CV death.	I	A
SGLT2 inhibitors (dapagliflozin, empagliflozin and sotagliflozin) are recommended in patients with T2DM and HFrEF to reduce hospitalizations for HF and CV death.	I	A

Adecuación en España a las recomendaciones terapéuticas de la guía de la ESC sobre insuficiencia cardiaca: *ESC Heart Failure Long-term Registry*







Alcanzan dosis objetivo

IECAs 16,2 %/ARAII 23,3% 13,2 % 23,5%

Rev Esp Cardiol. 2015

Logro de la dosis objetivo en los tratamientos farmacológicos recomendados en pacientes ambulatorios con fracción de eyección reducida

	Alcanzan dosis objetivo	No alcanzan dosis objetivo	Razón para no alcanzar dosis objetivo	
IECA (977 pacientes)	158 (16,2)	819 (83,8)	Todavía en fase de titulación	248 (30,3)
			Hipotensión sintomática	254 (31,0)
			Empeoramiento de la función renal	48 (5,9)
			Hiperpotasemia	37 (4,5)
			Tos	3 (0,4)
			Angioedema	1 (0,1)
			Otros/desconocido	228 (27,8)
ARA-II (395 pacientes)	92 (23,3)	303 (76,7)	Todavía en fase de titulación	91 (30,0)
			Hipotensión sintomática	97 (32,0)
			Empeoramiento de la función renal	27 (8,9)
			Hiperpotasemia	8 (2,6)
			Angioedema	2 (0,7)
			Otros/desconocido	78 (25,7)
Bloqueadores beta (1.413 pacientes)	186 (13,2)	1.227 (86,8)	Todavía en fase de titulación	425 (34,6)
			Hipotensión sintomática	240 (19,6)
			Bradiarritmia	111 (9,0)
			Empeoramiento de la IC	39 (3,2)
			Broncospasmo	33 (2,7)
			Empeoramiento EAP	22 (1,8)
			Disfunción sexual	7 (0,6)
			Otros/desconocido	350 (28,5)
ARM (905 pacientes)	213 (23,5)	692 (76,5)	Todavía en fase de titulación	185 (26,7)
			Hiperpotasemia	72 (10,4)
			Empeoramiento disfunción sexual	84 (12,1)
			Ginecomastia	4 (0,6)
			Otros/desconocido	347 (50,1)

ARA-II: antagonistas del receptor de la angiotensina II; ARM: antagonistas del receptor mineralocorticoideo; EAP: enfermedad arterial periférica; IC: insuficiencia cardiaca; IECA: inhibidores de la enzima de conversión de la angiotensina.
Los datos expresan n (%).

Rev Esp Cardiol. 2015

MANEJO DE LA HIPERPOTASEMIA EN PACIENTES CON INSUFICIENCIA CARDÍACA

IMPORTANCIA Y CLASIFICACIÓN

Definición e importancia

↑ niveles de K^+ plasmáticos >5 mEq/L

Provoca

- Alteraciones excitabilidad cardíaca y muscular
- Trastornos de conducción eléctrica
- Riesgo de arritmia maligna

Causas más frecuentes

- Enfermedad renal
- Uso de fármacos
- Prevalencia y recurrenciacon el nº de comorbilidades ↑

Clasificación

SEGÚN NIVELES

Niveles K^+

6 mEq/L	**Grave** (>6 mEq/L)
5,5 mEq/L	**Moderada** (5,5 - 6 mEq/L)
5 mEq/L	**Leve** (5 - 5,4 mEq/L)

SEGÚN RECURRENCIA

Aguda:
1 episodio/año

Crónica/recurrente:
≥2 episodios/año

LA HIPERPOTASEMIA PUEDE SER CONSIDERADA UNA COMORBILIDAD MÁS EN EL PACIENTE CON IC

Fármacos para la IC que pueden provocar hiperpotasemia

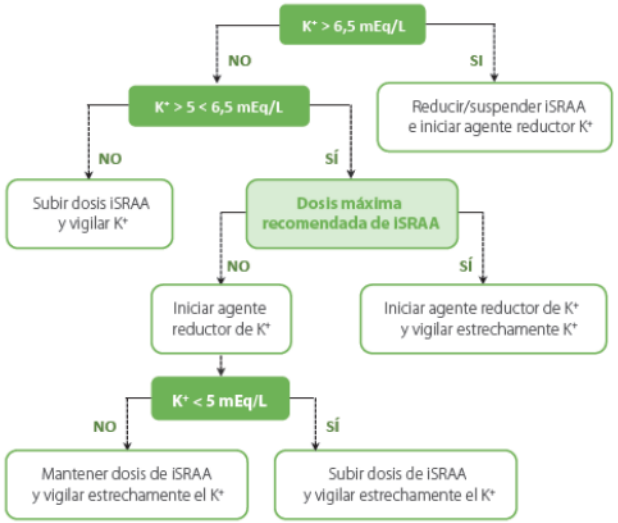
↑ Riesgo en pacientes susceptibles

iSRAA:
IECAs, ARA-II, INRA, ARM

Condiciones asociadas a la hiperpotasemia en IC

MANEJO DE LA HIPERPOTASEMIA

FIGURA 1 | Manejo de hiperpotasemia causada por fármacos



Hiperpotasemia causada por fármacos para la IC

Se recomienda:

- Dieta ↓ en K^+
- Uso de diuréticos y/o reductores de K^+ (patiromer/ ciclosilicato sódico de zirconio)
- Monitorización periódica de electrolitos y función renal
- Tras suspensión de iSRAA, reintroducción controlada si K^+ < 5 mEq/L
- No administrar resinas clásicas quelantes de K^+

Pacientes con antecedentes y necesidad de tratamiento para la IC

- Conocer las causas
- Identificar pacientes en riesgo de volver a desarrollarla
- Establecer dosis objetivo
- Seguimiento estrecho de la función renal y los iones

DECÁLOGO

1. Conocer los niveles actuales (y previos) de K^+ y del FGe
2. Identificar el tipo de hiperpotasemia
3. Determinar posibles antecedentes de hiperpotasemia y su etiología
4. Identificar factores de riesgo
5. Para reducir el riesgo de hiperpotasemia:
   - Disminuir el aporte de K^+
   - Evitar AINEs y diuréticos distales
   - Mantener balance hídrico equilibrado
   - Valorar patiromer o ciclosilicato sódico de zirconio (reductores de K^+)
6. Para la prescripción de un iSRAA:
   - ERC con albuminuria/proteinuria
   - HTA con alto riesgo cardiovascular
   - IC con FEVI reducida
7. Establecer dosis objetivo una vez aprobada la indicación de iSRAA
8. En función de los niveles de K^+:
   - K^+ = 4-5 mEq/L: Prescribir y/o titular iSRAA
   - K^+ = 5,1-6,0 mEq/L: Asociar fármaco reductor de K y prescribir/titular iSRAA
   - K^+ > 6,0 mEq/L: Suspender iSRAA y reevaluar
9. Realizar controles periódicos frecuentes desde el inicio del iSRAA
10. Usar reductores de K^+ ante imposibilidad de uso de iSRAA o de su adecuada titulación

K^+, potasio; IC, insuficiencia cardíaca; HTA, hipertensión arterial; FEVI, fracción de eyección del ventrículo izquierdo; FGe, filtrado glomerular estimado; AINE, antiinflamatorio no esteroideo; iSRAA, inhibidores del sistema renina-angiotensina aldosterona; IECA, inhibidor de la enzima conversora de angiotensina; ARA-II, antagonistas del receptor de angiotensina II; INRA, inhibidores del receptor de la neprilisina y angiotensina; ARM, antagonistas de los receptores mineralocorticoides; DM, diabetes mellitus; ERC, enfermedad renal crónica; ACV, accidente cerebrovascular

L. Almenar Bonet and A. González-Juanatey Franco, Consenso sobre el manejo de la hiperpotasemia en pacientes con insuficiencia cardíaca: recomendaciones de la SEC-SEMI, Revista Clínica Española, https://doi.org/10.1016/j.rce.2020.11.009

A Multicenter, Double-blind, Placebo-controlled, Randomized Withdrawal, Parallel Group Study of ***Patiromer*** for the Management of ***Hyperkalemia*** in Subjects Receiving Renin Angiotensin Aldosterone System Inhibitor (***RAASi***) Medications for the Treatment of Heart Failure **(DIAMOND)**

Pacients amb HFrEF I hiperK K > 5 mEq/L amb ISRAA o que són normoK però han tingut història prèvia d'hiperK als darrers 12 mesos que obligui a reducció o discontiuació d'ISRAA

- **Objetivo**: el tractament amb patiromer permetrà mantenir el tractament amb ISRAA d'accord amb les Guidelines i disminuir l'end point combinat de mort CV i hospitalitzacions per events CV comparat amb placebo.

Clinical Trials.gov Identifier: NCT03888066998

Conclusions

- Nous fàrmacs orals per la IC avançada ?
- Inotrops intermitents encara per incloure
- Individualitzar la indicació de DAI: abordatge multidisciplinar
- Reparació percutània IM funcional: Heart Team
- Algoritmes de tractament segons fenotips
- ACODs per la prevenció de la trombosis en la FA en IC
- Screening de la ferropènia i correcció de la mateixa durant l'hospitalització
- Tractament de la DM amb iSGLT2 en pacients amb factors de risc CV i HFreF
- Estudi i tractament de la toxicitat cardiaca per QT