

Overview-2021 ESC Guidelines for the diagnosis and treatment of acute and chronic heart failure

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Introduction

- **Task Force (n=31) 2019-2021**
 - “COVID-19 GL”
 - 2 face to face meetings
 - Numerous Zoom Sessions
 - **Considered published evidence until 31/03/2021**
- **Evidence**
 - “High quality”
 - **ESC rules for Classes of Recommendations (COR)/Levels of Evidence (LOE)**
 - **Voting (≥75% for a COR/LOE in a Table of Recommendations)**
- **Big GL!**
 - **Focus on what is new since the 2016 GL**
 - CHF/AHF/Advanced HF/Comorbidities
 - *Expanded sections on Cancer and CM*
 - *Addition of Quality Indicators*

2021 ESC Guidelines for the diagnosis and treatment of acute and chronic heart failure

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ESC Classes of recommendations

Definition

Wording to use

Classes of recommendations

Class I	Evidence and/or general agreement that a given treatment or procedure is beneficial, useful, effective.	Is recommended or is indicated
Class II	Conflicting evidence and/or a divergence of opinion about the usefulness/efficacy of the given treatment or procedure.	
Class IIa	Weight of evidence/opinion is in favour of usefulness/efficacy.	Should be considered
Class IIb	Usefulness/efficacy is less well established by evidence/opinion.	May be considered
Class III	Evidence or general agreement that the given treatment or procedure is not useful/effective, and in some cases may be harmful.	Is not recommended

ESC Levels of evidence

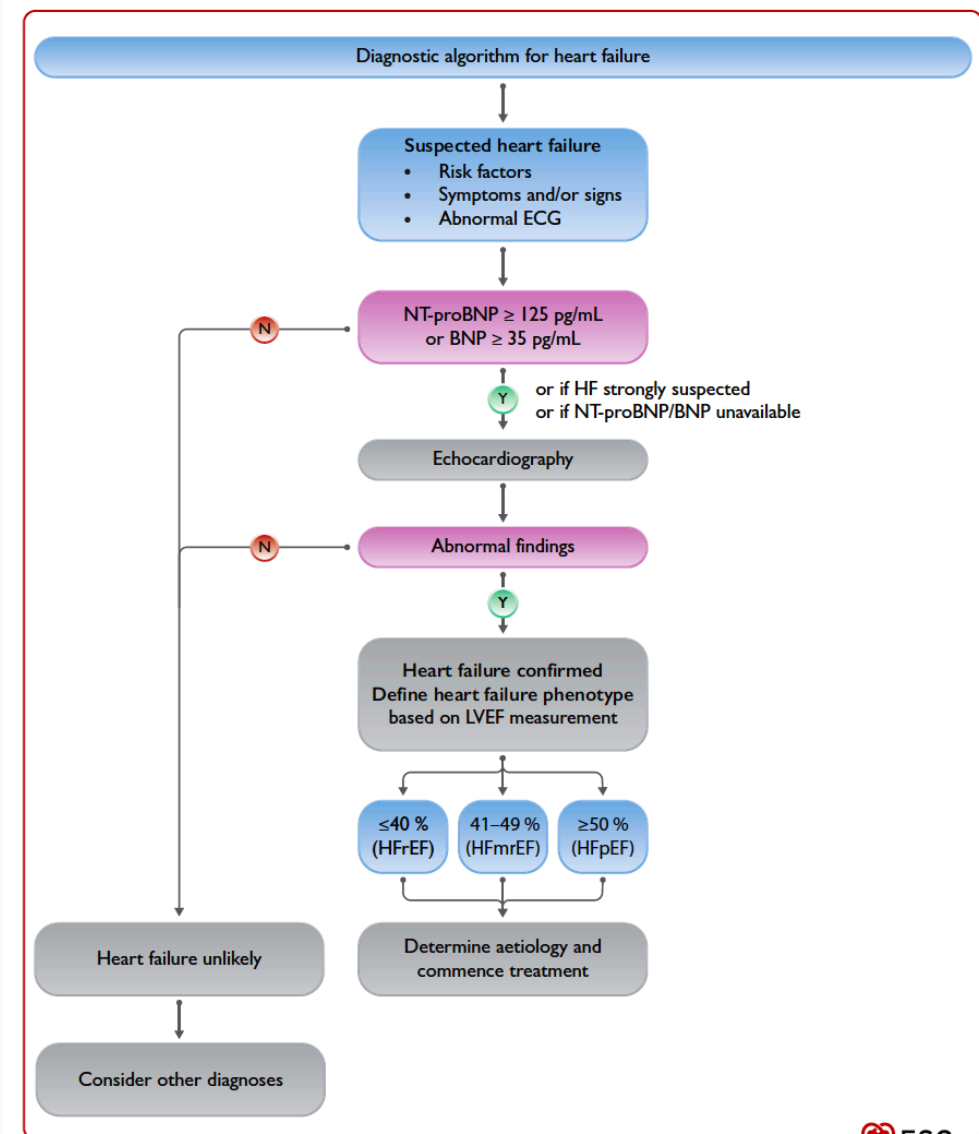
Level of evidence A	Data derived from multiple randomized clinical trials or meta-analyses.
Level of evidence B	Data derived from a single randomized clinical trial or large non-randomized studies.
Level of evidence C	Consensus of opinion of the experts and/or small studies, retrospective studies, registries.

Definition of HFref, HFmrEF and HFpeF

Heart failure is not a single pathological diagnosis, but a clinical syndrome consisting of cardinal symptoms (e.g. breathlessness, ankle swelling, and fatigue) that may be accompanied by signs (e.g. elevated jugular venous pressure, pulmonary crackles, and peripheral oedema). It is due to a structural and/or functional abnormality of the heart that results in elevated intracardiac pressures and/or inadequate cardiac output at rest and/or during exercise.

Type of HF		HFref	HFmrEF	HFpeF
CRITERIA	1	Symptoms ± Signs ^a	Symptoms ± Signs ^a	Symptoms ± Signs ^a
	2	LVEF ≤40%	LVEF 41–49% ^b	LVEF ≥50%
	3	-	-	Objective evidence of cardiac structural and/or functional abnormalities consistent with the presence of LV diastolic dysfunction/raised LV filling pressures, including raised natriuretic peptides ^c

Diagnosis of CHF



Drug Treatments for HFrEF

Pharmacological treatments indicated in patients with (NYHA class II–IV) heart failure with reduced ejection fraction (LVEF \leq 40%)

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

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Drug Treatment for HFrEF

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.

IIb

B

Omecamtiv mercabil-no TOR as the drug was (is) not licensed for use

Sacubitril Valsartan for “de novo” use-IIb B

HFrEF: Cardiac Rhythm Management

ICD

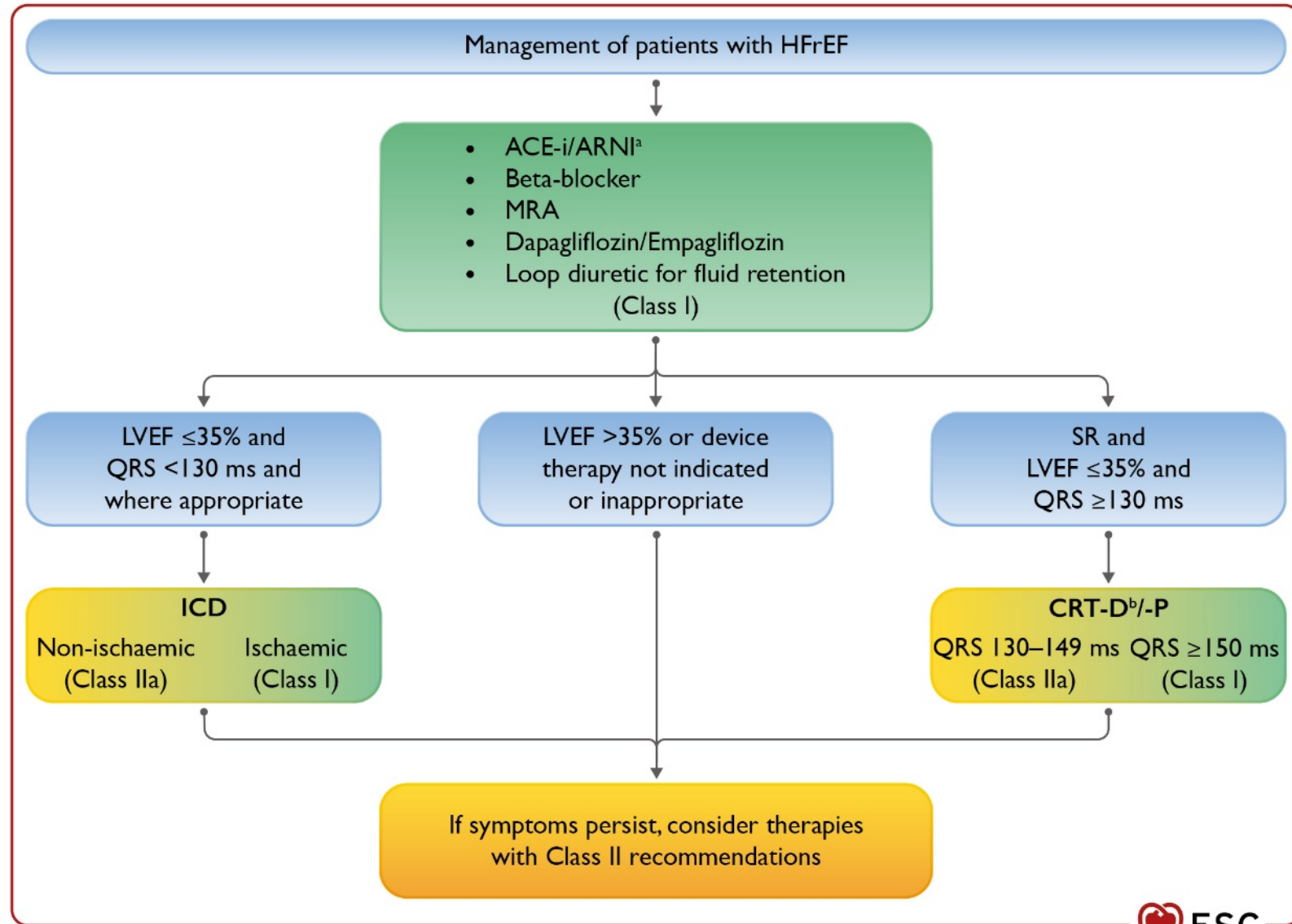
Primary prevention		
An ICD is recommended to reduce the risk of sudden death and all-cause mortality in patients with symptomatic HF (NYHA class II–III) of an ischaemic aetiology (unless they have had a MI in the prior 40 days—see below), and an LVEF $\leq 35\%$ despite ≥ 3 months of OMT, provided they are expected to survive substantially longer than 1 year with good functional status. ^{161,165}	I	A
An ICD should be considered to reduce the risk of sudden death and all-cause mortality in patients with symptomatic HF (NYHA class II–III) of a non-ischaemic aetiology, and an LVEF $\leq 35\%$ despite ≥ 3 months of OMT, provided they are expected to survive substantially longer than 1 year with good functional status. ^{161,166,167}	IIa	A

CRT

Recommendations	Class ^a	Level ^b
CRT is recommended for symptomatic patients with HF in SR with a QRS duration ≥ 150 ms and LBBB QRS morphology and with LVEF $\leq 35\%$ despite OMT in order to improve symptoms and reduce morbidity and mortality. ^{205–215}	I	A
CRT rather than RV pacing is recommended for patients with HFrEF regardless of NYHA class or QRS width who have an indication for ventricular pacing for high degree AV block in order to reduce morbidity. This includes patients with AF. ^{216–219}	I	A
CRT should be considered for symptomatic patients with HF in SR with a QRS duration ≥ 150 ms and non-LBBB QRS morphology and with LVEF $\leq 35\%$ despite OMT in order to improve symptoms and reduce morbidity and mortality. ^{205–215}	IIa	B
CRT should be considered for symptomatic patients with HF in SR with a QRS duration of 130–149 ms and LBBB QRS morphology and with LVEF $\leq 35\%$ despite OMT in order to improve symptoms and reduce morbidity and mortality. ^{211,220}	IIa	B
Patients with an LVEF $\leq 35\%$ who have received a conventional pacemaker or an ICD and subsequently develop worsening HF despite OMT and who have a significant proportion of RV pacing should be considered for 'upgrade' to CRT. ²²¹	IIa	B



2021 HFrEF Therapeutic Algorithm



Drug Treatment of HFmrEF

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

Recommendations for 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.	I	C

Reducing body weight in obese patients and increasing exercise may further improve symptoms and exercise capacity and should therefore be considered in appropriate patients.

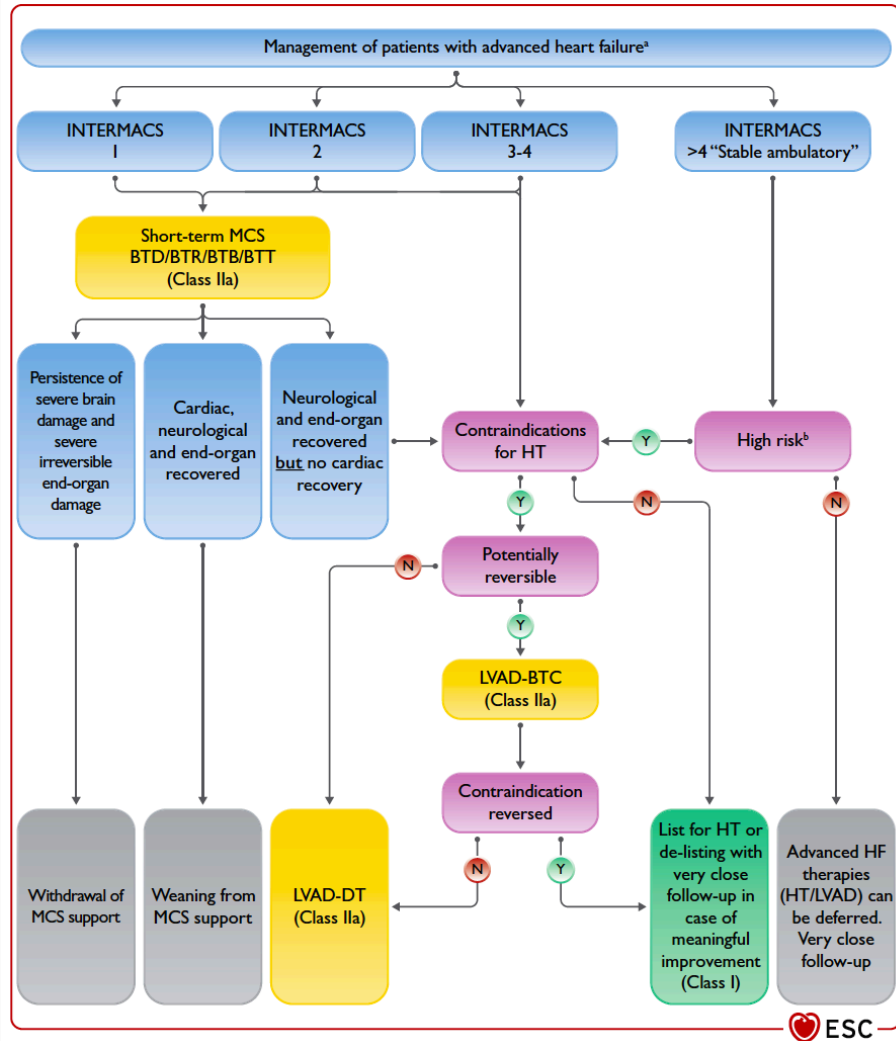
HFpEF = heart failure with preserved ejection fraction.

^a Class of recommendations. ^b Level of evidence.

Multidisciplinary management

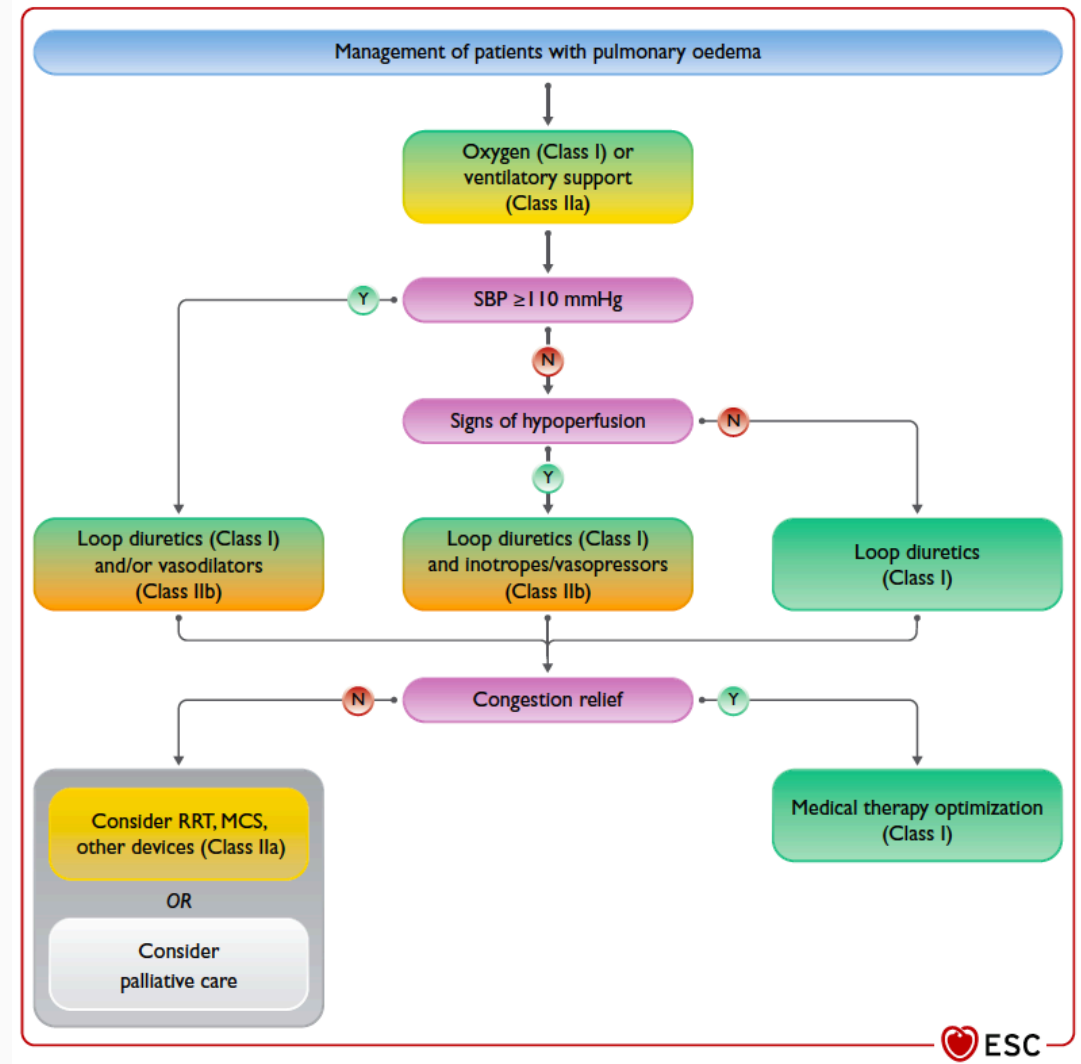
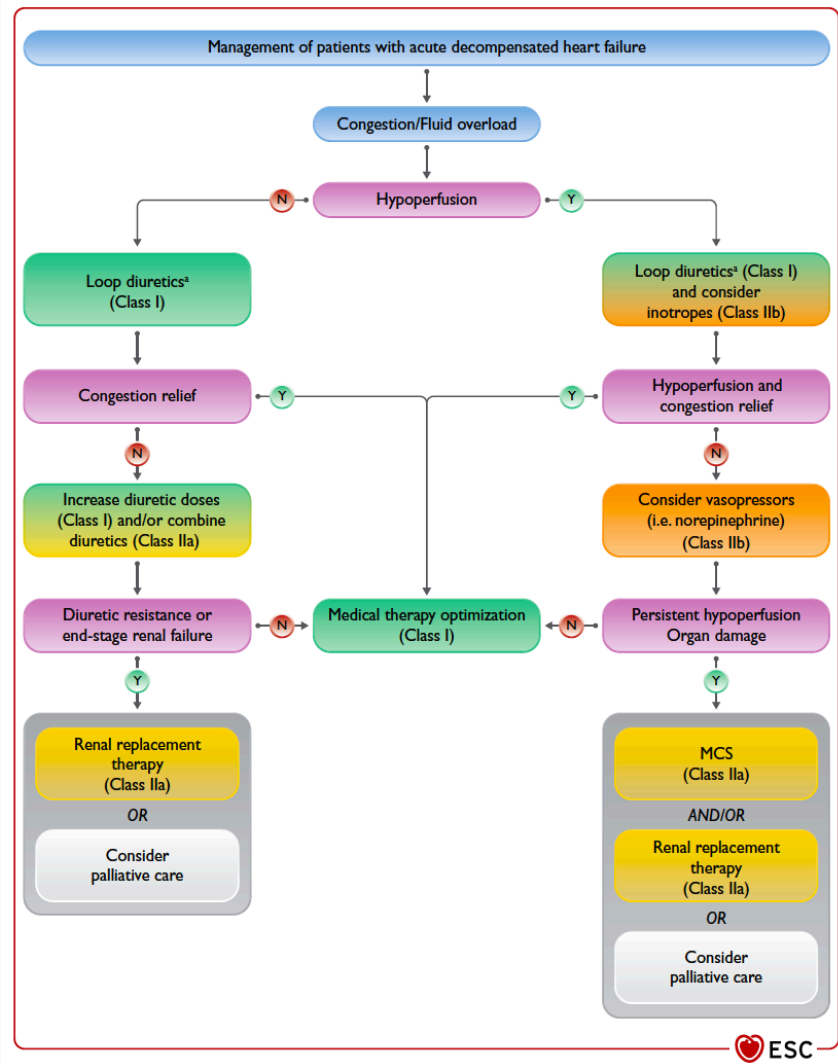
It is recommended that HF patients are enrolled in a multidisciplinary HF management programme to reduce the risk of HF hospitalization and mortality. ^{309,314,315,316}	I	A
Self-management strategies are recommended to reduce the risk of HF hospitalization and mortality. ³⁰⁹	I	A
Either home-based and/or clinic-based programmes improve outcomes and are recommended to reduce the risk of HF hospitalization and mortality. ^{310,317}	I	A
Influenza and pneumococcal vaccinations should be considered in order to prevent HF hospitalizations. ^{315,316}	IIa	B

Advanced Heart Failure



Patients being considered for long-term MCS must have good compliance, appropriate capacity for device handling and psychosocial support. ^{414–416}	I	C
Heart transplantation is recommended for patients with advanced HF, refractory to medical/device therapy and who do not have absolute contraindications.	I	C
Long-term MCS should be considered in patients with advanced HFrEF despite optimal medical and device therapy, not eligible for heart transplantation or other surgical options, and without severe right ventricular dysfunction, to reduce the risk of death and improve symptoms. ^{378,396,397,401,402,404,417}	IIa	A
Long-term MCS should be considered in patients with advanced HFrEF refractory to optimal medical and device therapy as a bridge to cardiac transplantation in order to improve symptoms, reduce the risk of HF hospitalization and the risk of premature death. ^{398–400,402,404}	IIa	B

Acute Heart Failure



Acute Heart Failure

2021

2016

Recommendations for management of patients with acute HF			
Combination of a loop diuretic with thiazide-type diuretic should be considered in patients with resistant oedema who do not respond to an increase in loop diuretic doses.	IIa	Combination of loop diuretic with either thiazide-type diuretic or spironolactone may be considered in patients with resistant oedema or insufficient symptomatic response.	IIb
In patients with AHF and SBP >110 mmHg, i.v. vasodilators may be considered as initial therapy to improve symptoms and reduce congestion.	IIb	In patients with hypertensive AHF, i.v. vasodilators should be considered as initial therapy to improve symptoms and reduce congestion.	IIa
Routine use of opiates is not recommended, unless in selected patients with severe/intractable pain or anxiety.	III	Opiates may be considered for cautious use to relieve dyspnoea and anxiety in patients with severe dyspnoea but nausea and hypopnea may occur.	IIb
Short-term MCS should be considered in patients with cardiogenic shock as a BTR, BTD, BTB. Further indications include treatment of the cause of cardiogenic shock or long-term MCS or transplantation.	IIa	Short-term MCS may be considered in refractory cardiogenic shock depending on patient age, comorbidities, and neurological function.	IIb

Discharge Planning

Recommendations for management of patients after HF hospitalization	
It is recommended that patients hospitalized for HF be carefully evaluated to exclude persistent signs of congestion before discharge and to optimize oral treatment.	I
It is recommended that evidence-based oral medical treatment be administered before discharge.	I
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.	I

Comorbidities

T2DM

Recommendation	Class ^a	Level ^b
SGLT2 inhibitors (canagliflozin, dapagliflozin, empagliflozin, ertugliflozin, sotagliflozin) 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. ^{293–297}	I	A
SGLT2 inhibitors (dapagliflozin, empagliflozin, and sotagliflozin) are recommended in patients with T2DM and HFrEF to reduce hospitalizations for HF and CV death. ^{108,109,136}	I	A

Iron Deficiency

Recommendations	Class ^a	Level ^b
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. ^{720,722,724}	IIa	A
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 HF hospitalization. ⁵¹²	IIa	B

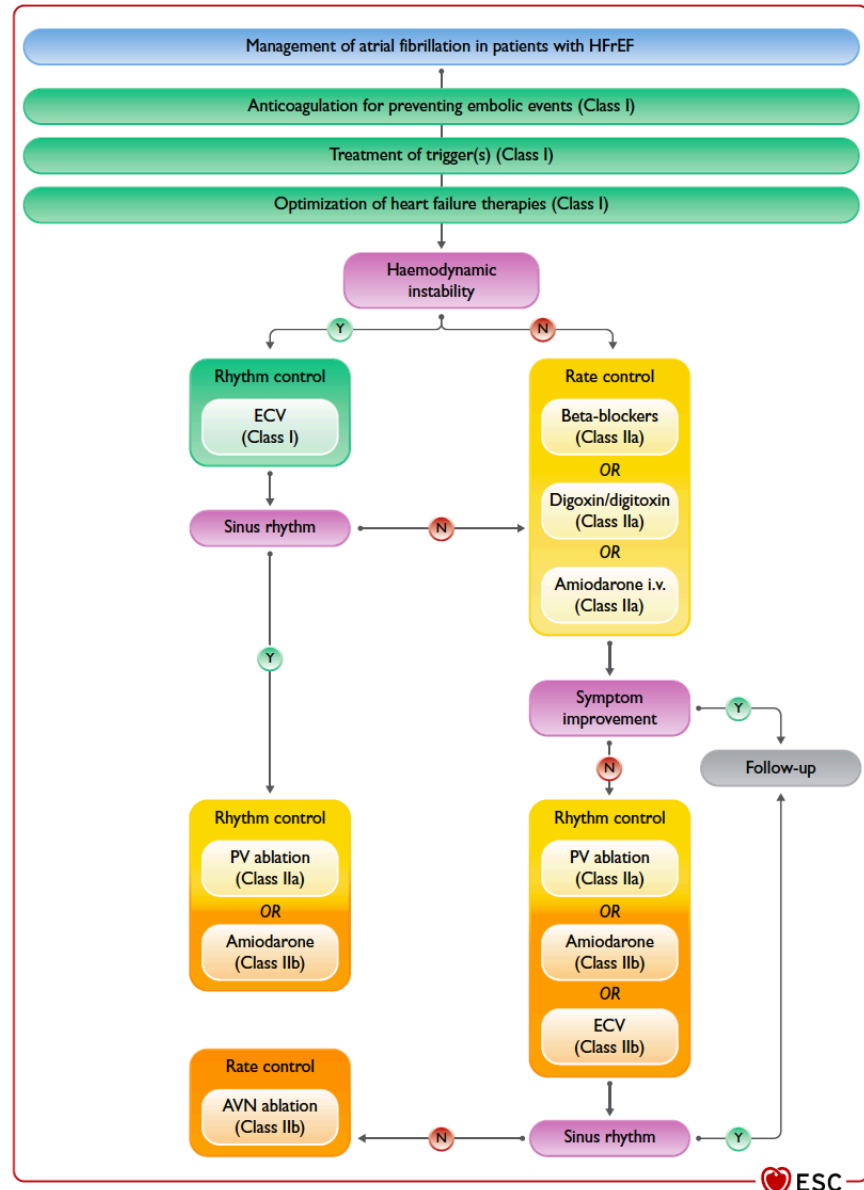


Recommendations for myocardial revascularization in HFrEF and CCS

Recommendations	Class ^a	Level ^b
Coronary revascularization should be considered to <u>relieve persistent symptoms</u> of angina (or an angina-equivalent) in patients with HFrEF, CCS, and coronary anatomy suitable for revascularization, despite OMT including anti-anginal drugs.	IIa	C
Coronary revascularization may be considered to <u>improve outcomes</u> in patients with HFrEF, CCS, and coronary anatomy suitable for revascularization, after careful evaluation of the individual risk to benefit ratio, including coronary anatomy (i.e. proximal stenosis >90% of large vessels, stenosis of left main or proximal LAD), comorbidities, life expectancy, and patient's perspectives.	IIb	C

Recommendations	Class ^a	Level ^b
CABG should be considered as the first-choice revascularization strategy, in patients suitable for surgery, especially if they have diabetes and for those with multivessel disease.	IIa	B
PCI may be considered as an alternative to CABG, based on Heart Team evaluation, considering coronary anatomy, comorbidities, and surgical risk	IIb	C

AF



Anticoagulation

Long-term treatment with an oral anticoagulant is recommended in all patients with AF, HF, and CHA₂DS₂-VASc score ≥ 2 in men or ≥ 3 in women.⁷

I	A
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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.^{528,558}

I	A
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Long-term treatment with an oral anticoagulant should be considered for stroke prevention in AF patients with a CHA₂DS₂-VASc score of 1 in men or 2 in women.^{7,559}

IIa	B
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AF catheter ablation

In cases of a clear association between paroxysmal or persistent AF and worsening of HF symptoms, which persist despite MT, catheter ablation should be considered for the prevention or treatment of AF.^{552–554,557}

IIa	B
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Valve Disease

Aortic valve intervention, TAVI or SAVR is recommended in patients with HF and severe high-gradient aortic stenosis to reduce mortality and improve symptoms.	I
It is recommended that the choice between TAVI and SAVR be made by the Heart Team, according to individual patient preference and features including age, surgical risk, clinical, anatomical and procedural aspects, weighing the risks and benefits of each approach.	I
Percutaneous edge-to-edge mitral valve repair should be considered in carefully selected patients with secondary mitral regurgitation, not eligible for surgery and not needing coronary revascularization, who are symptomatic despite OMT and who fulfil criteria to achieve a reduction in HF hospitalizations.	IIa
Percutaneous edge-to-edge mitral valve repair may be considered to improve symptoms in carefully selected patients with secondary mitral regurgitation, not eligible for surgery and not needing coronary revascularization, who are highly symptomatic despite OMT and who do not fulfil criteria for reducing HF hospitalization.	IIb

COAPT criteria*

All of the following criteria must be fulfilled:

- LVEF >20%
- LVESD <70 mm
- Systolic pulmonary pressure <70 mmHg
- Absence of moderate or severe right ventricular dysfunction or severe TR
- Absence of haemodynamic instability

Amyloidosis

Recommendations for treatment of patients with HF and amyloidosis

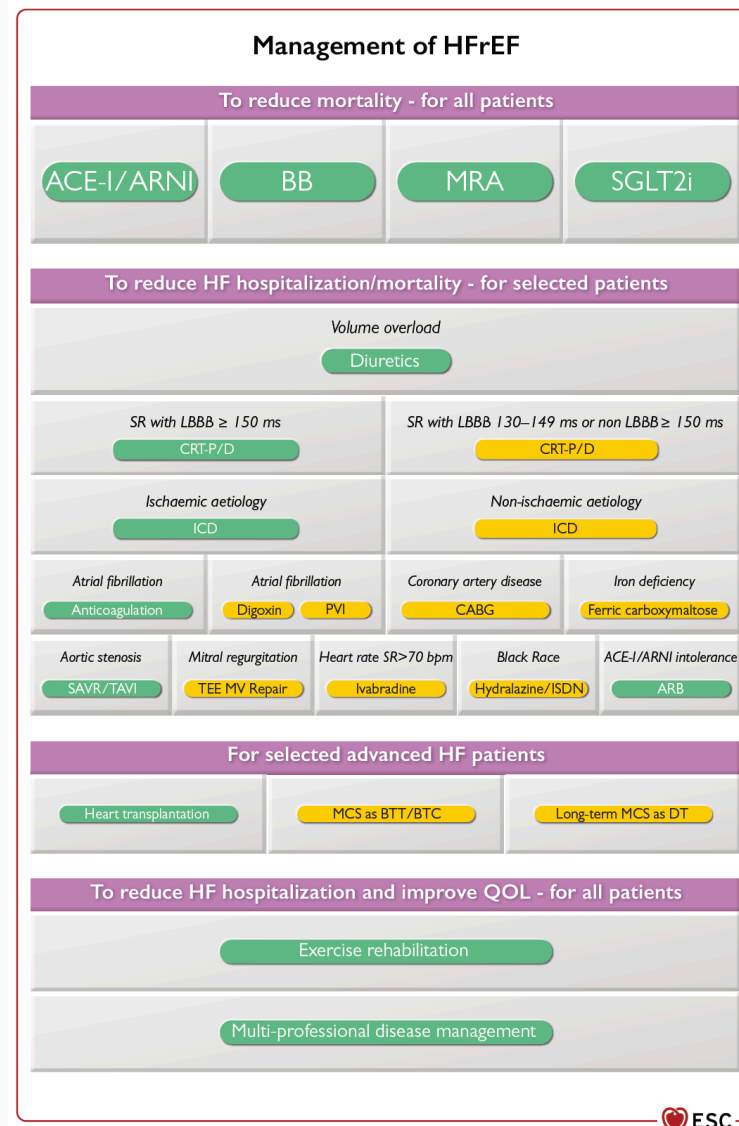
Tafamidis is recommended in patients with genetic testing proven hereditary hTTR-CMP and NYHA class I or II symptoms to reduce symptoms, CV hospitalization and mortality.

I

Tafamidis is recommended in patients with wtTTR-CA and NYHA class I or II symptoms to reduce symptoms, CV hospitalization and mortality.

I

Phenotypic approach to the management of HFrEF



ESC Pocket Guidelines

ESC Pocket Guidelines App

ESC Guidelines Official Slide-set

