

**Aiming for improved  
outcomes in HFrEF:  
Patient education, evidence-based  
treatment and biomarkers**

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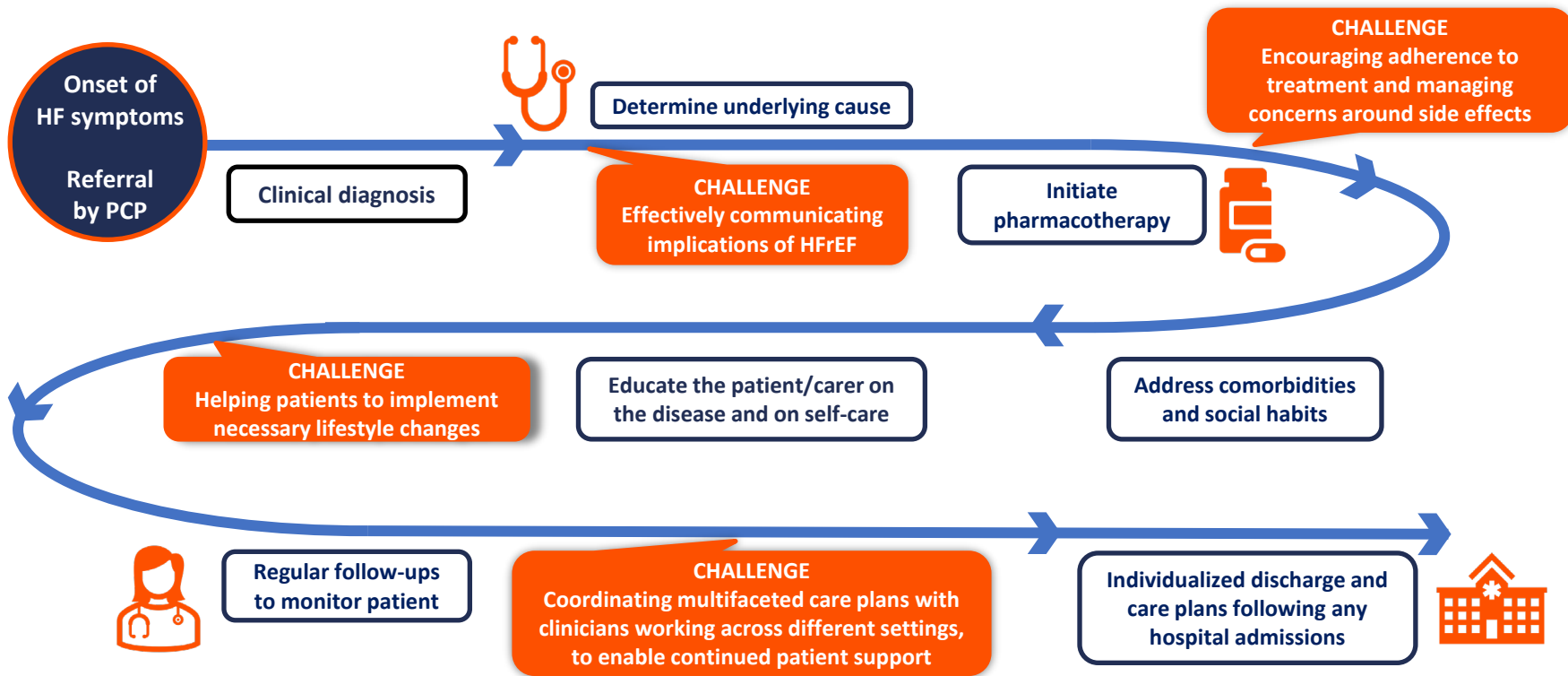
# Agenda

**How can we help patients navigate their journey after a diagnosis of HFrEF?**

**How can we implement evidence-based therapies for HFrEF into clinical practice?**

**What are the current and prospective roles of HFrEF biomarkers for guiding patient management?**

# The patient journey with HFrEF: Key care points and challenges<sup>1-4</sup>



HF, heart failure; HFrEF, heart failure with reduced ejection fraction; PCP, primary care physician.

1. Aidemark J, et al. *Procedia Technol.* 2014;16:1256–64; 2. Ferreira JP, et al. *Global Heart.* 2019;14:197–214; 3. Maddox TM, et al. *J Am Coll Cardiol.* 2021;77:772–810;

4. The Heart Failure Policy Network. 2018. Available at: [www.hfpolicynetwork.org/wp-content/uploads/The-handbook-of-multidisciplinary-and-integrated-heart-failure-care.pdf](http://www.hfpolicynetwork.org/wp-content/uploads/The-handbook-of-multidisciplinary-and-integrated-heart-failure-care.pdf) (accessed 17 June 2021).

# Education on HFrEF: What do patients need to know?

## Important lifestyle changes<sup>1,2</sup>



Physical activity



Daily weight check



Reduce sodium and water intake



Take medication as directed



Regular follow-up visits with physician

Patients must be educated on the underlying causes of HFrEF to emphasize the importance of lifestyle changes

## Warning signs<sup>3</sup>

- Worsening shortness of breath
- Increased swelling of legs, feet and ankles
- Sudden weight gain
- Dyspnoea in supine position
- Discomfort in abdomen
- Dry, hacking cough
- Trouble sleeping

Patients must be aware of when to contact their physician and, if symptoms worsen quickly, when it is a medical emergency

HFrEF, heart failure with reduced ejection fraction.

1. Maddox TM, et al. *J Am Coll Cardiol*. 2021;77:772–810; 2. Ferreira JP, et al. *Global Heart*. 2019;14:197–214; 3. American Heart Association. 2021. Available at: [www.heart.org/-/media/files/health-topics/heart-failure/hf-symptom-tracker.pdf?la=en](http://www.heart.org/-/media/files/health-topics/heart-failure/hf-symptom-tracker.pdf?la=en) (accessed 17 June 2021).

# Risks of guideline-directed therapy changes in HFrEF

Potential harms of trying new guideline-directed therapy or higher dose in an eligible patient include:

- Side effects
- Adverse effects

Risk of commission

Potential harms of **NOT** trying new guideline-directed therapy or higher dose in an eligible patient include:

- Reduced survival
- Increased hospitalization
- Reduced QoL
- Increased symptoms

Risk of omission


Every visit is a chance to initiate/escalate therapies, as tolerated

- New-onset HF does not equate to 'low risk'
- 'Stable' outpatient HF does not equate to 'low risk'
- Hospitalized HF does not equate to 'low risk'


In conversations between clinicians and patients regarding medication changes, risks of side effects and adverse events are often discussed. However, for making informed decisions, it is also critical to consider the 'risks of not trying' the medication change, which include increased risk of death, hospitalization, and worsening quality of life.

# Clinical inertia in HF management: A summary of contributing factors


- Clinical inertia is “the lack of treatment intensification in a patient not at evidence-based goals for care”<sup>1</sup>
- Principal factors: system-related (20%), patient-related (30%), **physician-related (50%)**<sup>1</sup>

 **HCPs’ knowledge...**


of, and attitude towards evidence-based guidelines<sup>2</sup>

 **HCPs’ clinical judgement...**

as well as experience<sup>2</sup>

 **HCPs’ awareness...**

of patient attitudes, behaviour and preferences<sup>2</sup>

 **HCPs’ ability...**

to make appropriate decisions within a given clinical and organizational context<sup>2</sup>



# Addressing gaps in the use of evidence-based medical therapy for HF

Treatment gaps in outpatient medical therapy for HFrEF

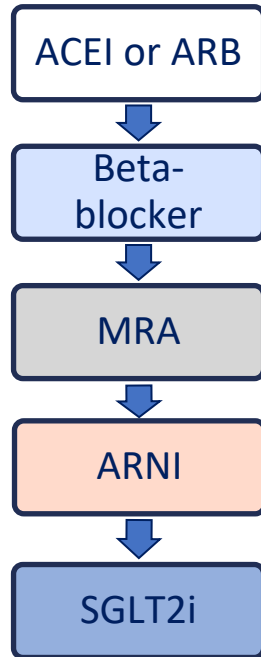
	ACEI/ARB	ARNI	ACEI/ARB/ ARNI	Beta- blocker	MRA
<b>Patients not treated and without contraindications, %</b>					
The Netherlands (CHECK-HF)	7.4	0	0	15.7	38.2
United States (CHAMP-HF)	39.1	86.1	26.2	32.9	65.9
<b>Patients treated but not receiving target doses, %</b>					
The Netherlands (CHECK-HF)	56.4	0	0	81.1	48.0
United States (CHAMP-HF)	82.5	86.0	83.2	72.5	23.4

ACEI, angiotensin-converting enzyme inhibitor; ARB, angiotensin receptor blocker; ARNI, angiotensin receptor neprilysin inhibitor; HCP, healthcare professional; HF, heart failure; MRA, mineralocorticoid receptor antagonist.  
Greene SJ, Felker GM. *JACC Heart Fail.* 2019;7:22–4.

# Rapid evidence-based sequencing of foundational drugs for HFrEF

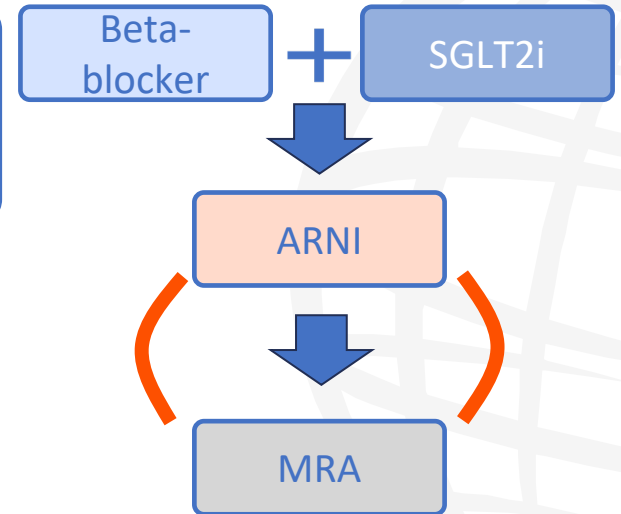
## Conventional sequencing

- Up-titration to target doses at each step
- Typically requires 6 months or more



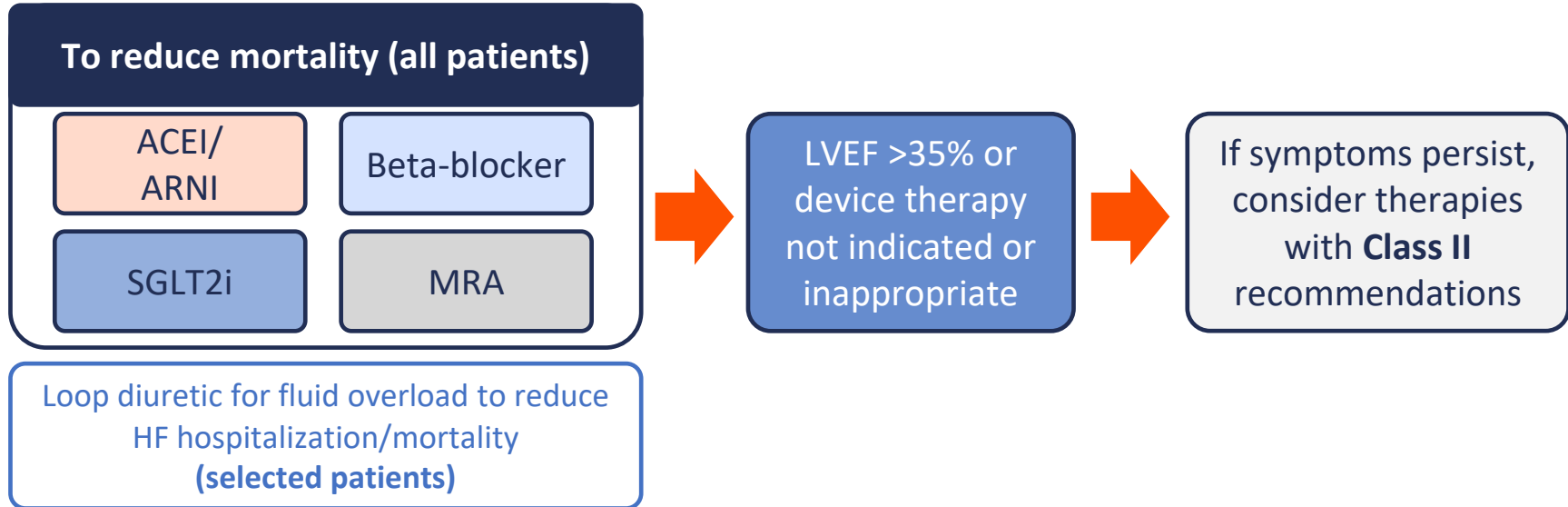
## Rapid sequencing

- All 3 steps achieved within 4 weeks
- Up-titration to target doses thereafter



# ESC Heart Failure guidelines 2021: Updated management algorithm for HFrEF

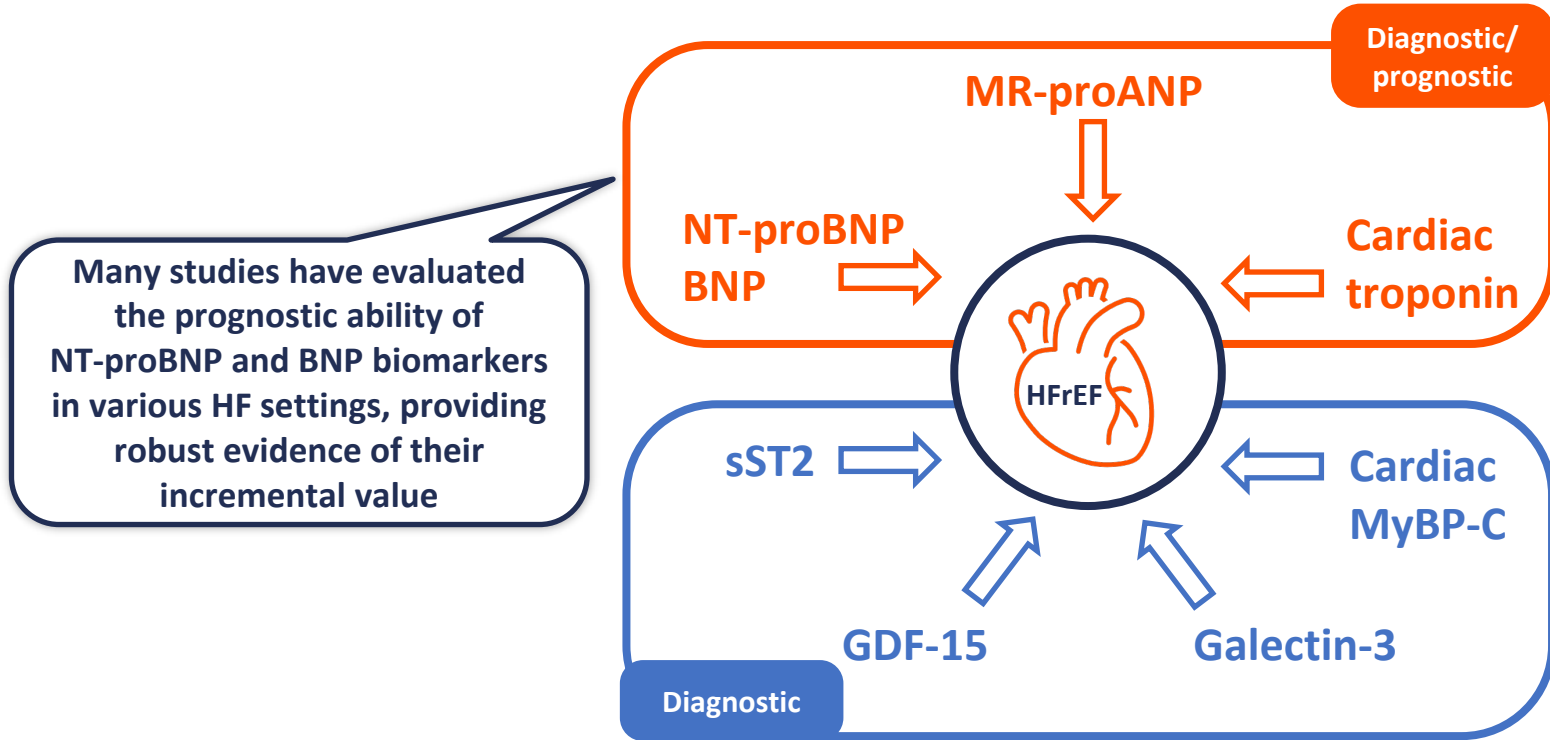
## Class I



ACEI, angiotensin-converting enzyme inhibitor; ARB, angiotensin receptor blocker; ARNI, angiotensin receptor neprilysin inhibitor; ESC, European Society of Cardiology; HF, heart failure; HFrEF, heart failure with reduced ejection fraction; LVEF, left ventricular ejection fraction; MRA, mineralocorticoid receptor antagonist; SGLT2i, sodium-glucose cotransporter 2 inhibitor.

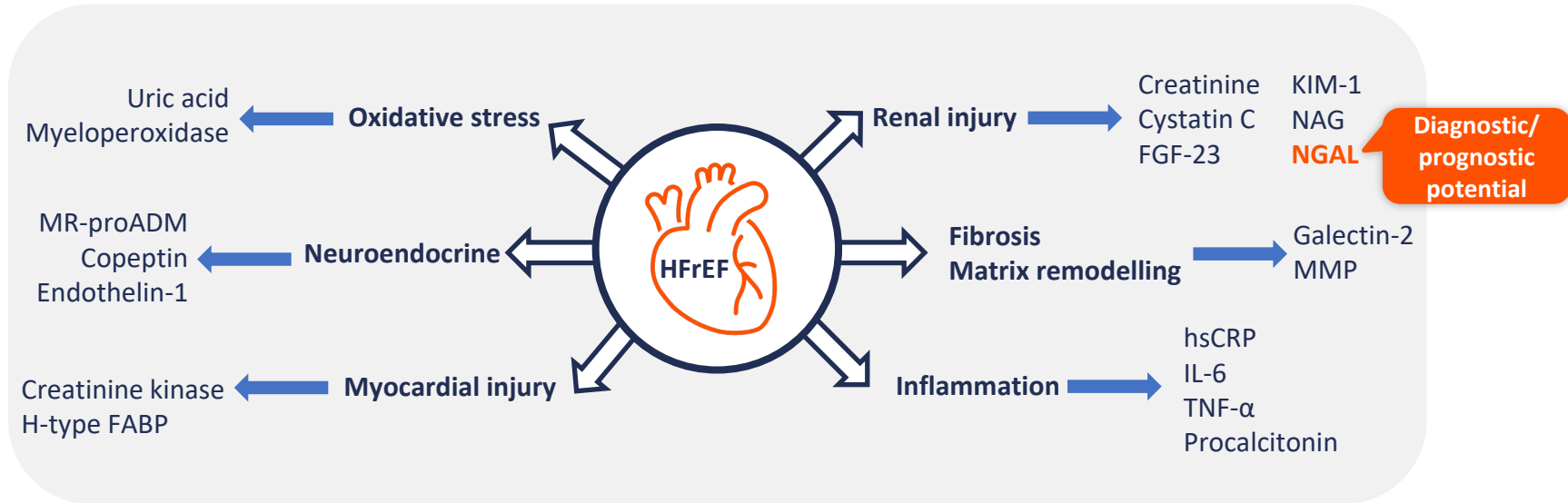
Metra M, McDonagh T. New algorithm for the management of HFrEF. Presented at Heart Failure and World Congress on Acute Heart Failure 2021. 29 June –1 July 2021.

# Established biomarkers for HFrEF



BNP, brain-type natriuretic peptide; GDF-15, growth differentiation factor 15; HF, heart failure; HFrEF, heart failure with reduced ejection fraction; MR-proANP, mid-region of N-terminal prohormone of atrial-type natriuretic peptide; MyBP-C, myosin binding protein-C; NT-proBNP, N-terminal prohormone of BNP; sST2, soluble suppression of tumorigenicity 2. Shrivastava A, et al. *Front Cardiovasc Med.* 2020;7:601364.

# Selected investigational biomarkers for HFrEF<sup>\*,1-3</sup>



\*Investigational/prospective biomarkers not currently established for clinical use.

BNP, brain-type natriuretic peptide; FABP, fatty acid binding protein; FGF-23, fibroblast growth factor 23; HFrEF, heart failure with reduced ejection fraction; hsCRP, high sensitivity C-reactive protein; IL, interleukin; KIM-1, KIM-1 kidney injury molecule-1; MMP, matrix metalloproteinase; MR-proADM, mid-regional pro-adrenomedullin; NAG, N-acetyl- $\beta$ -(D)-glucosaminidase; NGAL, neutrophil gelatinase-associated lipocalin; TNF- $\alpha$ , tumour necrosis factor alpha.

1. Nadar SK, Shaikh MM. *Cardiac Failure Rev.* 2019;5:50-7; 2. Castiglione V, et al. *Heart Failure Rev.* 2021:1-9; 3. Ibrahim NE, Januzzi JL. *Circ Res.* 2018;123:614-29.