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AMERICAN COLLEGE OF CARDIOLOGY

2023 ACC Expert Consensus Decision Pathway on Management of Heart Failure with Preserved Ejection Fraction

Kittleson MM, Panjrath GS, Amancherla K, Davis LL, Deswal A, Dixon DL, Januzzi JL Jr, Yancy CW. 2023 ACC expert consensus decision pathway on management of heart failure with preserved ejection fraction: a report of the American College of Cardiology Solution Set Oversight Committee. *J Am Coll Cardiol*. Published online April 19, 2023. https://doi.org/10.1016/j.jacc.2023.03.393.

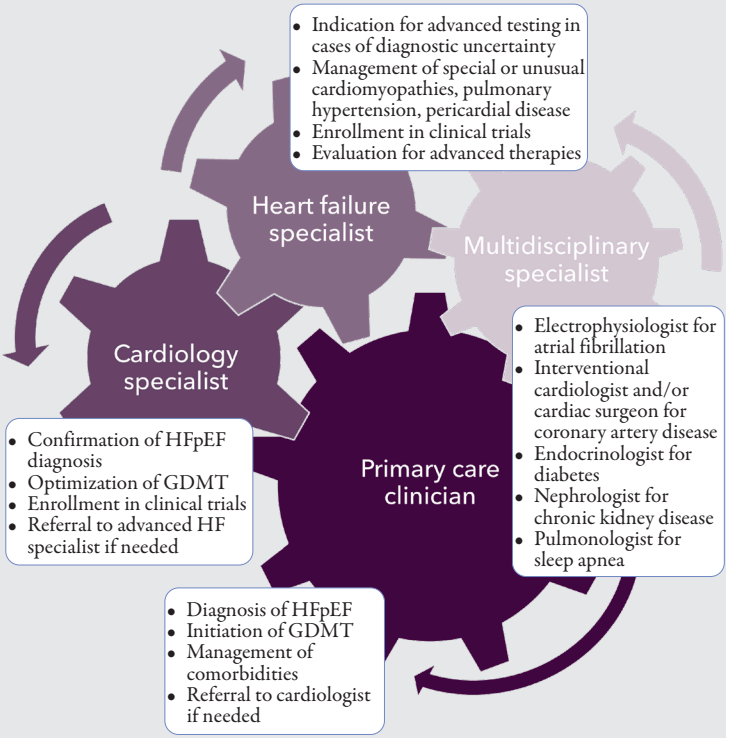
General Assumptions and Key Principles

1. The principal focus of this effort, including Consensus Decision Pathway (ECDP) considerations, applies to individuals with heart failure with preserved ejection fraction (HFpEF).
2. The writing committee endorses the evidence-based approach to heart failure (HF) diagnosis and management recommended in the 2022 American Heart Association (AHA)/ACC/Heart Failure Society of America (HFSA) Guideline for the Management of HF.
3. Optimal care decisions should properly reflect the individual's preferences and priorities as well as those of the managing clinician. A shared-decision model regarding care decisions is appropriate, particularly when clinical equipoise exists in areas of treatment uncertainty.
4. This ECDP is not intended to supersede good clinical judgement as, especially for HFpEF care, many questions remain unanswered. The treating clinician should seek input as needed from relevant experts (eg, pharmacists, cardiologists, HF specialists, endocrinologists, nephrologists, palliative care specialists).
5. This ECDP is based on the best data currently available. As new discoveries emerge, (eg, trials of additional agents and devices and including other populations), these data will affect the considerations made here. Clinicians should be careful to incorporate relevant information published after this ECDP.
6. Although implementing relevant portions of these recommendations in the acute inpatient hospital setting may be reasonable, this ECDP is primarily focused on management in the ambulatory setting.
7. The Universal Definition of HF requires symptoms and/or signs of HF caused by structural/functional cardiac abnormalities *and* at least 1 of the following: 1) elevated natriuretic peptides; or 2) objective evidence of cardiogenic pulmonary or systemic congestion. While these criteria are clear, there are nuances and challenges to be considered in the diagnosis of HFpEF.
8. HFpEF is defined as a clinical diagnosis of HF with left ventricular ejection fraction (LVEF) ≥50%. Those individuals with ejection fractions (EFs) between 40% and 50% are noted to have HF with mildly reduced ejection fraction (HFmrEF).
9. Management of HFpEF focuses on: 1) risk stratification and management of comorbidities, including hypertension, diabetes mellitus (DM), obesity, atrial fibrillation (AF), coronary artery disease (CAD), chronic kidney disease (CKD), and obstructive sleep apnea; 2) nonpharmacological management, including the role of exercise and weight loss and the use of wireless, implantable pulmonary artery monitors; and 3) symptom management and disease-modifying therapy with loop diuretic agents, sodium-glucose cotransporter-2 inhibitors (SGLT2is), mineralocorticoid antagonists (MRAs), angiotensin receptor–neprilysin inhibitors (ARNIs), and angiotensin receptor blockers (ARBs).
10. Originally developed to improve glucose control in individuals with type 2 diabetes mellitus (T2DM), the SGLT2is have demonstrated significant cardiovascular benefits in individuals with and without T2DM. This is particularly evident in individuals with HF, as SGLT2is significantly reduce the risk of hospitalization for HF and cardiovascular death across all EF subgroups. Therefore, SGLT2i should be initiated in all individuals with HFpEF lacking contraindications.
11. For patients with HFpEF and T2DM:
    - Treat according to ACC ECDP on novel therapies for CV risk reduction in patients with T2DM and current ADA standards of medical care in diabetes
    - SGLT2is as first-line therapy for T2DM
    - Metformin is a safe additional agent
    - GLP1-RAs as option in individuals with obesity or high risk for ASCVD
    - Target HbA1c <7–7.5%
    - Avoid alogliptin, saxigliptin, thiazolidinediones
    - Collaborative care with endocrinologist

This ACC ECDP update provides clinicians with practical guidance for managing patients with HFpEF based on expert opinions. ECDPs for this and other medical conditions are designed to complement guidelines and provide a framework for clinical decision-making.

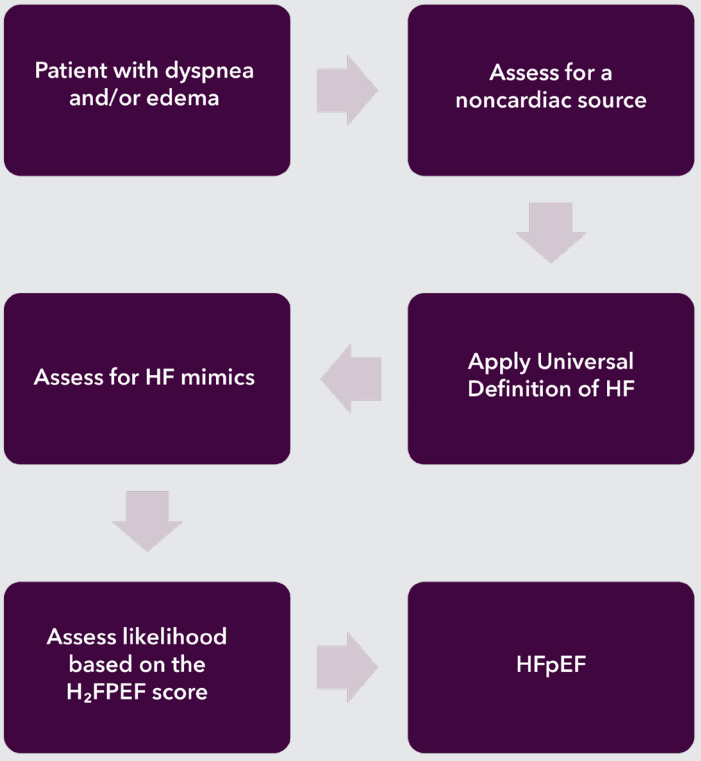
This publication contains some discussion of the use of products in populations and of outcomes that are not consistent with product labeling.

Figure 1. Approach to HFpEF



- Many individuals present first to their primary care clinicians with symptoms of dyspnea and exercise intolerance and/or signs of congestion.
- The primary care clinician should be aware of HFpEF in the differential diagnosis of dyspnea, exercise intolerance, and edema; order relevant testing; be able to initiate GDMT; and recognize when a cardiology referral may be useful.
- The role of the cardiology specialist (cardiologist or cardiology advanced practice professional) is to exclude the presence of an alternative diagnosis to explain the individual's presentation of dyspnea, edema, and preserved EF; optimize GDMT; encourage clinical trials; and identify indications for referral to an HF specialist.
- The role of the HF specialist is to pursue advanced testing in case of diagnostic dilemma; manage special or unusual cardiomyopathies, a particularly important consideration for HFpEF; identify clinical trial eligibility; and assess the need and eligibility for advanced therapies, including heart transplantation.
- Multidisciplinary specialist collaboration for optimization of comorbidities may include collaboration with electrophysiologists, interventional cardiologists or cardiac surgeons, endocrinologists, nephrologists, and pulmonologists.

Figure 5. The Diagnostic Approach to HFpEF*



* The diagnostic approach to HFpEF focuses on the evaluating the differential diagnosis of dyspnea and edema, excluding noncardiac causes, establishing diagnostic probability with the H2FPEF score, and excluding cardiac mimics, especially in those with intermediate scores (potentially including referral to a cardiovascular and/or HF specialist) is essential before establishing the likely diagnosis of HFpEF.

Figure 4. HFpEF Diagnostic Scoring Systems*

A H_2FPEF

H_2	Heavy (BMI >30 kg/m²)	2
	On ≥2 antiHypertensives	1
F	Atrial Fibrillation	3
P	Pulmonary hypertension (PASP >35 mm Hg on Doppler echocardiography)	1
E	Elder (age >60 years)	1
F	Filling pressure (E/e' >9 on Doppler echocardiography)	1

≥6 points: highly diagnostic of HFpEF

B HFA-PEFF Score

P **Pretest assessment**

- Symptoms and/or signs of heart failure
- Comorbidities/risk factors
- Standard echocardiography

E **Echo and natriuretic peptide score**

- Comprehensive echocardiography
- Natriuretic peptides

F1 **Functional testing in case of uncertainty**

- Diastolic stress test (exercise echocardiography)
- Invasive hemodynamic measurements

F2 **Final etiology**

- Special imaging (CMR, CT, PET, scintigraphy)
- Biopsies
- Genetic testing

Functional
Septal e' <7 cm/s or
Lateral e' <10 cm/s or
Average E/e' ≥15 or
TR velocity >2.8 m/s
Average E/e' 9-14 or
GLS <16%

Morphological
LAVI >34 mL/m² or
LVMI ≥149/122 g/m² (M/F) and
RWT >0.42
LAVI 29.34 or
LVMI >115/95 g/m² (M/F) or
RWT >0.42 or
LY wall thickness ≥12 mm

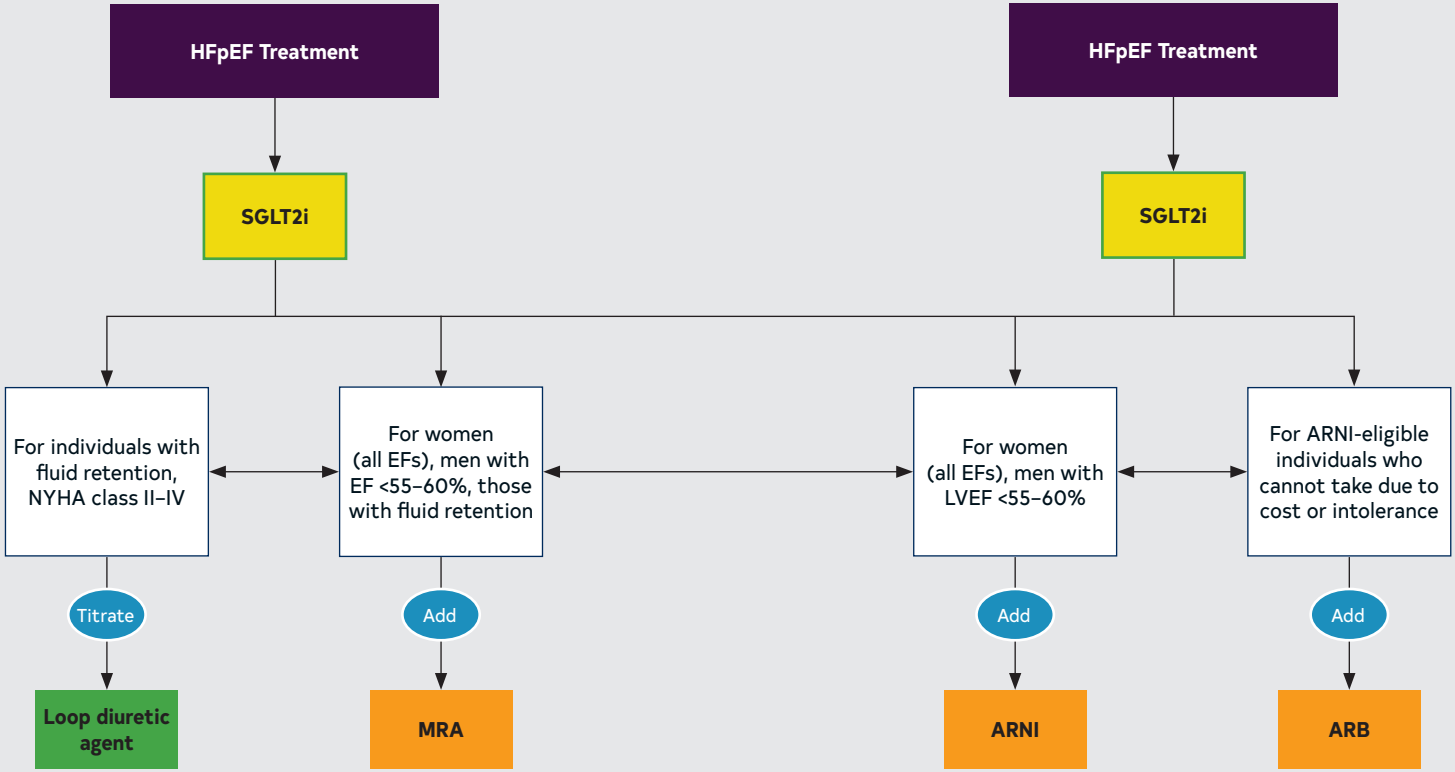
Biomarker (Sinus rhythm)
NT-proBNP >220 pg/mL or
BNP >80 pg/mL
NT-proBNP 125-220 pg/mL or
BNP 35-80 pg/mL

Biomarker (Atrial Fibrillation)
NT-proBNP >660 pg/mL or
BNP >240 pg/mL
NT-proBNP 365-660 pg/mL or
BNP 105-240 pg/mL

≥5 points: HFpEF
Major criteria (2 pts): bolded
Minor criteria (1 pt): non-bolded

* (A) The H2FPEF score includes 6 clinically accessible factors.
(B) HFA-PEFF includes a more involved diagnostic algorithm starting with Pretest assessment, Echocardiographic and natriuretic peptide score, Functional testing for an advanced evaluation, and Final etiology assessment.

Figure 9. Treatment Algorithm for GDMT in HFpEF*



SGLT2is receive a Class 2a indication in the 2022 ACC/AHA/HFSA HF Guidelines, but the benefit, now confirmed in 2 randomized trials, suggests that SGLT2is may receive a stronger class of the recommendation in future guidelines, and thus the box is shaded yellow with a green border.

* Green color identifies a Class 1 therapy from clinical practice guidelines, yellow color indicates a Class 2a therapy, and orange color denotes a Class 2b therapy.

Approach to GDMT Initiation and Titration

- Barring contraindication, all individuals with a diagnosis of HFpEF should be treated with an SGLT2i, with the goal of reducing cardiovascular death/HF hospitalization and improving health status. Initiation of an SGLT2i may be considered for either ambulatory individuals with HFpEF or those with acutely decompensated HF. In those with an LVEF <55% to 60%, use of an MRA, ARNI, or ARB (when an ARNI is not feasible based on the strength of evidence and more contemporary evidence of ARNI vs ARB as described earlier) may be considered (Figure 9).

Sodium-Glucose Cotransporter-2 Inhibitors

- Given that in-hospital initiation of HF GDMT is associated with greater long-term adherence and prescription persistence, it is reassuring to note that the use of SGLT2is appears to be safe and effective when initiated in the context of hospitalization for acutely decompensated HF, once clinically stable.

Mineralocorticoid Antagonists

- MRAs significantly improve measures of diastolic function in individuals with HFpEF. Although MRAs have not been shown to improve quality of life or exercise tolerance in individuals with HFpEF, most individuals with HFpEF will still benefit from MRAs to provide balanced diuresis with sequential nephron blockade, control hypertension, and reduce HF hospitalizations.

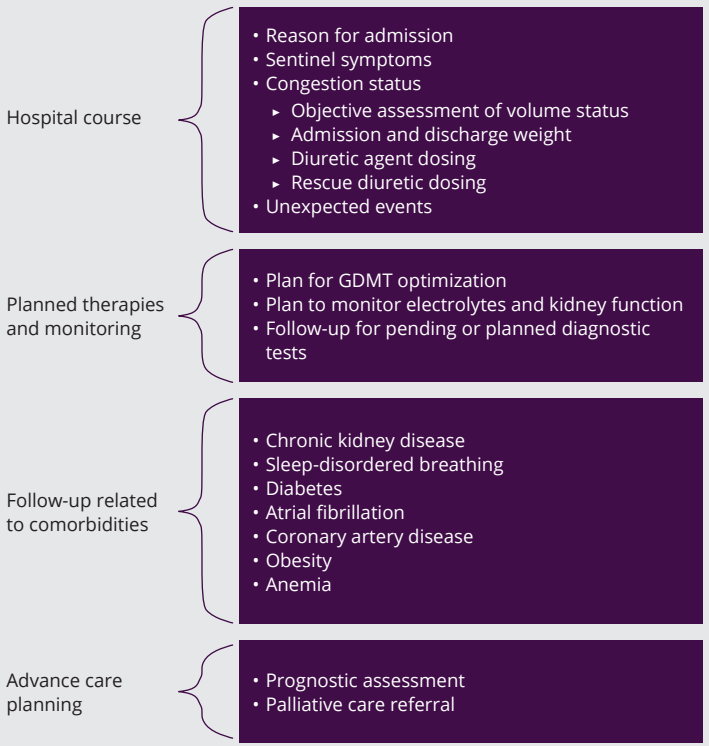
Angiotensin Receptor–Neprilysin Inhibitors

- Sacubitril/valsartan provides modest additional benefit compared with valsartan in individuals with HFpEF. Although serum creatinine elevations and hyperkalemia occur less frequently with ARNI therapy, hypotension and angioedema, albeit rare, occur more frequently with ARNIs.

Angiotensin Receptor Blockers

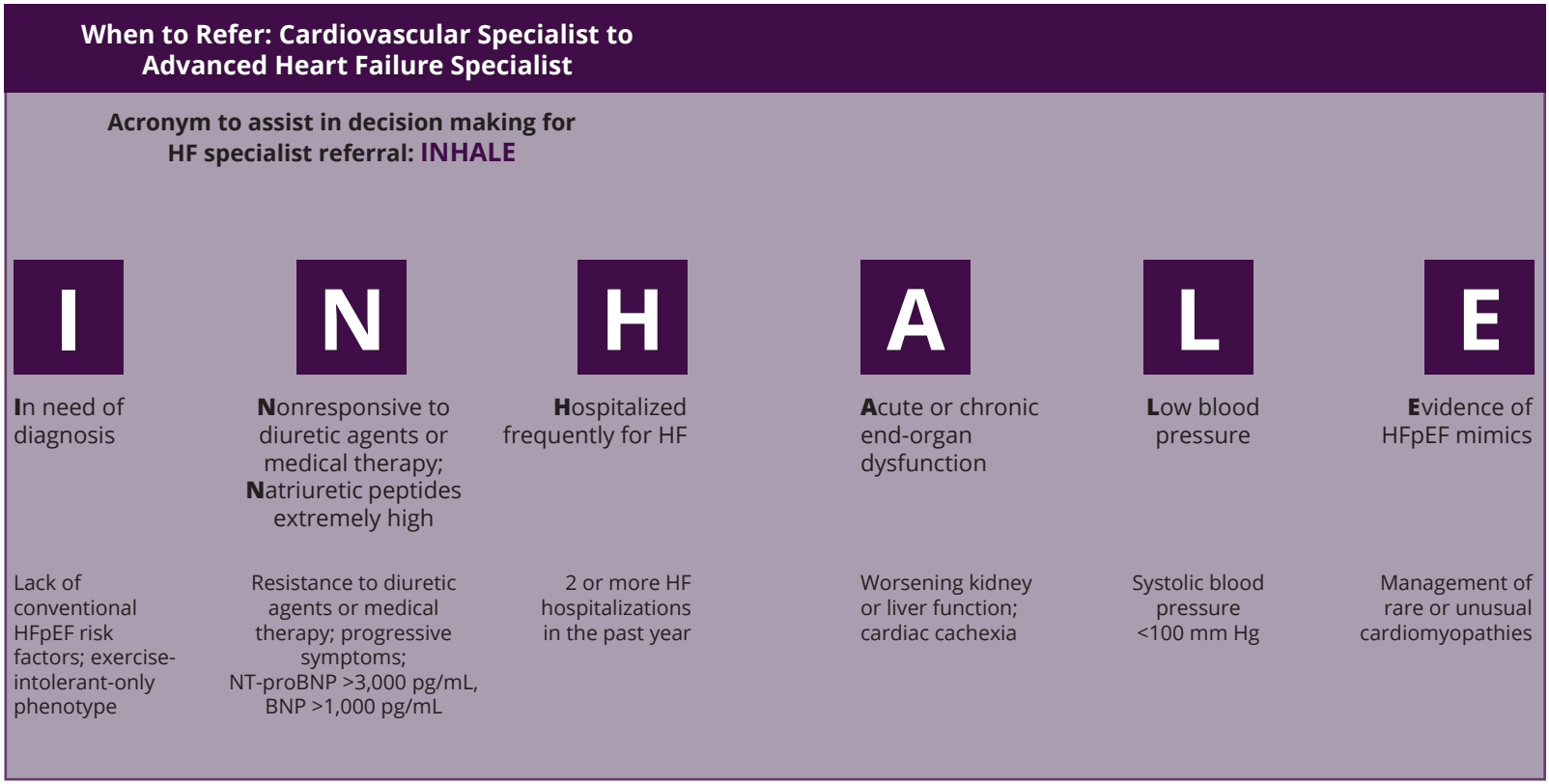
- Although an ARNI is likely more effective than an ARB, an ARB may be used when an ARNI is contraindicated (eg, history of angioedema) or lack of affordability impedes access.

Figure 15. Checklist for Communication to Clinicians Involved in Continuing Care



Adapted from Hollenberg et al.

Figure 13. INHALE: Acronym for Advanced HF Specialist Referral*



* Most individuals with suspected or proven HFpEF can be managed by a general cardiovascular specialist. However, there are some situations that suggest a special or unusual cardiomyopathy (such as infiltrative or restrictive cardiomyopathy), pulmonary hypertension, or pericardial disease. Features to assist in identification of individuals with advanced HF not classic for HFpEF are summarized in the acronym "INHALE," which includes markers of advanced HF.

Abbreviations

ACC, American College of Cardiology; **AHA**, American Heart Association; **AF**, atrial fibrillation; **ARB**, angiotensin receptor blocker; **ARNI**, angiotensin receptor-neprilysin inhibitor; **ASCVD**, atherosclerotic cardiovascular disease; **BB**, beta-blocker; **BNP**, B-type natriuretic peptide; **BP**, blood pressure; **CAD**, coronary artery disease; **CCB**, calcium-channel blocker; **CKD**, chronic kidney disease; **DM**, diabetes mellitus; **eGFR**, estimated glomerular filtration rate; **ECDPs**, Expert Consensus Decision Pathways; **EF**, ejection fraction; **GDMT**, guideline-directed medical therapy; **GLP1-RA**, glucagon-like peptide-1 receptor agonist; **HF**, heart failure; **HFmrEF**, HF with mildly reduced ejection fraction; **HFpEF**, heart failure with preserved ejection fraction; **HFSA**, Heart Failure Society of America; **LVEF**, left ventricular ejection fraction; **MI**, myocardial infarction; **MRA**, mineralocorticoid antagonists; **NSAIDs**, non-steroidal anti-inflammatory drugs; **NT-proBNP**, N-terminal pro–B-type natriuretic peptide; **NYHA**, New York Heart Association; **OSA**, obstructive sleep apnea; **RAAS**, reninangiotensin-aldosterone system; **SGLT2i**, sodium-glucose cotransporter-2 inhibitor; **T2DM**, type 2 diabetes mellitus

The printing and distribution of this educational resource was supported by Boehringer Ingelheim Pharmaceuticals, Inc.

Source

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