Diagnosis and Management of Heart Failure with Preserved Ejection Fraction in Primary Care

Medscape UK × Guidelines
Primary Care Hacks

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Classification of HF[3–7]

	HFrEF	HFmrEF	HFpEF
LVEF	<40%	40–49%	≥50%
Characteristics	• Signs/symptoms of HF	• Signs/symptoms of HF	• Signs/symptoms of HF • ↑ LV filling pressures • LV diastolic dysfunction • Usually ↑ natriuretic peptides
Proportion of people with HF	40%	10%	50%

HFimpEF is another suggested phenotype, defined as HF with a baseline LVEF <40% and a ≥10-point increase from baseline to a second LVEF measurement of >40%

1. Individuals at Risk of HFpEF

Consider HF as a potential diagnosis in any individual who has been prescribed diuretics for ankle swelling with no known history of HF.[8]

Key risk factors:[9–14]

- advancing age
- female sex (the female:male ratio is 2:1)
- long-term conditions causing myocardial stiffness—including the features of the CVRM syndrome (obesity, T2D, CKD, hypertension, dyslipidaemia, the metabolic syndrome, ASCVD [IHD/TIA/stroke/PVD]) and other inflammatory conditions (e.g. rheumatoid arthritis)
- functional abnormalities of the heart—e.g. AF.

Additional risk factors:[9,12,14–19]

- COPD
- OSAHS
- anaemia and iron deficiency
- excessive alcohol intake
- low socioeconomic status
- behavioural risk factors—e.g. physical inactivity, smoking, poor diet quality, medication nonadherence.

2. Symptoms and Signs of HFpEF

Be aware that, in HFpEF, SOBOE and reduced exercise tolerance may occur **in the absence of clinical fluid overload**.[9]

Symptoms:[9,14,20]

- **typical:**
  - shortness of breath (SOBOE/SOBAR/orthopnoea/bendopnoea)
  - paroxysmal nocturnal dyspnoea
  - reduced exercise tolerance
  - ankle swelling
  - fatigue/tiredness ('tired all the time')
- **less typical:**
  - nausea
  - wheezing
  - nocturnal cough
  - loss of appetite/bloated feeling
  - dizziness
  - syncope
  - palpitations
  - confusion.

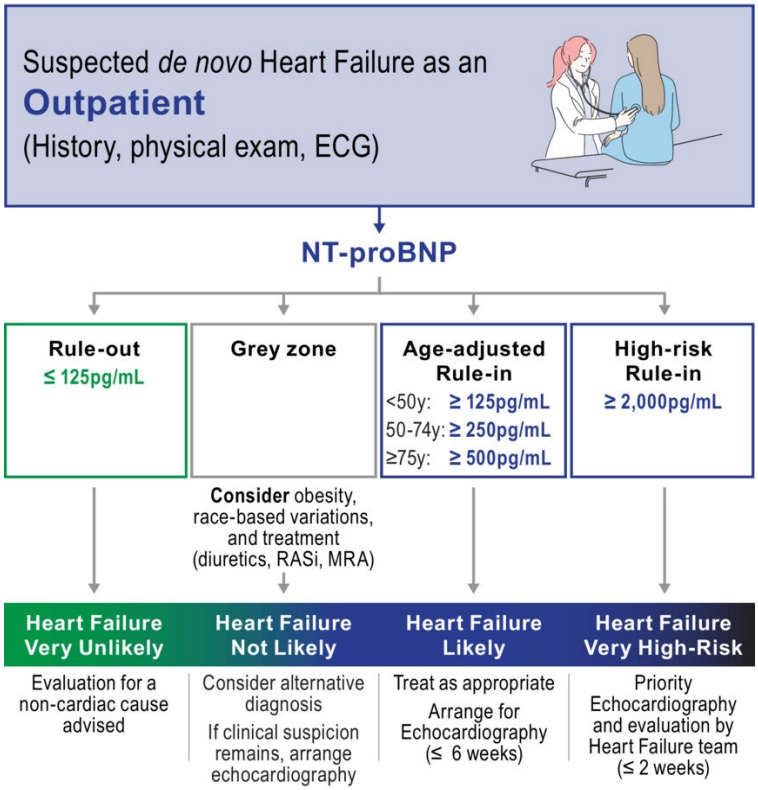
Signs:[3,14]

- **more specific:**
  - raised JVP
  - hepatojugular reflex
  - laterally displaced apical impulse
  - third heart sound
- **less specific:**
  - cardiac murmur
  - weight gain >2 kg per week
  - pulmonary crackles
  - peripheral pitting oedema, including sacral and ankle oedema
  - tachycardia
  - irregular pulse
  - tachypnoea
  - ascites
  - hepatomegaly
  - pleural effusion.

Consider documenting **NYHA functional classification** to aid description of HF severity:[4,14,21]

- **class I**—no limitation of physical activity (asymptomatic)
- **class II**—mild limitation of physical activity (symptoms with ordinary activity)
- **class III**—marked limitation of physical activity (symptoms with less-than-ordinary activity)
- **class IV**—severe limitation of physical activity (symptoms at rest).

Figure 1: NT-proBNP for Diagnosis of HF in the Outpatient Setting[25]



AF=atrial fibrillation; **ASCVD**=atherosclerotic cardiovascular disease; **BMI**=body mass index; **bpm**=beats per minute; **CKD**=chronic kidney disease; **COPD**=chronic obstructive pulmonary disease; **COX-2**=cyclooxygenase-2; **CVD**=cardiovascular disease; **CVRM**=cardiovascular–renal–metabolic; **CXR**=chest X-ray; **DNACPR**=do not attempt cardiopulmonary resuscitation; **DPP4**=dipeptidyl peptidase-4; **ECG**=electrocardiogram; **eGFR**=estimated glomerular filtration rate; **FBC**=full blood count; **GLP-1 RA**=glucagon-like peptide-1 receptor antagonist; **GRMT**=guideline-recommended medical therapy; **HbA_{1c}**=glycated haemoglobin; **HF**=heart failure; **HFimpEF**=heart failure with improved ejection fraction; **HFmrEF**=heart failure with mildly reduced ejection fraction; **HFpEF**=heart failure with preserved ejection fraction; **HFrEF**=heart failure with reduced ejection fraction; **HHF**=hospitalisation for heart failure; **HR**=heart rate; **IHD**=ischaemic heart disease; **JVP**=jugular venous pressure; **LBT**=liver blood test; **LTC**=long-term condition; **LV**=left-ventricular; **LVEF**=left-ventricular ejection fraction; **MI**=myocardial infarction; **MRA**=mineralocorticoid receptor antagonist; **NSAID**=nonsteroidal anti-inflammatory drug; **NT-proBNP**=N-terminal pro b-type natriuretic peptide; **NYHA**=New York Heart Association; **od**=once daily; **OSAHS**=obstructive sleep apnoea/hypopnoea syndrome; **PAH**=pulmonary arterial hypertension; **PVD**=peripheral vascular disease; **QoL**=quality of life; **RASi**=renin–angiotensin system inhibitor; **SGLT2i**=sodium–glucose co-transporter 2 inhibitor; **SOBAR**=shortness of breath at rest; **SOBOE**=shortness of breath on exertion; **STOP-BANG**=Snoring, Tiredness, Observed apnoea, Pressure, BMI, Age, Neck circumference, Gender; **SU**=sulphonylurea; **T2D**=type 2 diabetes; **TIA**=transient ischaemic attack; **TSH**=thyroid-stimulating hormone; **UKMEC**=UK Medical Eligibility Criteria; **U&E**=urea and electrolytes; **uACR**=urinary albumin:creatinine ratio; **WtHR**=waist-to-height ratio

3. Testing and Referral of Possible HFpEF

- Auscultate for heart murmurs, check pulse to identify AF, and assess for frailty using the Rockwood clinical frailty scale in those aged >65 years[3,14,22,23]
- Check **NT-proBNP** to identify likelihood of HFpEF (see Figure 1)[12,14,24,25]
- Consider further investigations to exclude alternative diagnoses, identify underlying modifiable risk factors, and/or detect any cardiac abnormalities:[3,12,14,24]
  - **FBC, U&E, TSH, lipids, LBTs, HbA_{1c}, iron studies** (see also the Primary Care Hacks on LBTs and iron studies)
  - **CXR, ECG**
  - **dipstick urine** for evidence of albuminuria and send sample for **uACR** (see also the Primary Care Hack on CKD)
  - **spirometry** (or peak flow if not available locally); be aware that HF may cause an obstructive pattern on spirometry due to pulmonary congestion[9]
  - **BMI** and **WtHR** (to assess for obesity)
- Consider OSAHS (using the Epworth sleepiness scale and the STOP-BANG questionnaire)[9,14]
- If HFpEF is suspected (see Figure 1), refer as appropriate via HF diagnostic pathways to a local HF service or Cardiology if unavailable[9,22,24]
  - **NT-proBNP is normal in approximately 20% of people with HFpEF (usually people living with obesity)**[9]—still refer if clinically suspicious; secondary care may assess probability of HFpEF using H_2FpEF score.[9,14,24]

If HF is unlikely/uncertain, consider:

- **noncardiac mimics**[9,14,26,27]—e.g. COPD, asthma, obesity, deconditioning, frailty, ageing, nephrotic syndrome, liver failure/cirrhosis, anaemia, pleural disease, pulmonary embolism
- **cardiac mimics**[9,27]—e.g. hypertrophic cardiomyopathy, constrictive pericarditis, infiltrative disorders (amyloidosis, sarcoidosis, haemochromatosis), primary valvular disease, PAH, myocarditis.

4. Strong Clinical Suspicion of HF

While awaiting specialist assessment for suspected HF, consider management of congestion with diuresis (e.g. furosemide 40–80 mg or double pre-existing dose) **and initiation of an SGLT2i** (see *5. Guideline-Recommended Medical Therapy* and *Management of Congestion*).

5. Guideline-Recommended Medical Therapy

- The three tenets of therapy are **diuretics** (see *Management of Congestion*), **SGLT2is**, and **treatment of associated LTCs** (see *6. Other Interventions*)[28]
- There is no prognostic or mortality benefit associated with use of diuretics in HFpEF, but they should be used to reduce symptoms and signs of congestion[9,14,22,24]
  - **diuretics should not be delayed in people with oedema/fluid retention**; loop diuretics are preferred[22,24]
- **SGLT2is**—dapagliflozin or empagliflozin 10 mg[28–30] (see also the Primary Care Hack on extra-glycaemic indications of SGLT2is)
- **Future therapies**—trials have shown benefits of certain medications for HFpEF, which may become future GRMTs:
  - **finerenone** (FINEARTS[31])
  - **tirzepatide** (SUMMIT—in HFpEF with obesity[32])
  - **semaglutide** (STEP-HFpEF[33] and SELECT[34]—both in HFpEF with obesity).

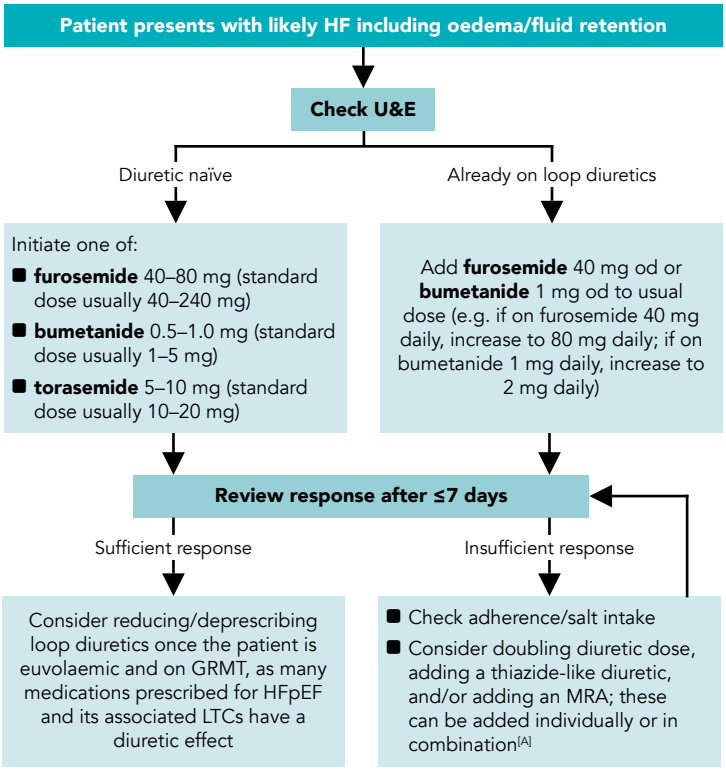
Prescribing Pearls

- **Avoid beta-blockers unless there is a compelling indication** (i.e. AF rate control, MI, or angina), as there is no evidence of their efficacy in HFpEF[3,9]
- **SGLT2is may reduce hyperkalaemia risk**[45]
- Give sick day guidance for relevant medicines, including guidance on hyperkalaemia as required (see **bit.ly/43clrnQ**)[22,35,46,47]
- **If low K^+ noted from e.g. diuretics in those with hypertension, consider starting or uptitrating an MRA** instead of giving K^+ supplements (if there is no contraindication to MRAs)[9,35]
- **T2D:**
  - consider semaglutide or tirzepatide (as trials have shown benefits for HFpEF in people living with obesity[32–34])
  - avoid DPP4 inhibitors (saxagliptin) and pioglitazone in people living with T2D and HF[9,14]
  - those on SUs/insulin may need dose adjustment with addition of an SGLT2i, to minimise risk of hypoglycaemia if eGFR >45 ml/min/1.73 m^2
- **Avoid NSAIDs and COX-2 inhibitors**, as they increase the risk of acute HF decompensation and HHF[14]
- **Discuss contraception and pregnancy in women of childbearing potential with HF**;[24] refer to the UKMEC.

6. Other Interventions

- Identify and treat associated LTCs, i.e. **CVRM management** (including management of T2D, hypertension, lipids/CVD prevention, CKD, and obesity)[3,9,14,22]
  - for obesity, consider incretin therapies (see the Primary Care Hack on incretin therapies for overweight/obesity), aerobic and resistance training, and calorie restriction[9,14]
- Identify and manage **AF**[9,14]—aim for HR 80–90 bpm[9]
- Refer to a sleep clinic if **OSAHS** is suspected[14]
- Physical activity—recommend aerobic and resistance training[9,24]
  - consider referral to an exercise-based **cardiac rehabilitation** programme for all patients[14,22,24]
  - exercise training improves outcomes in HFpEF, with benefits observed even in frail, older, hospitalised patients[9,36,37]
- Consider **anaemia**, which is seen in up to 33% of people with HFpEF and increases risk of HHF and mortality[9,14,38–40]
  - also consider **iron deficiency**;[14] see the Primary Care Hack on iron studies
- **Salt**—advise on limiting salt consumption as part of a healthy diet (ideally <2 g of sodium per day, equating to <5 g of sodium chloride)[14]
- Avoid overconsumption of **fluid**[14]
- **Smoking cessation**—assess smoking status and offer a brief intervention to stop smoking; signpost to smoking cessation services[14,24,41]
- **Alcohol**—current UK guidance advises limiting alcohol intake to ≤14 units/week[42]
- Assess for **depression** and **anxiety**[14,22]
- Offer **vaccinations** in line with national programmes (including annual flu and one-off pneumococcal vaccinations)[14,24]
- **Frailty** may be present in up to 45% of people with HF;[14] if significant frailty is identified:
  - consider medication adjustment
  - trial evidence has shown consistent benefits from SGLT2is across the range of frailty studied; QoL improved early and was more significantly affected in more severe frailty[22,43]
  - to enable **palliative care** considerations, assess people with HF at an early stage for severe frailty and last year of life[14,22]
  - as required, **develop individualised care plans** through needs-based holistic assessment and shared decision-making; these care plans may involve advance care planning, DNACPR considerations, and preference for virtual wards.[22,44]

Management of Congestion[9,14,22,35]



Notes

- U&E should be checked before and after dose adjustments (within 2 weeks)
- Ongoing diuretic management is required for both dose increases (in periods of congestion) and dose decreases (if the patient becomes euvolaemic or dehydrated)
- People with HF should be taught how to adjust their own diuretic dose according to daily weight measurements and signs/symptoms of congestion
- Measure weight daily in the morning to check trend (bodyweight reduction of 0.75–1.0 kg/day is generally considered an effective rate during active diuresis).

[A] Think about contacting the patient's HF team, as they may consider addition.

Patient Resources

- The Pumping Marvellous website and guide to HFpEF for patients
- The British Heart Foundation
- Cardiomyopathy UK.