Heart Failure

Dr Laura Mulligan
IMT2

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Disclaimer*

- Please note that QUACK is a regional teaching programme operating across GG&C, Lanarkshire and Ayrshire & Arran.

- This presentation outlines general management, though local variances e.g. antibiotic prescription may vary slightly depending on your local trust

- Remember to check your local guidelines

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74 year old male

- Referred by GP with increased SOB and leg swelling for 2 months, but much worse today
- PMH: AF, COPD, MI 8 years ago
- Medications: bisoprolol 2.5mg OD, edoxaban 60mg OD, simvastatin 40mg OD, Trelegy Ellipta 1 puff OD, Salbutamol PRN. NKDA
- SH: lives alone in ground floor flat, no POC, close family support, normally mobile with a stick outside but hasn't been out much recently as limited by SOB, ex-smoker

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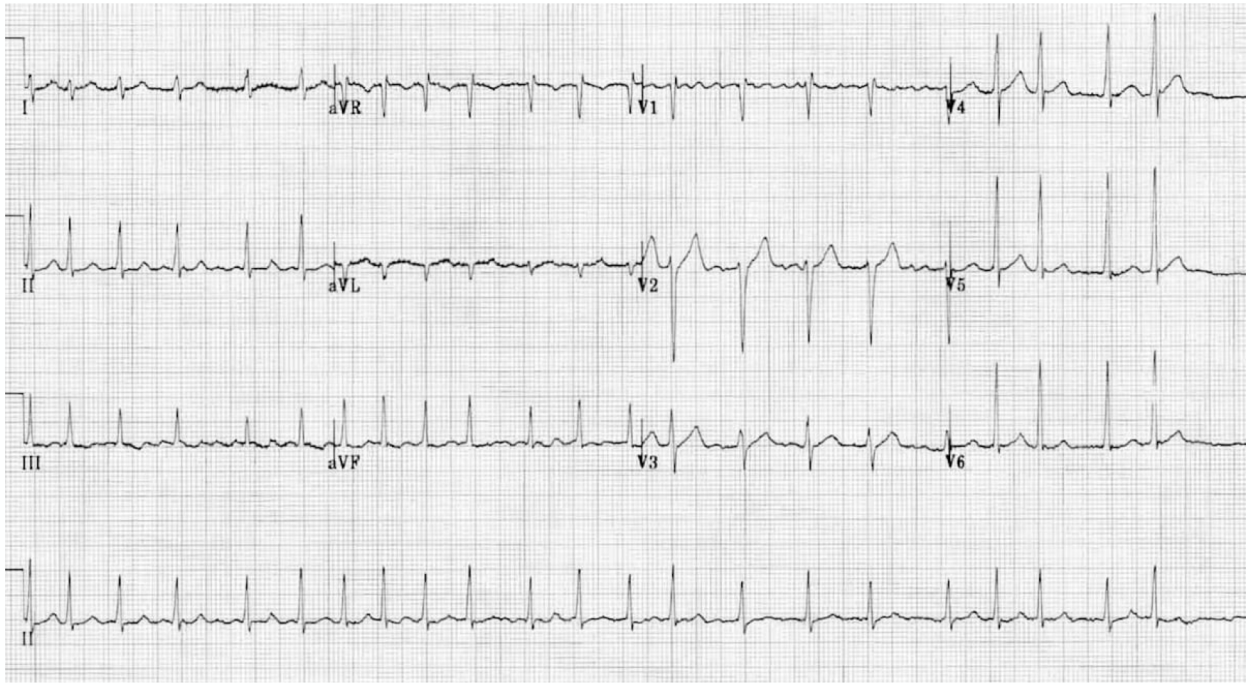
- On further questioning describes orthopnoea and nocturnal cough
- On examination appears breathless++, grey and clammy, pulse irregularly irregular, HS I+II+soft ESM, raised JVP, bilateral crackles on chest auscultation and pitting oedema to knees.
- ECG



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CXR

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Treatment

- Sit upright
- High flow oxygen
- Morphine if chest pain
- IV furosemide – 50mg bolus initially, can be repeated after about 30 mins depending on clinical response
- Glyceryl trinitrate → can give sublingually or IV (commence at 0.5 mg/hour) *only* if systolic BP >90mmHg
- Consider continuous positive airway pressure or NIV if acidotic or poor response to furosemide and nitrates.
- Consider rate control if ongoing AF with rapid ventricular rate digoxin

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The next day…

- Feels much better now on IV furosemide
- Negative fluid balance
- NT-Pro BNP result comes back raised at 10964.
- Echocardiogram: AF rate 90bpm, LV ejection fraction 30%, mild AS

What medications would we want to start now given the diagnosis?

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- MRA e.g. eplerenone
- ACE inhibitor or sacubitril/valsartan
- Can uptitrate beta blocker

- Slowly titrate to ensure not too hypotensive

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Heart Failure

- **Heart failure** is essentially 'pump failure' → cardiac output is inadequate to meet the body's requirements
- **Left ventricular systolic dysfunction (LVSD**) is usually defined as an LV ejection fraction **<40%** on echocardiography.
- Some symptomatic patients have a normal ejection fraction and no obvious cause for increased myocardial demand: heart failure with preserved ejection fraction (HFpEF)

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- Aetiology falls into 3 main categories:
  - Valvular disease e.g. aortic stenosis
  - Myocardial disease e.g ischaemia, arrhythmia, cardiomyopathy
  - High output failure e.g. in pregnancy

- NYHA classification of HF symptoms:
  - I no limitations
  - II slight limitation of physical activity
  - III marked limitation of physical activity
  - IV symptoms at rest

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Presentation of heart failure

Symptoms	
Typical	Less typical
Breathlessness	Nocturnal cough
Orthopnoea	Wheezing
Paroxysmal nocturnal dyspnoea	Weight gain (>2 kg/week)
Reduced exercise tolerance	Weight loss (in advanced heart failure)
Fatigue, tiredness, increased time to recover after exercise	Bloated feeling
Ankle swelling	Loss of appetite
	Confusion (especially in older people)
	Depression
	Palpitations
	Syncope
Signs	
More specific	Less specific
Elevated jugular venous pressure	Peripheral oedema (ankle, sacral, scrotal)
Hepatojugular reflux	Pulmonary crepitations
Third heart sound (gallop rhythm)	Reduced air entry and dullness to percussion at lung bases (pleural effusion)
Laterally displaced apical impulse	Tachycardia
Cardiac murmur	Irregular pulse
	Tachypnoea (>16 breaths/min)
	Hepatomegaly
	Ascites
	Tissue wasting (cachexia)

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Long term treatments

- ACE-I/ARB
  - E.g. Ramipril/candesartan
  - Sacubritril/valsartan (Entresto) → Promote systemic vasodilation so reduce preload/afterload
- Beta blockers e.g. bisoprolol
- Loop diuretics e.g. furosemide
- Mineralocorticoid receptor antagonists e.g. eplenerone/spironolactone

- Digoxin (for HF/AF)
- Cardiac resynchronisation therapy/ICD
- Cardiac transplant

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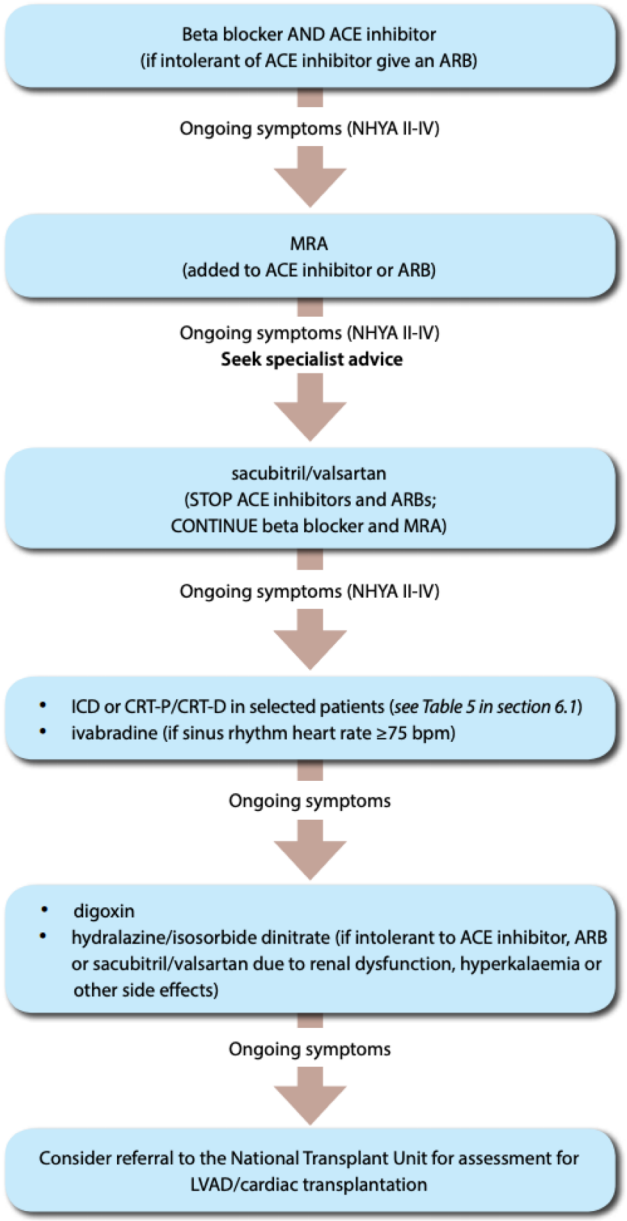
SIGN

Figure 2: Algorithm for pharmacotherapy and device therapy in patients with HF-REF, NYHA class II-IV



Other therapies to consider:
Intravenous iron (ferric carboxymaltose) if haemoglobin 9.5 to 13.5 mg/dl and iron deficiency (defined as ferritin <100 microgram/l or <300 microgram/l if TSAT <20%)

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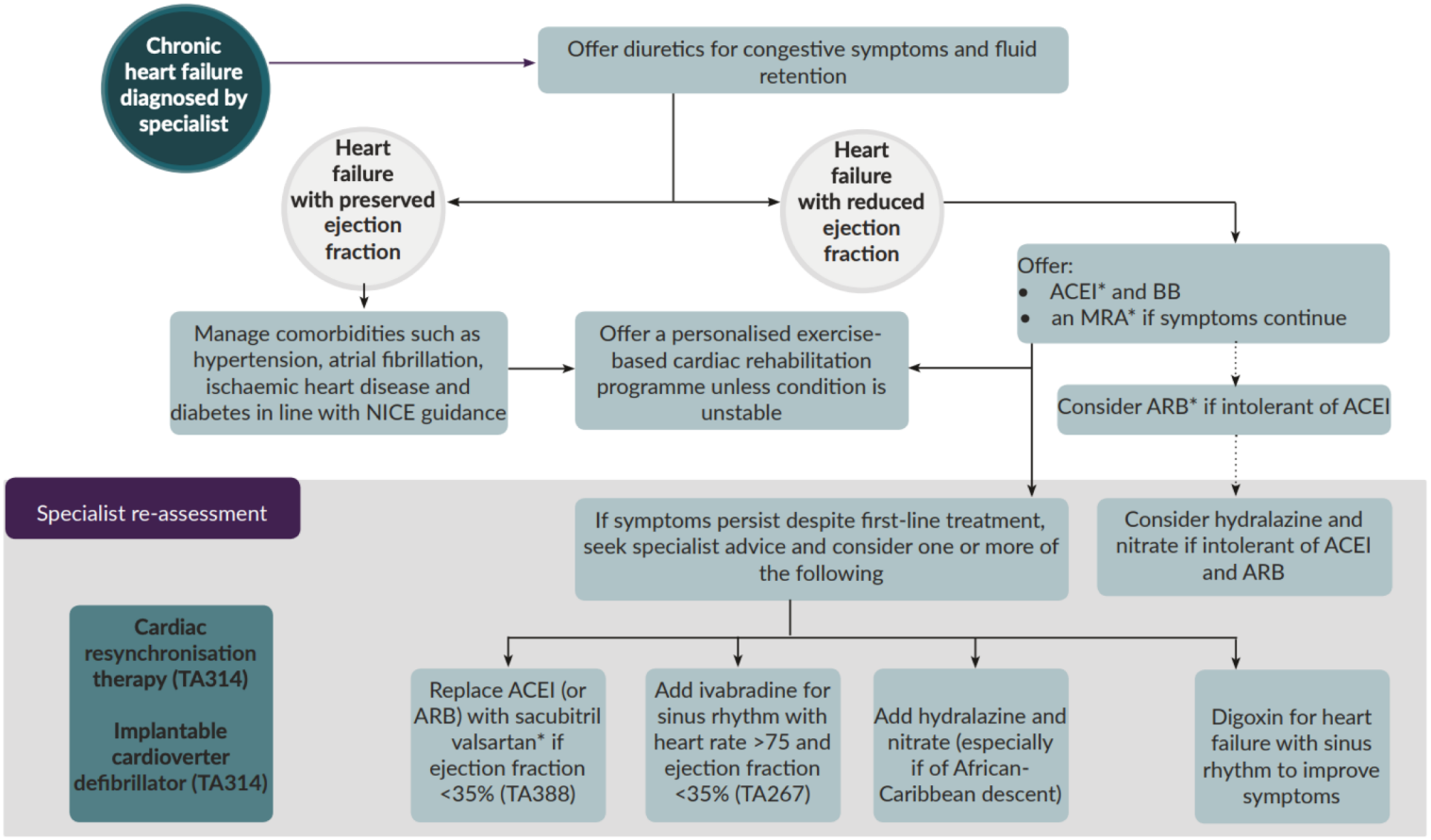
Chronic heart failure: management

NICE National Institute for Health and Care Excellence



*Measure serum sodium, potassium and assess renal function before and after starting and after each dose increment.
If eGFR is 30 to 45 ml/min/1.73 m², consider lower doses or slower titration of ACEI or ARBs, MRAs, sacubitril valsartan and digoxin.

This is a summary of the recommendations on management from NICE's guideline on chronic heart failure. See the original guidance at www.nice.org.uk/guidance/NG106

NICE

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Latest developments

- DAPA-HF trial → Among individuals with HFrEF (NYHA II-IV, LVEF ≤40%) with or without T2DM, the addition of the SGLT-2 inhibitor dapagliflozin decreased rates of CV death or worsening HF, as well as all-cause mortality.
- SUGAR-DM-HF trial → empagliflozin reduces LV volumes in HFpEF patients with T2DM/pre-diabetes when added to standard therapy
- AFFIRM-HF trial → patients with iron deficiency, LVEF<50%, and who were stabilised after an episode of acute heart failure, treatment with IV ferric carboxymaltose was safe and reduced the risk of heart failure hospitalisations, with no apparent effect on the risk of cardiovascular death.

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Website

www.quackmeded.co.uk

Email

gg-uhb.quackmeded@nhs.net

Social Media

Twitter: @QUACK_ Med

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