What do you need to know about Heart Failure

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Plan for this session

Heart Failure and referrals

Medications and updated ESC HF 2021 guidelines

Key messages

ESC Guidelines – definition of HF

Table 3 Definition of heart failure with reduced ejection fraction, mildly reduced ejection fraction and preserved ejection fraction

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]

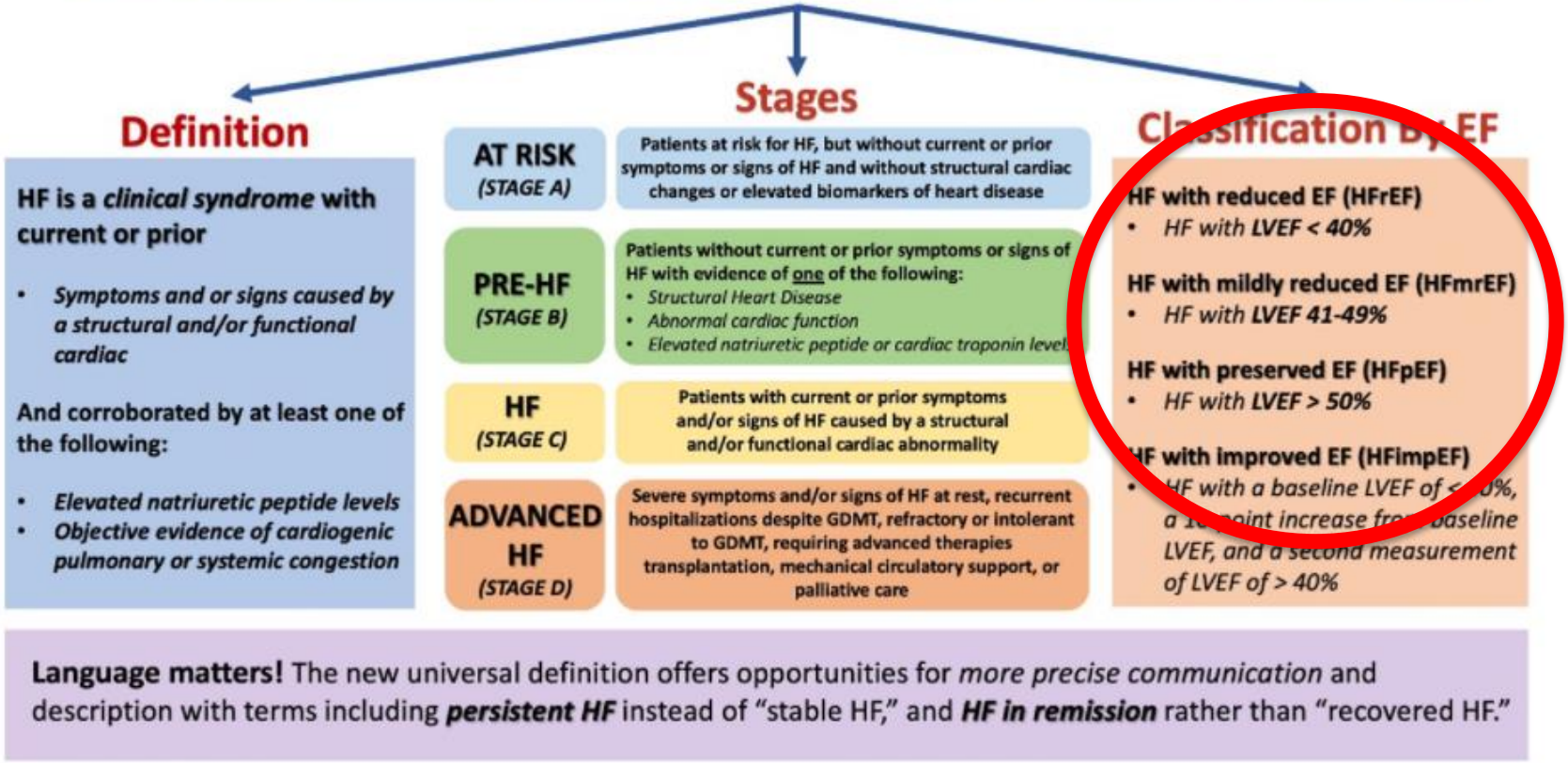
HF = heart failure; HFmrEF = heart failure with mildly reduced ejection fraction; HFpEF = heart failure with preserved ejection fraction; HFrEF = heart failure with reduced ejection fraction; LV = left ventricle; LVEF = left ventricular ejection fraction.

[a]Signs may not be present in the early stages of HF (especially in HFpEF) and in optimally treated patients.

[b]For the diagnosis of HFmrEF, the presence of other evidence of structural heart disease (e.g. increased left atrial size, LV hypertrophy or echocardiographic measures of impaired LV filling) makes the diagnosis more likely.

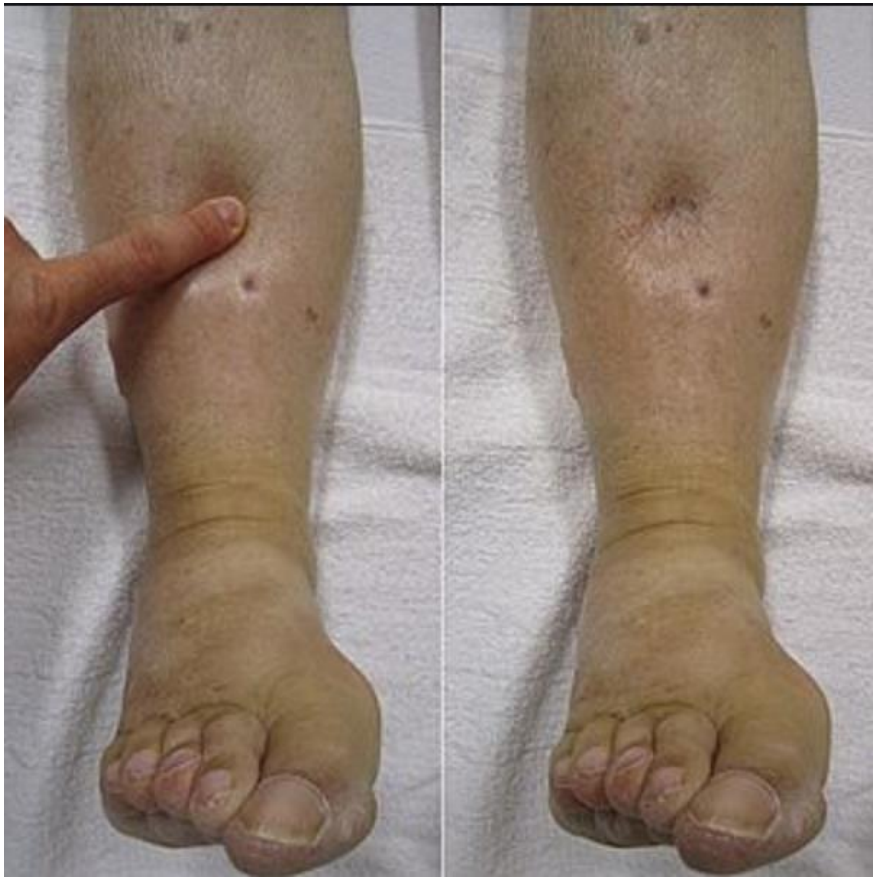
[c]For the diagnosis of HFpEF, the greater the number of abnormalities present, the higher the likelihood of HFpEF.

Definition and classification of HF



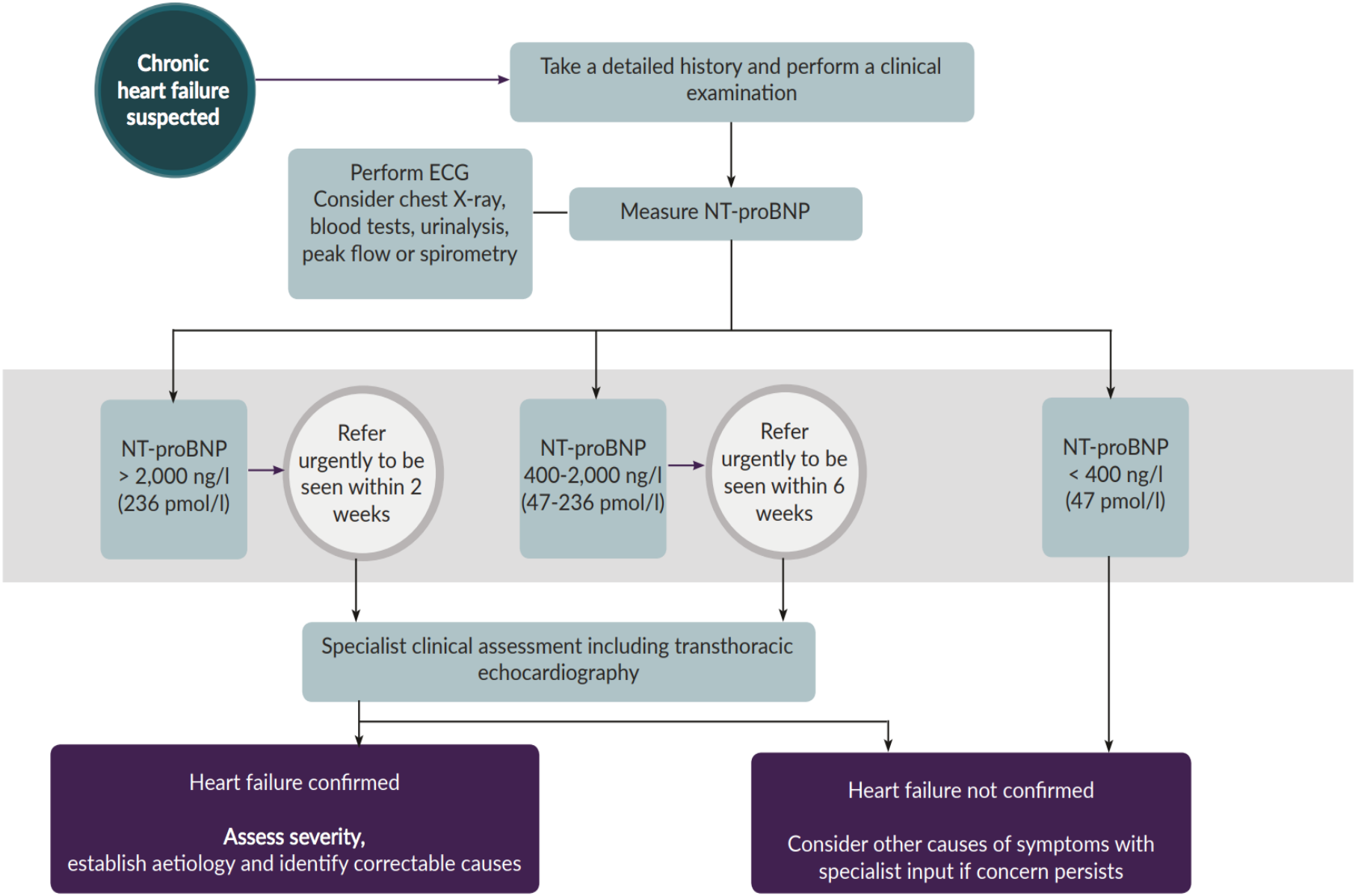
Sounds familiar….

- Mr RS is a 76 year old man who comes to see you with increasing breathlessness, reduced exercise tolerance and swollen legs
- Ex smoker since 1984, HTN and HbA1c 44 new units
- On review, never had chest pain, sleeps with 2 pillows when used to be 1, feeling really tired and unable to do what he enjoys doing
- BP 132/84mmHg, HR 92bpm, sats 98% R/A. Not sure about JVP, pitting oedema to mid shins, can't hear any murmurs



Chronic heart failure: diagnosis

NICE National Institute for Health and Care Excellence



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

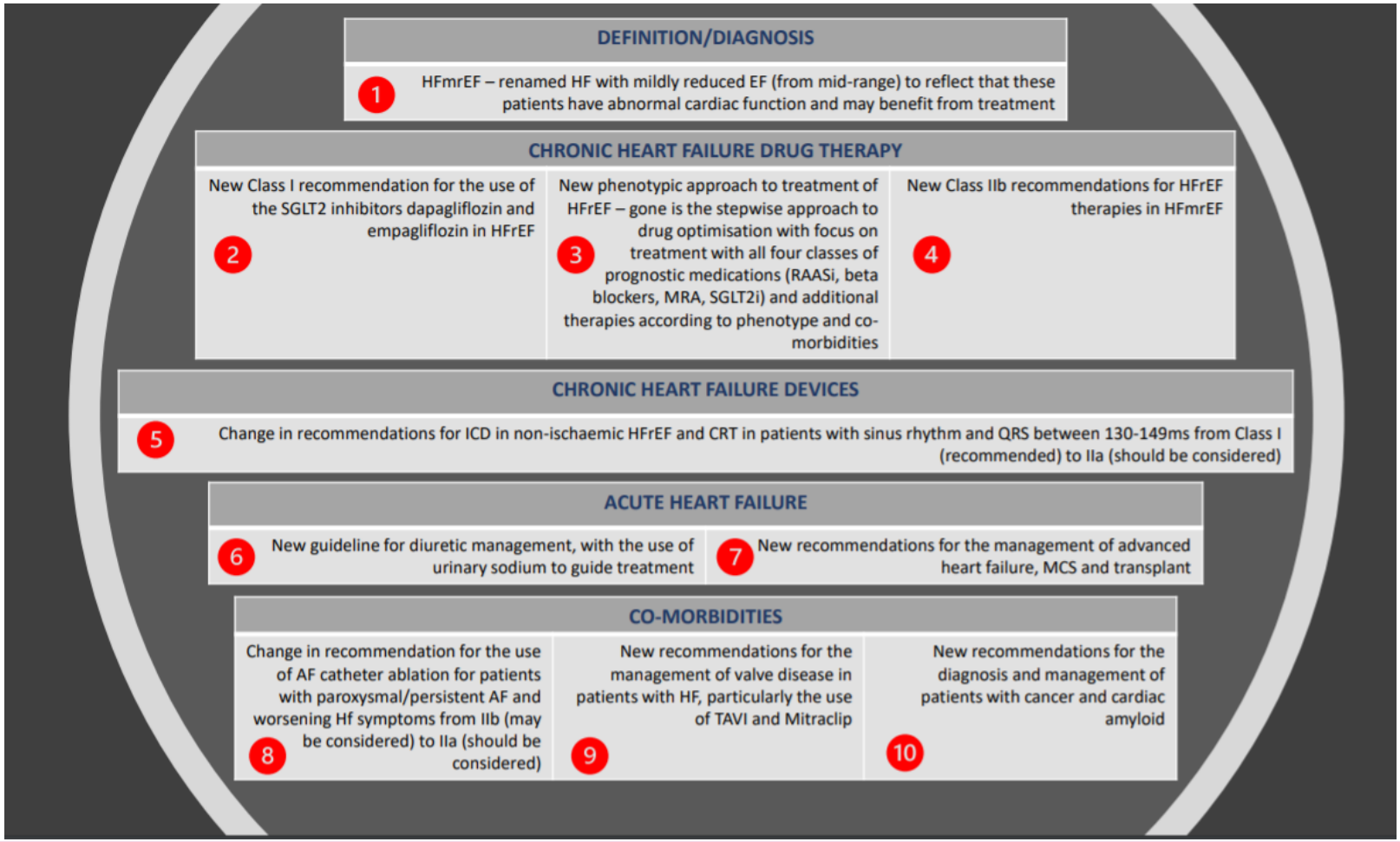
How to contact the HF team

- Refer to GSTT/KCH if suspected HF for 2/6 week appointments using ERS

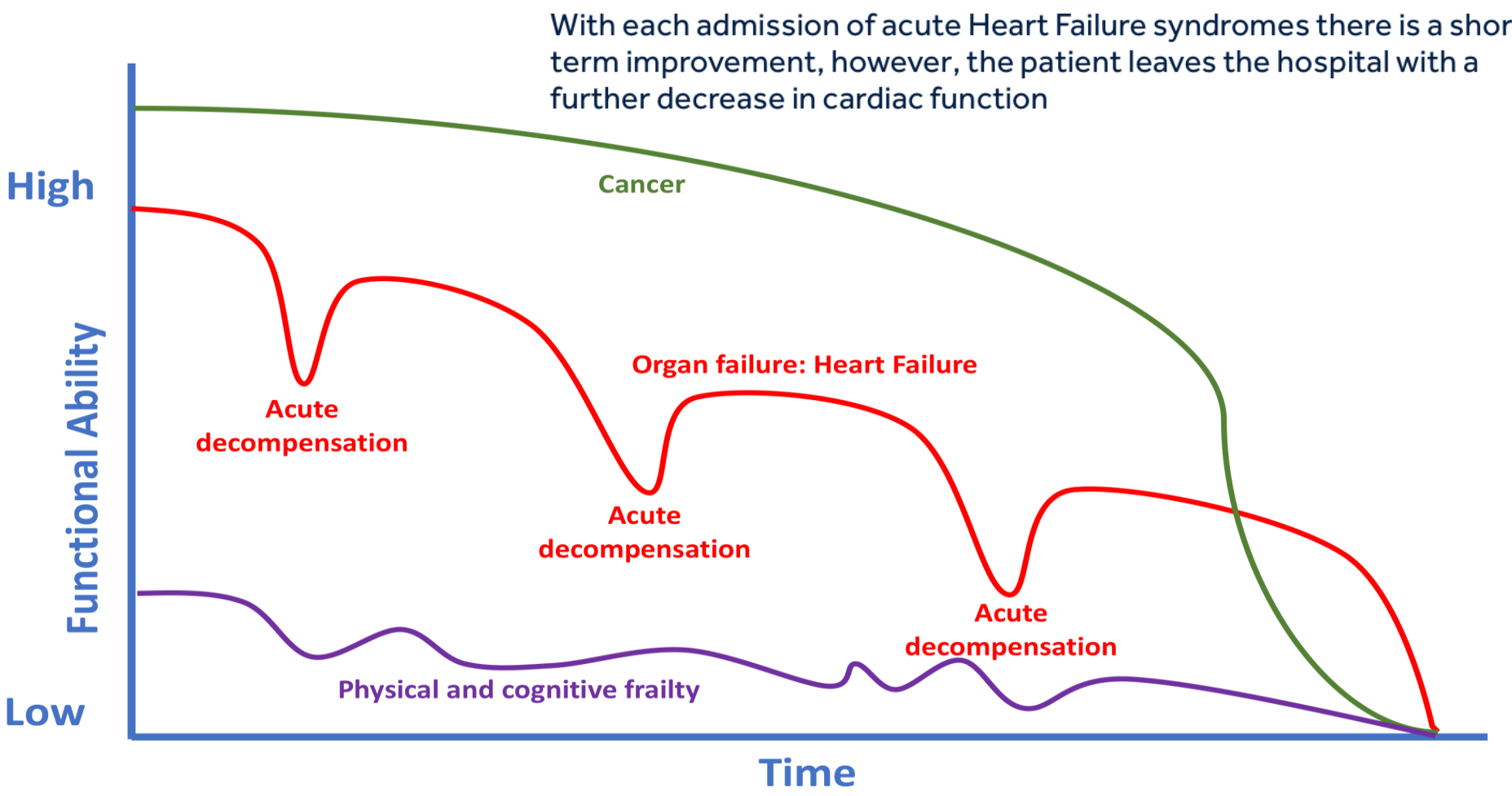
- Is the patient known to HF team :
  - HF specialist Nurse (GSTT have mobile on call number 02071889760, 07464657601)
  - HF Pharmacist
  - HF consultant (email/switchboard)
    - GSTT consultants: name@gstt.nhs.uk or name@nhs.net
    - KCH consultants: name@nhs.net email addresses

- Patient not HF but cardiology concern: Consultant of the Week/referral

Updated ESC 2021 HF guidelines

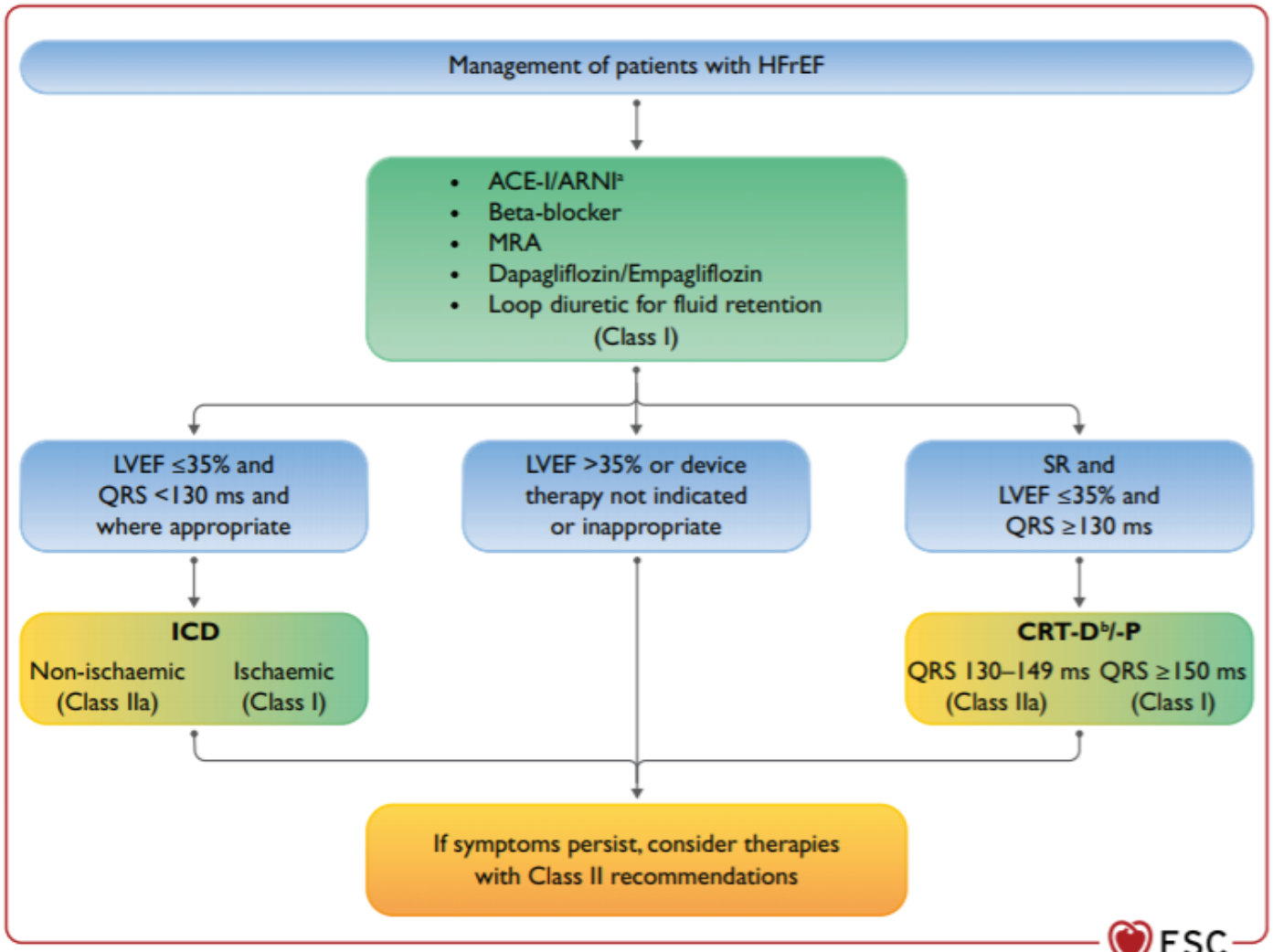


What is the disease progression for HF?



Adapted from Jain et al, Am Heart Journal 2003

Management of patients with HFrEF



Practical Tips for ACEi/ARB/ARNIs

Managing cough

Exclude respiratory disease / pulmonary oedema

Only stop ACEi if very troublesome

ARNI if this is the case

exclude pulmonary oedema

May be COPD/smoking related

Managing Hypotension

Asymptomatic: No change

Symptomatic

- Common, reassure, safety measures – up to few months
- Consider stopping other vasodilators
- Reduce diuretics if no congestion
- Reduce ACEi / ARB / MRA if persists

Practical Tips for ACEi/ARB/ARNIs

Increase is expected

Managing creatinine

Immediate pre-treatment Cr is baseline

Start if Cr<220, GFR>30

clinical assessment, repeat U&Es in 1-2/52, stop other nephrotoxics first, reduce diuretics if no oedema, reduce other BP drugs

Increase Cr of up to 50% or up to 266umol/L

stop/reduce to previously tolerated dose, get advice

Managing Potassium

Accept K up to 5.5

K 5.5-6: stop nephrotoxics /potassium retaining meds/foods; change diuretics

K 6-6.5: stop drug and reintroduce once at lower dose

K >6.5: refer to hospital

Betablockers

BBs	1st line Bisoprolol	1.25mg OD	10mg OD	• Increase dose at 2-4 weekly intervals • **Stop when symptomatic with hypotension/ bradycardia**; many patients tolerate HR of 50bpm (80 in AF), and systolic of 90 mmHg • May temporarily worsen SOB/ fatigue, if marked, halve dose and review • **Do not stop suddenly** • **Drug interactions:** Digoxin, amiodarone, diltiazem, verapamil (generally contraindicated in HF) • Monitor IDDM patients closely • **Contraindications/ Cautions include:** Severe asthma, decompensated HF, 2nd/ 3rd degree heart block, HR<60
	2nd line Carvedilol	3.125mg BD	25mg BD (50mg BD if >85kg and mild HF)	

- Contraindication – severe asthma (not COPD), critical limb ischaemia, 2nd/3rd degree block without a pacemaker, known allergy
- Caution: NYHA IV, recent decompensation, HR <60bpm, congested
- Start low
- May be initial mild deterioration (treat with diuretics)
- Avoid sudden cessation

MRAs

	Drug	Starting dose	Target dose	Notes (please refer to the SEL APC guide or latest BNF for more detailed information, especially titration increments/cautions/contra-indications)
MRA/AAs	Spironolactone	25mg OD	50mg OD	• Start if still symptomatic (NYHA2-4) despite max tolerated ACE-I and BB • Do not use in patients with baseline K^+>5.5 or creatinine >200 • Baseline bloods: Renal and Liver function. Re-check baseline bloods at 1 week after initiation • **If remains symptomatic at 4 weeks** (and bloods satisfactory) **increase to target dose** and repeat bloods after 1 week • There is a higher **risk of hyperkalaemia** due to concomitant treatment with ACE-I • **Side effects**: gynecomastia, hyperkalemia, renal dysfunction • Avoid K^+rich foods (spinach, mangos, bananas, coconut) • **Contraindications/ Cautions include:** eGFR <30ml/min, hepatic impairment, K^+>5 mmol/L at initiation
	Eplerenone	25mg OD	50mg OD	

MRA /AA renal function monitoring

K^+	Action
5.5 – 5.9	Reduce dose (50mg OD to 25mg OD; 25mg OD to 25mg alternate days)
>5.9	**Stop and discuss with cardiology**

- Concern with K >5mmol/L or creatinine >221umol/L
- Eplerenone interactions with CYP3A4 inhibitors

PARADIGM HF: sacubitril valsartan

- Neprilysin inhibitor and angiotensin receptor blocker – LCZ696
- Primary outcome, a composite of CV death, HF hospitalisation
- NNT 21
- Mean age patients 63.8 years
- Jhund et al: showed effects similar in all age groups (75-80 years)
- Simpson et al: effects similar across RF profile (using MAGGIC score)
- NICE: recommend if NYHA II-IV, LVEF <35%, stable dose ACEi/ARB

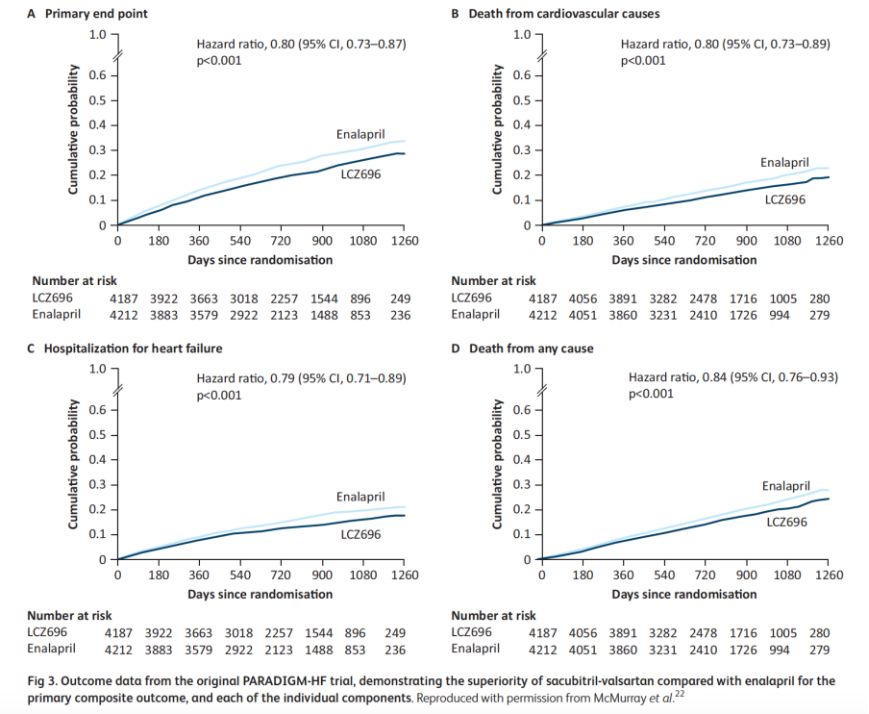


Fig 3. Outcome data from the original PARADIGM-HF trial, demonstrating the superiority of sacubitril-valsartan compared with enalapril for the primary composite outcome, and each of the individual components. Reproduced with permission from McMurray *et al.*[22]

McMurray et al, NEJM 2016, Jhund et al, EHJ 2015; Simpson et al, JACC 2015

Sacubitril/valsartan

- Contraindications
  - History of angioedema, known bilateral RAS, pregnancy, known allergies
  - BP >95mmHg systolic
  - Caution
- Need washout of at least 36 hours
- Three doses – start at mid dose (49/51mg), then increase to top dose 97/103mg. Start low dose (24/26mg) in selected patients

EMPA-REG: effect of empaglifozin on CV outcomes

- Empaglifozin is an inhibitor of the sodium-glucose linked transporter 2, found in the proximal tubules of the nephron (increases glucose excretion)
- Multicentre, blinded, randomised trial in 7028 patients with T2DM, FU 2.6 years
- Primary outcome: CV death, non-fatal MI, and non-fatal CVA
- Osmotic diuretic: 1.5L loss, lower BP

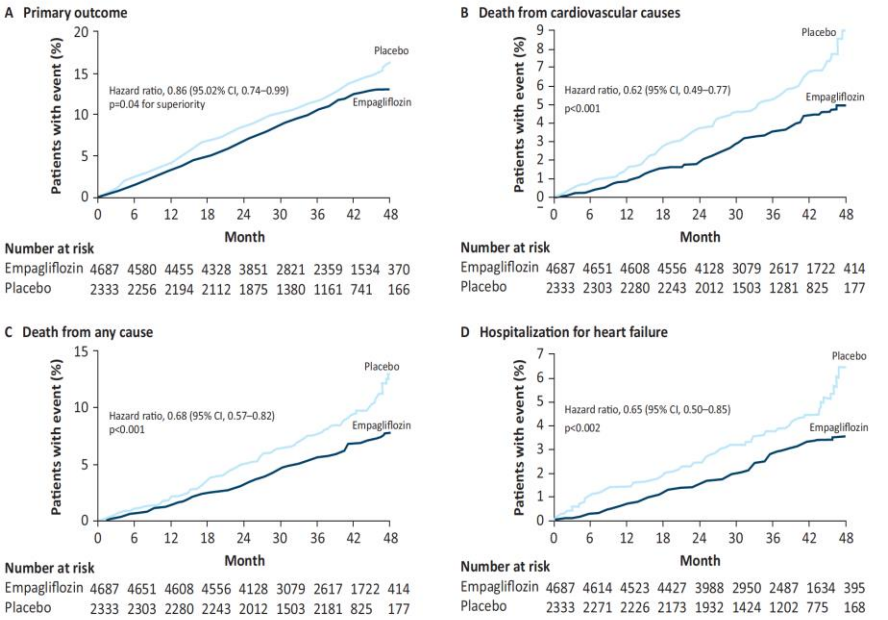


Fig 2. Outcome data from the EMPA-REG trial, demonstrating the superiority of emagliflozin compared with placebo for the primary composite outcome, and each of the individual components. Reproduced with permission from Zinman *et al.*[14]

Zinman et al, NEJM, 2016

SGLT2i

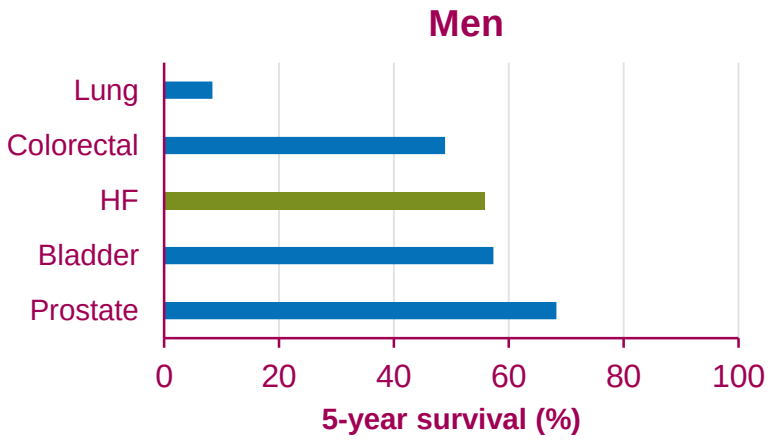
- T1DM is not an absolute CI, risk of ketoacidosis
- Glycosuria may predispose to fungal genitourinary infections
- Look out for interactions to increase risk of hypoglycaemia
- Monitor diuretics to ensure not dehydrated
- Monitor glycaemia regularly, especially if patient is diabetic
- Renoprotective, small drop in renal function

Outcome data

<75 years: inpatient mortality 3%, 3-year mortality about 30%

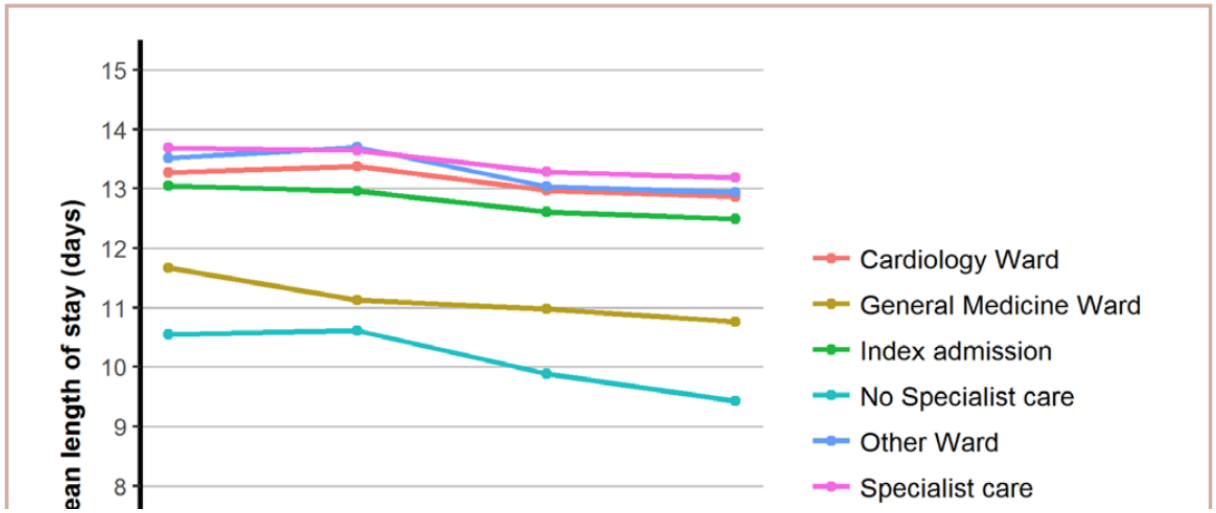
>75 years: inpatient mortality 12%, 3-year mortality about 60%

5 year mortality equivalent to commonest cancers



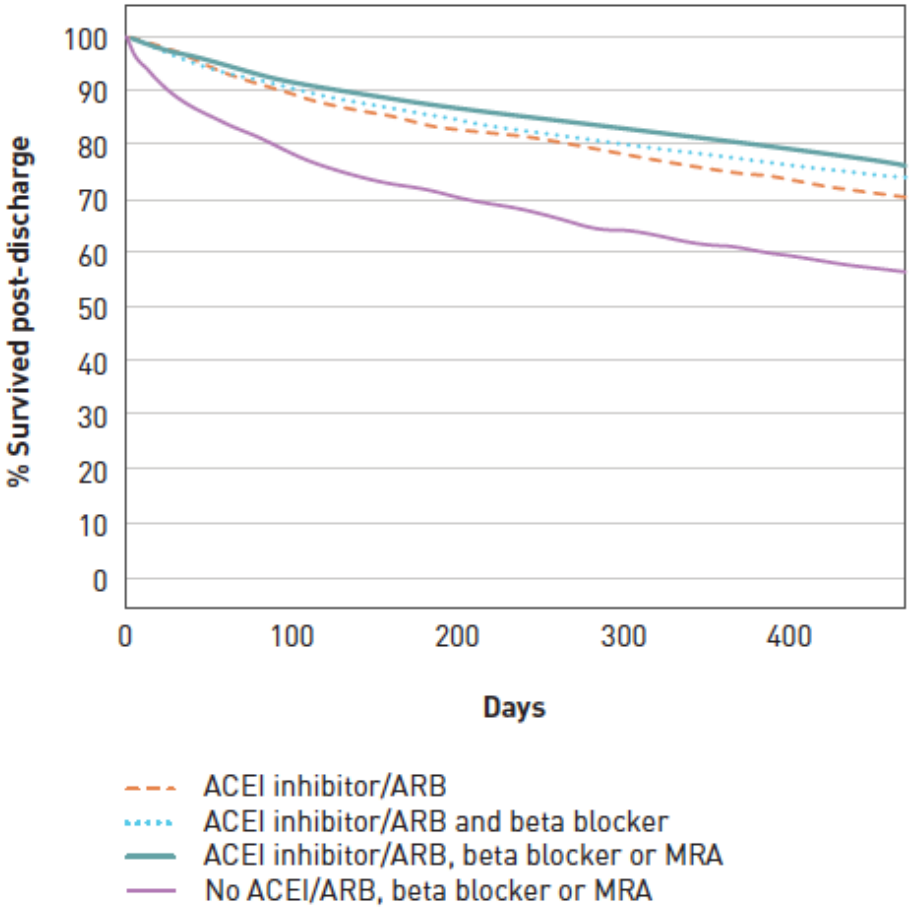
Trend of LOS

Figure 8: *Trend of mean length of stay based on place of care and specialist input (2014/15-2017/18)*



Not on cardiology wards, not seeing cardiologists/HF specialists….
Then can't access echo – can't diagnose HFrEF, can't start medications….
Short IP stay with HF admission is a concern

Evidence that the drugs work…



Key messages

Need to think of HF to diagnose it

Check NTproBNP and then refer

Patients are getting older with more comorbidities

Treatment for patients with HFrEF

Joint working