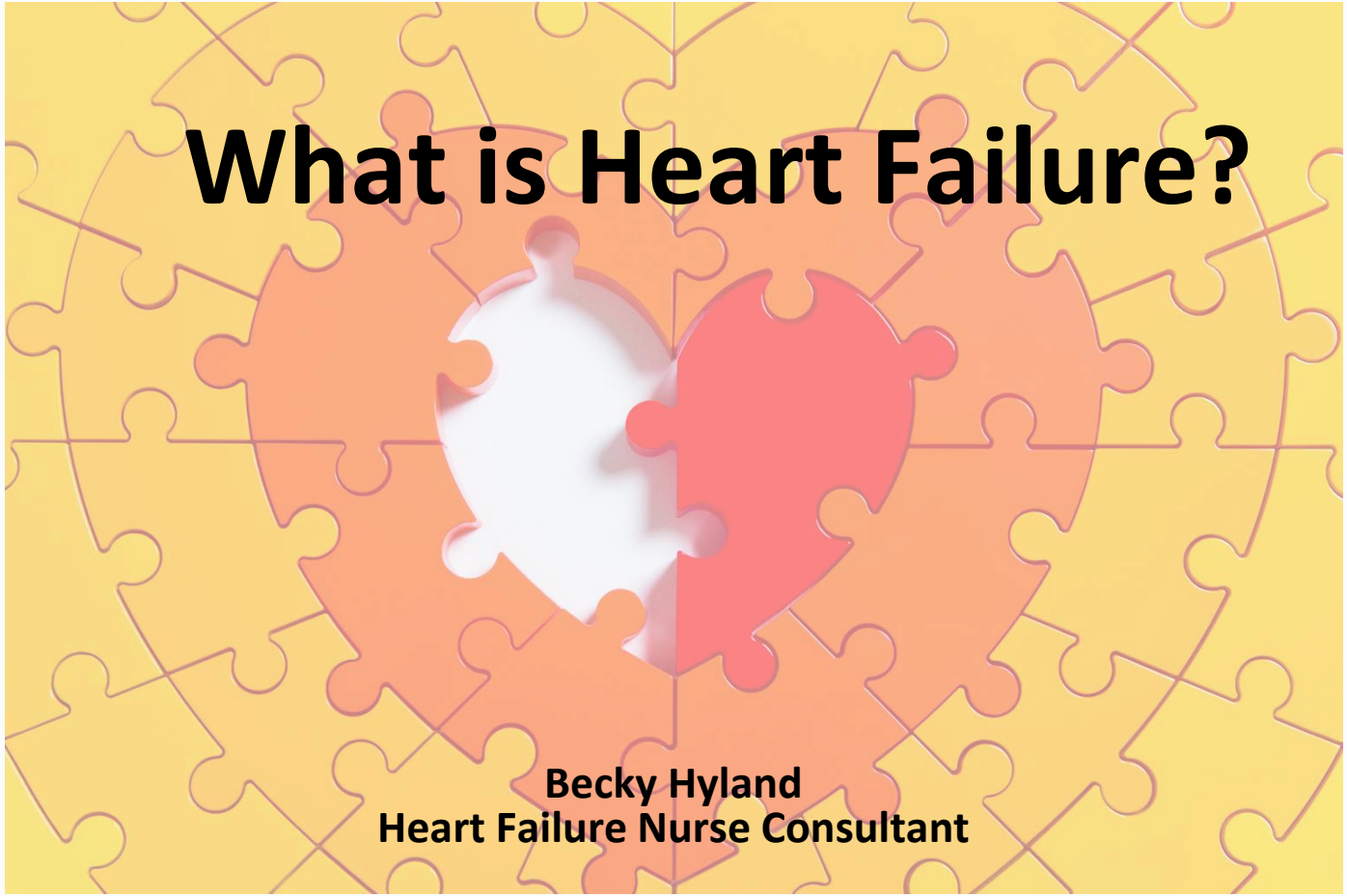
What is Heart Failure?



Becky Hyland
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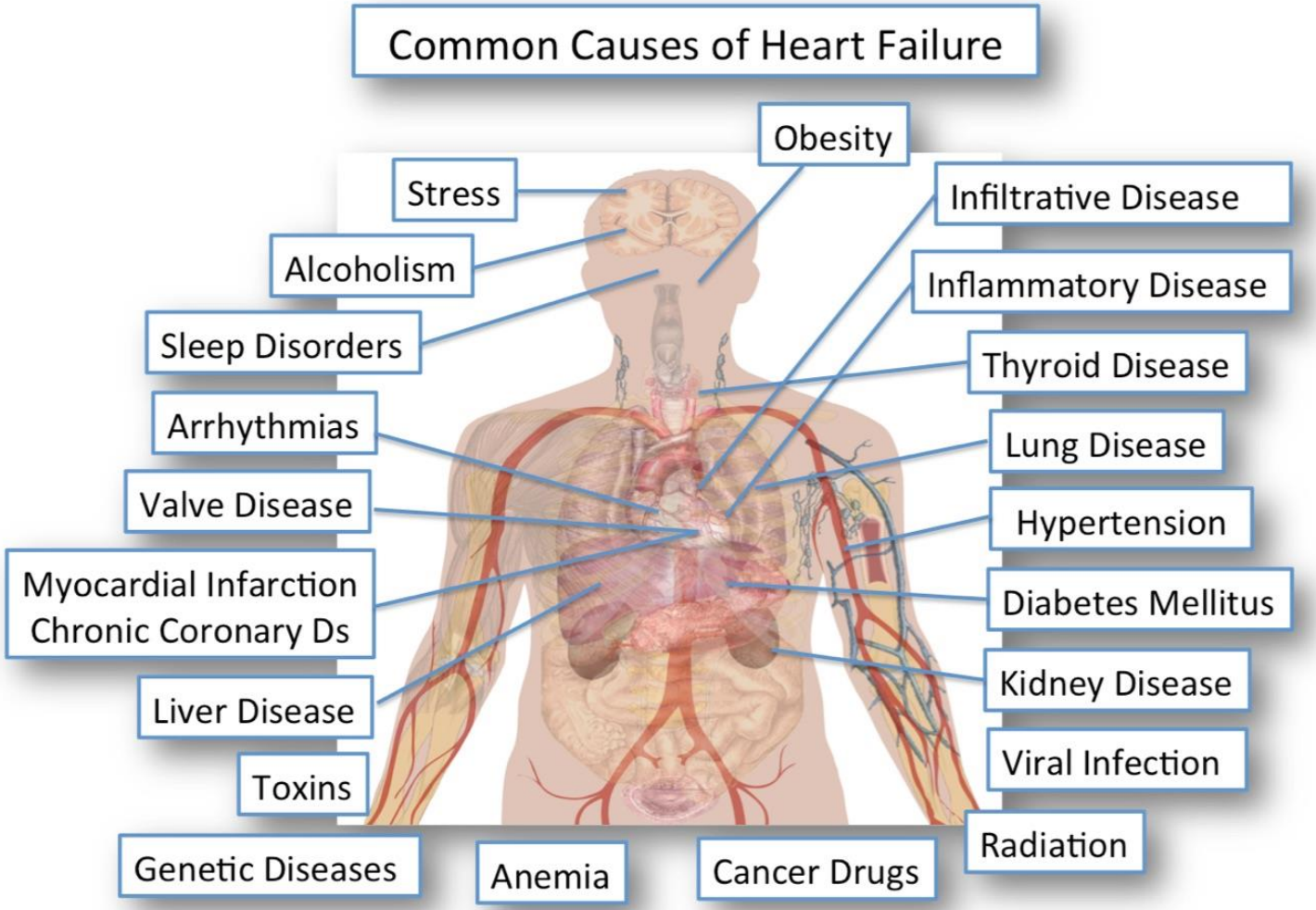
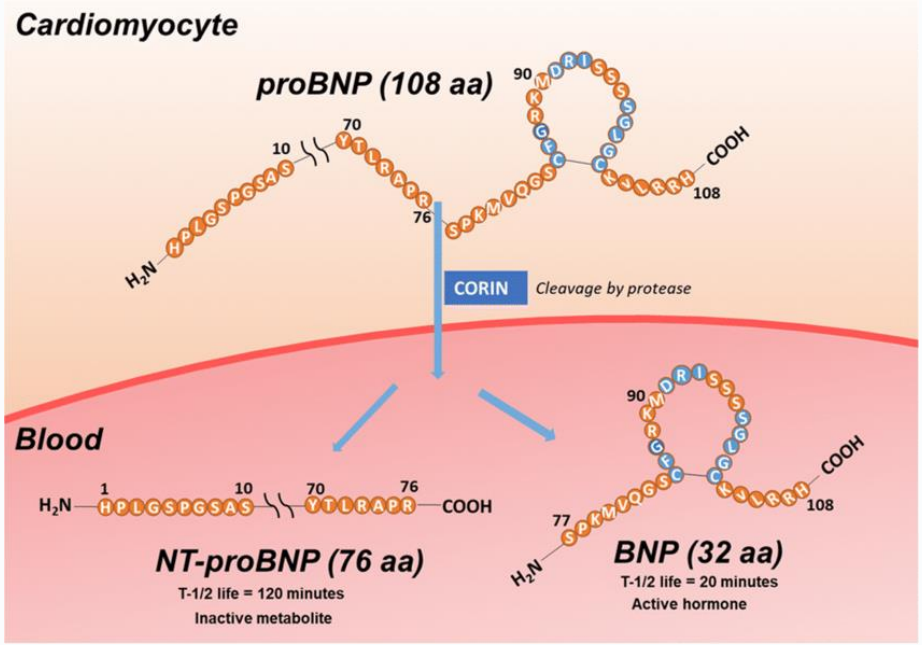
Heart Failure

- Heart Failure (HF) is not a single pathological diagnosis, but a clinical syndrome consisting of:
  - Symptoms such as breathlessness, ankle swelling, and fatigue
  - Signs elevated jugular venous pressure, pulmonary crackles, and peripheral oedema
  - And - a structural and/or functional abnormality of the heart.
- Identification of the aetiology of the underlying cardiac dysfunction is crucial as the specific pathology can determine subsequent treatment.

Common Causes of Heart Failure



Natriuretic Peptides

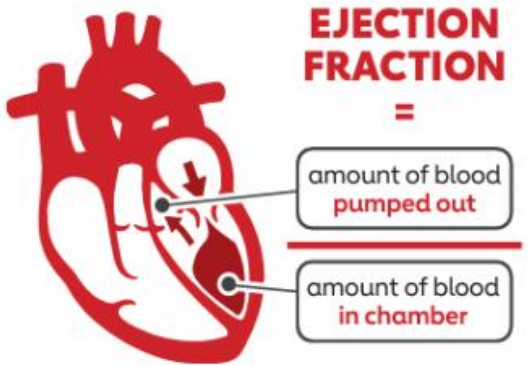


Cardiac	Heart failure ACS Pulmonary embolism Myocarditis Left ventricular hypertrophy Hypertrophic or restrictive cardiomyopathy Valvular heart disease Congenital heart disease Atrial and ventricular tachyarrhythmias Heart contusion Cardioversion, ICD shock Surgical procedures involving the heart Pulmonary hypertension
Non-cardiac	Advanced age Ischaemic stroke Subarachnoid haemorrhage Renal dysfunction Liver dysfunction (mainly liver cirrhosis with ascites) Paraneoplastic syndrome COPD Severe infections (including pneumonia and sepsis) Severe burns Anaemia Severe metabolic and hormone abnormalities (e.g. thyrotoxicosis, diabetic ketosis)

HF Diagnosis

- Signs and Symptoms of HF
- NTpro BNP
- Echo

The **ejection fraction** compares the **amount of blood in the heart** to the **amount of blood pumped out.** The fraction or percentage helps describe how well the heart is pumping blood to the body.

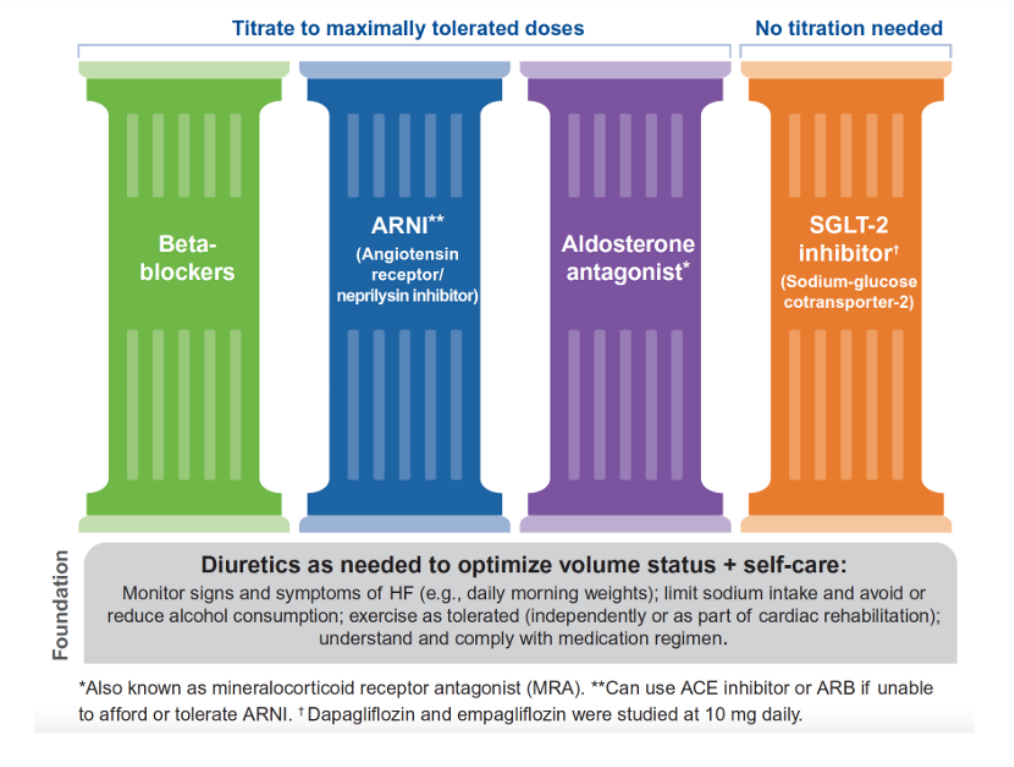


HF Subtypes

- Heart Failure with reduced Ejection Fraction (HFrEF)
- Heart Failure with mildly reduced Ejection Fraction (HFmrEF)
- Heart Failure with preserved Ejection Fraction (HFpEF)

Criteria	HFrEF	HFmrEF	HFpEF
1	Symptoms & Signs	Symptoms & Signs	Symptoms & Signs
2	LVEF ≤40%	LVEF 41% - 49%	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

HFrEF Management - Four Pillars of Therapy



Cardiac Rehabilitation is the fifth pillar

HFmrEF Management - Guidelines

Recommendations	Class[a]	Level[b]
Diuretics are recommended in patients with congestion and HFmrEF in order to alleviate symptoms and signs.[137]	I	C
An ACE-I may be considered for patients with HFmrEF to reduce the risk of HF hospitalization and death.[11]	IIb	C
An ARB may be considered for patients with HFmrEF to reduce the risk of HF hospitalization and death.[245]	IIb	C
A beta-blocker may be considered for patients with HFmrEF to reduce the risk of HF hospitalization and death.[12,119]	IIb	C
An MRA may be considered for patients with HFmrEF to reduce the risk of HF hospitalization and death.[246]	IIb	C
Sacubitril/valsartan may be considered for patients with HFmrEF to reduce the risk of HF hospitalization and death.[13,247]	IIb	C

Features that are more similar to HFrEF than HFpEF; more commonly men, younger, more likely to have coronary artery disease, less likely to have AF and non-cardiac comorbidities

Patients with HFmrEF may include patients whose LVEF has improved from ≤40% or declined from ≥50%.

HFpEF Management

Treatment Strategies		
Lifestyle Modification	**Comorbidity Management**	**Drug Therapies**
Exercise/ Cardiac rehabilitation	HTN	Diuretics
Diet	AF	Spironolactone
Alcohol	Obesity	SGLT2i
Smoking	Diabetes	

Diuretics

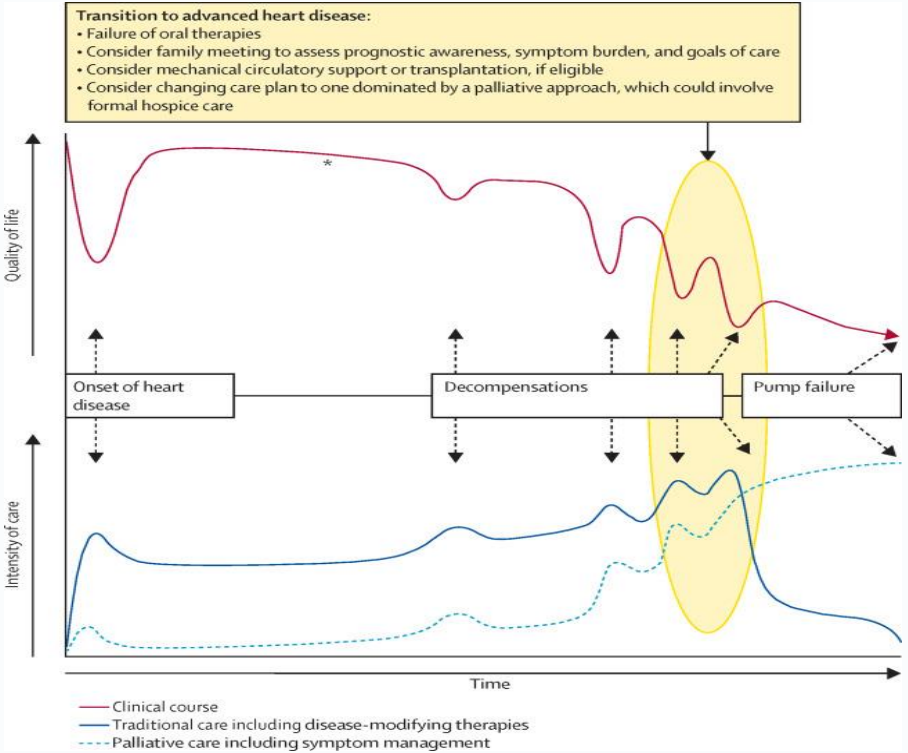
Class 1 evidence within the guidelines for all subtypes of HF

Red Flags – HF Symptoms

Decompensation

- PND/Orthopnoea
- Worsening SOB
- Reduced appetite
- Oedema- how high does it go? Is it refractory to treatment.
- Arrhythmia/ device shocks

Consider potential causes



Red flags in Practice - Hypotension

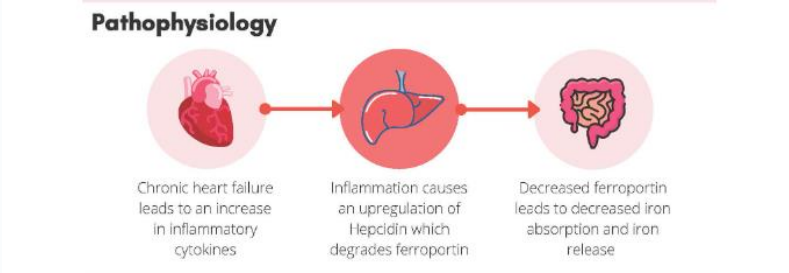
- Hypotension is common in HF, then patients are treated with agents that further lower BP.
- Hypotension, particularly orthostatic hypotension is often the main limiting factor when uptitrating prognostic medications.
- Link between symptoms of hypotension and low BP must be established before medications changed.
- If medications held during a period of intercurrent illness, they should restart once patient recovered.

Cautela et al (2020)

Red Flags in Practice - Iron Deficiency

- Independently associated with reduced exercise capacity, recurrent HF hospitalisations & increased mortality.
- Intravenous iron therapy improves symptoms in HFrEF and may also reduce hospitalisations.

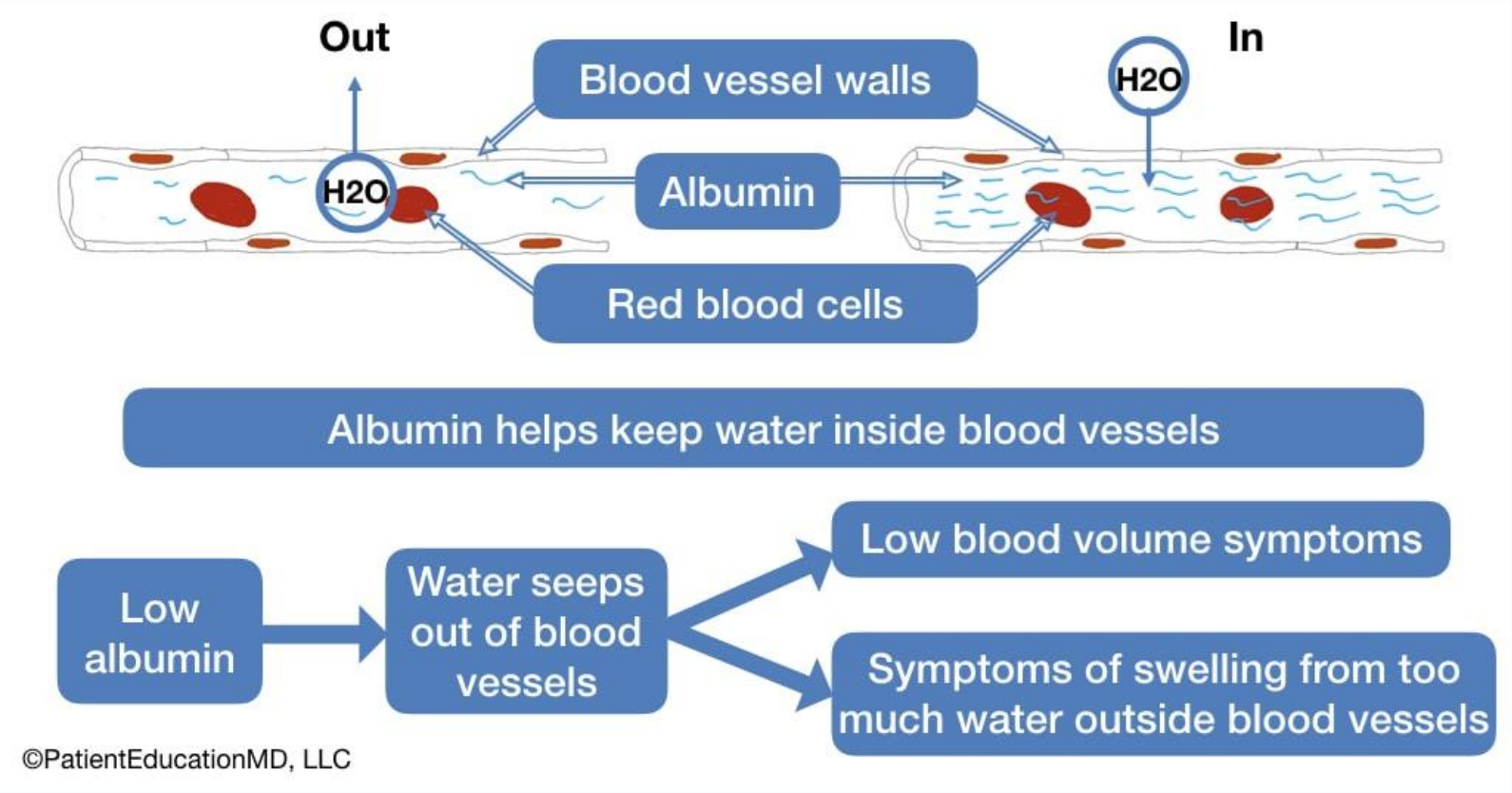
Defined by ferritin <100 µg/L or between 100-300 µg/L with a transferrin saturation of <20%



There is a lack of evidence for its use in HFpEF

Masini et al (2022)

Red Flags in Practice - Hypoalbuminemia



Red flags in Practice - Changes in renal function

- A decline in renal function is commonly seen in patients when they start an ACEI, ARB or sacubitril/valsartan and SGlT2i and is usually modest
- Regardless of whether patients are treated with RAAS inhibitors, changes in renal function are common during acute intercurrent illness

Case study - Baseline

- 50 yr old male, HFrEF (ejection fraction 30%)
- Severely breathless on minimal exertion.
- Ankle oedema.
- Candidate for cardiac device.
- Started on Dapagliflozin 10 mg OD, Entresto 97/103 mg BD, Bisoprolol 7.5 mg OD and Spironolactone 25 mg OD. Also once daily. Also taking Furosemide 20 mg daily

Case Study – 3 months post optimisation

- 3 months later
- Unrestricted activities
- No oedema
- Repeat echocardiogram shows improved ejection fraction to 50%
- To continue meds as per TRED-HF (Halliday et al, 2019)
- No longer needs cardiac device.
- Comprehensive disease modifying pharmacological therapy estimated to given 8.3 additional years (Vaduganathan *et al* 2020)

In summary

- Heart failure is common you will see it in your practice – we ask you to look for it and refer patients for specialist diagnosis.
- Treatment medications in the reduced ejection fraction category save lives. We ask to work with us to ensure patients can continue medications where possible.

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