

Heart Failure

Types

- **Systolic heart failure**
 - Reduction in contractility of ventricles
 - Causes below
- **Heart failure with preserved ejection fraction (HFpEF)**
 - Reduction in compliance of ventricles (i.e. stiff ventricles)
 - Usually occurs in older hypertensive patients

Causes

- **Myocardial dysfunction**
 - Ischaemic heart disease
 - Cardiomyopathy
 - Constrictive (e.g. tamponade, pericarditis)
- **Valvular dysfunction** (mitral/aortic/tricuspid/pulmonary)
- **Outflow resistance**
 - Systemic hypertension
 - Pulmonary hypertension (may be: primary or secondary to lung disease/LVF/PE)

Clinical features

	Reduced perfusion	Pulmonary congestion (LVF)	Systemic congestion (RVF)
Symptoms	<ul style="list-style-type: none"> • Fatigue • Exercise intolerance 	<ul style="list-style-type: none"> • Orthopnoea • Paroxysmal nocturnal dyspnoea • White/pink frothy sputum • Cardiac wheeze • Nocturnal cough 	<ul style="list-style-type: none"> • Peripheral oedema • Weight gain
Signs	<ul style="list-style-type: none"> • Cyanosis • Tachypnoea • Tachycardia 	<ul style="list-style-type: none"> • Pulmonary oedema (fine basal creps) • Pleural effusions • S3/ventricular gallop 	<ul style="list-style-type: none"> • Raised JVP • Peripheral oedema • Hepatomegaly • Ascites

Investigations

- Bloods (FBC, U&Es, β - natriuretic peptide)
- Chest X-ray (**ABCDE**)
 - Alveolar shadowing (Bats wings sign)
 - B-lines (interstitial oedema)
 - Cardiomegaly
 - Diversion of blood to upper lobe
 - Effusion
- ECG (may indicate/suggest cause e.g. ischaemia, ventricular hypertrophy)
- Echocardiography

Management

- For acute heart failure, see [here](#)
- Treat cause where possible
- Pharmacological treatments
 - 1st line: **ACE-inhibitor + beta-blocker, + diuretic** (e.g. furosemide, bumetanide) if peripheral/pulmonary oedema
 - 2nd line: add aldosterone antagonist (e.g. spironolactone, eplerenone)
 - 3rd line: add digoxin
- Non-pharmacological treatments
 - Cardiac Resynchronisation Therapy (CRT) device
 - Implantable cardioverter defibrillator (ICD)

Implantable cardioverter defibrillator (ICD) indications

- Previous ventricular arrhythmia causing cardiac arrest/syncope/haemodynamic compromise
- Previous ventricular arrhythmia and LVEF <35%
- Familial condition with high risk of sudden death (long QT, HOCUM, Brugada syndrome, arrhythmogenic RV dysplasia)
- Previous surgical repair of congenital heart disease