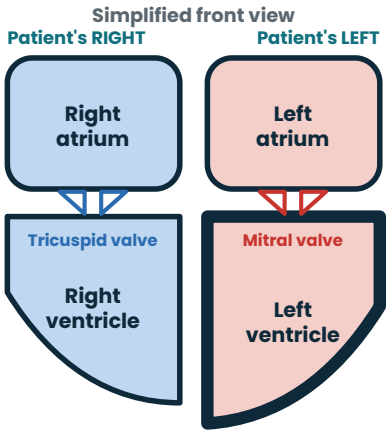
Cardiovascular System

Study Sheet · Learn It with Prof. Melanie

1 The Heart



2 Structures

Structure	Key facts
Right atrium	Receives blood from the body (venae cavae)
Right ventricle	Pumps to the lungs (pulmonary artery)
Left atrium	Receives blood from the lungs (pulmonary veins)
Left ventricle	Pumps to the body (aorta); thickest wall
Valves	Tricuspid, pulmonary, mitral (bicuspid), aortic
Layers	Pericardium (sac), epicardium, myocardium (muscle), endocardium
Coronary arteries	Supply the heart muscle

Hoots' tip: "**Tri** before you **bi**": tricuspid (right) before bicuspid (left).

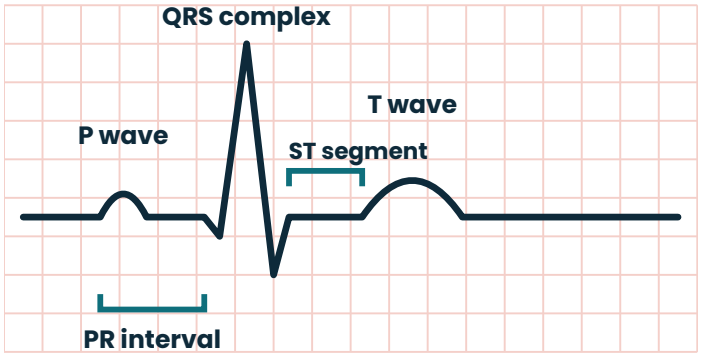
3 Blood Flow

1. Venae cavae	**2. Right atrium**	**3. Tricuspid valve**	**4. Right ventricle**	**5. Pulmonary valve**	**6. Pulmonary artery → lungs**
7. Pulmonary veins	**8. Left atrium**	**9. Mitral valve**	**10. Left ventricle**	**11. Aortic valve**	**12. Aorta → body**

Systole contraction · **Diastole** relaxation · **S1 "lub"** AV valves close · **S2 "dub"** semilunar valves close · **Arteries** carry blood **a**way from the heart

4 Conduction and ECG

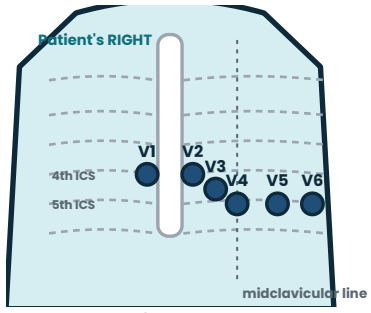
SA node (pacemaker) → AV node → bundle of His → bundle branches → Purkinje fibers



P atrial depolarization · **QRS** ventricular depolarization · **T** ventricular repolarization

5 12-Lead Placement

V1	4th ICS, right sternal border
V2	4th ICS, left sternal border
V3	Midway between V2 and V4
V4	5th ICS, left midclavicular line
V5	Anterior axillary line, level with V4
V6	Midaxillary line, level with V4



10 electrodes · 25 mm/sec · 10 mm = 1 mV. **Artifacts:** somatic tremor, wandering baseline, AC interference.

Cardiovascular System · Study Sheet

6 Vessels and Pulses

Arteries away, thick walls · **Capillaries** exchange · **Veins** back to heart, valves

Pulse	Use
Radial	Routine adult pulse
Brachial	Blood pressure; infants
Carotid	Adult CPR (one side only)
Apical	5th ICS, midclavicular; full minute
Dorsalis pedis	Foot circulation

Adult pulse **60–100** · bradycardia < 60 · tachycardia > 100

7 Blood Pressure (ACC/AHA)

Category	Systolic		Diastolic
Normal	< 120	and	< 80
Elevated	120–129	and	< 80
Stage 1	130–139	or	80–89
Stage 2	≥ 140	or	≥ 90
Severe	> 180	and/or	> 120

Rest 5 min, feet flat, arm at heart level. Cuff too small = falsely **high**.

8 Disorders

Disorder	Key facts	Disorder	Key facts
CAD	Plaque in coronary arteries	**Atrial fibrillation**	Atria quiver; stroke risk
Angina	Temporary chest pain; nitroglycerin	**Ventricular fibrillation**	Cardiac arrest; CPR, AED
MI	Heart muscle dies; call 911	**DVT**	Leg clot; risk of PE
Heart failure	Weak pump; edema, short of breath	**PAD**	Leg pain with walking
Aneurysm	Bulging artery wall	**Varicose veins**	Weak vein valves

9 Tests and Medications

Test	Purpose	Medication	Purpose
Holter monitor	24–48 hr ECG	**-pril, -olol**	Lower BP (ACE inhibitor, beta blocker)
Stress test	ECG with exercise	**Warfarin, apixaban**	Anticoagulants
Echocardiogram	Ultrasound of the heart	**-statin**	Lower cholesterol
Troponin	Heart muscle damage	**Furosemide**	Diuretic
Lipid panel	Cholesterol (may need fasting)	**Nitroglycerin**	Angina; may cause headache

10 Word Parts

Part	Meaning	Part	Meaning
cardi/o	Heart	**ather/o**	Fatty plaque
angi/o, vas/o	Vessel	**thromb/o**	Clot
arteri/o	Artery	**sphygm/o**	Pulse
phleb/o, ven/o	Vein	**brady-, tachy-**	Slow, fast

11 MA Skills

- **ECG:** supine, relaxed, clean dry skin, no lotion
- **Limb leads:** white on right, smoke over fire, green on right leg
- **Chest pain:** get help, call 911 per protocol, CPR/AED as needed

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