

HTA Style Summary - Anatomy of the Human Heart

Audience: *Health Policy /Market Access/Medical Professionals*

The human heart is a four-chambered muscular organ located in the middle mediastinum, slightly left of the midline. It acts as the central pump for both systemic and pulmonary circulation, ensuring continuous delivery of oxygen and nutrients throughout the body.

Structural Overview:

- **Chambers:** The heart consists of two upper chambers (right and left atria) and two lower chambers (right and left ventricles). The left ventricle has the thickest myocardium, generating the high pressures required for systemic circulation, while the right ventricle is optimised for the lower-resistance pulmonary circuit.
- **Valves:** Four valves: tricuspid, pulmonary, mitral, and aortic. Maintain unidirectional blood flow and prevent regurgitation.
- **Wall Layers:** The heart wall is composed of three layers:
 - **Epicardium:** The outermost layer, also the visceral layer of the serous pericardium, provides protection and lubrication.
 - **Myocardium:** The thick, contractile middle layer made of cardiac muscle, responsible for generating the force of contraction.
 - **Endocardium:** The smooth inner lining, minimising turbulence and risk of thrombosis.

Pericardium:

The heart is enclosed by the pericardium, a double-layered sac that anchors the heart within the thoracic cavity and reduces friction during cardiac cycles.

Coronary Circulation:

The coronary arteries supply oxygen-rich blood to the myocardium, ensuring the heart's metabolic demands are met.

Functional Anatomy:

- The right atrium receives deoxygenated blood from the body and channels it to the right ventricle, which pumps it to the lungs.
- The left atrium receives oxygenated blood from the lungs and sends it to the left ventricle, which pumps it into systemic circulation.
- The conduction system. Including the sinoatrial node, atrioventricular node, bundle of His, and Purkinje fibres-coordinates the heartbeat, enabling synchronised contraction and efficient blood flow.

Clinical Importance:

A detailed understanding of cardiac anatomy is foundational for diagnosing and managing cardiovascular diseases. Structural variations and acquired changes, such as ventricular hypertrophy or valvular dysfunction, directly impact cardiac performance and patient outcomes.

References:

- [Michigan Medicine – Anatomy of a Human Heart](#)
- [BlueLink Anatomy – Heart Learning Objectives \(University of Michigan\)](#)
- [Heart Surgery: A Guide for Patients and Their Families – Michigan Medicine \(PDF, see Heart Anatomy section\)](#)
- [Anatomy of a Human Heart | University of Michigan Health](#)