

# Chapter 44

## Cardiac Devices: Pacemaker, AICD, and IABP



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What are the two main types of implantable cardiac conduction devices?	1. Pacemaker 2. Automatic implantable cardioverter-defibrillator (AICD)
What are the major components of these two devices?	1. Pulse generator- battery pack and control unit 2. Leads/electrodes
What are common types of pacemakers?	Single chamber, dual chamber, and biventricular
What is the desired positioning of the lead for a single chamber pacemaker?	Right ventricle

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What is the desired positioning of the leads for a dual-chamber pacemaker?	Right atrial appendage and right ventricular apex [1]
What is the positioning of the leads for a biventricular pacemaker?	Right atrium, right ventricle, and coronary sinus [1]
How can the shock/defibrillator leads on an AICD be differentiated from standard pacing/sensor leads?	Shock/defibrillator leads are thicker.
What are possible complications of insertion of pacemakers and AICDs?	Pneumothorax, vascular injury
What should the presence of a new pleural fluid collection following pacemaker/AICD placement raise your suspicion for?	Hemothorax
What is a loop recorder?	Small implantable device which continuously monitors and records cardiac rhythm. Pill-shaped and easily recognizable on chest radiography
What is an intra-aortic balloon pump (IABP)?	Inflatable pump placed directly into the aorta via a femoral artery to provide hemodynamic support in the setting of cardiogenic shock [2]
What is optimal positioning of an IABP?	Within the descending thoracic aorta, with its tip just distal to the origin of the left subclavian artery. The tip is often marked by a small radiopaque tick.

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What is the most common complication of an IABP?	Malpositioning, resulting in occlusion of the left subclavian artery if too high, or the renal arteries, if too low
What is a left-ventricular assist device (LVAD)?	Surgically implanted device to assist cardiac function, often serving as a bridge to transplant [3]
What are the components of an LVAD?	Inflow cannula, pump, outflow cannula, driveline
Current LVAD models propel blood in a continuous fashion. What imaging modalities might be affected by this alteration in physiology?	Doppler ultrasound waveforms when evaluating the arterial system [4]
What are major complications of an LVAD?	Thromboembolic events including stroke, driveline infection, hemorrhage, and device failure
What is an Impella device?	A more minimally invasive LVAD, with tip positioned within the left ventricle [3]
What other types of ventricular assist devices exist?	Right ventricular assist device (RVAD) and biventricular assist device (BiVAD)
What is a left atrial appendage occluder device, and what is it used for?	Wire basket placed into the atrial appendage to help prevent strokes in patients who cannot receive anticoagulation
Name another frequently encountered cardiac occluder device.	Atrial septal defect occluder

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## References

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