Cardiac Pacemakers

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KEYWORDS

• Cardiac Pacemaker • Pacemaker indications • Pacemaker Complications
• Pacing Modes • Pacemaker Interrogation

HOSPITAL MEDICINE CLINICS CHECKLIST

1. Pacemaker insertion in the setting of sinus node dysfunction requires both symptoms and irreversibility.
2. First-degree atrioventricular block and type I second-degree atrioventricular block do not typically progress to advanced block, and therefore do not require a pacemaker.
3. Type II second-degree and third-degree atrioventricular block pose a significant risk of complications and therefore permanent pacemaker is indicated irrespective of symptoms.
4. Chest radiography is helpful in confirming type of pacemaker, placement of leads and presence of ICD shock coils, as well as device and manufacturer identification.
5. The North American Society of Pacing and Electrophysiology (NASPE) and the British Pacing and Electrophysiology Group (BPEG) published the NBG pacemaker code, last revised in 2002. It describes the 5-letter code for operation of implantable pacemakers and is the common language used to communicate device pacing modes. There are 5 positions, although position V is rarely used.
6. Atrial pacing, when possible, is preferred given that it avoids the complications associated with long term right ventricular pacing (heart failure death and atrial fibrillation).
7. Managed Ventricular Pacing and Mode Switching are pacing programs that minimize dependency on right ventricular pacing.
8. Cardiac resynchronization therapy (CRT), also referred to as biventricular pacing, is used in systolic heart failure to improve ventricular synchrony, resulting in improved outcomes.

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Hosp Med Clin 6 (2017) 374–396
http://dx.doi.org/10.1016/j.ehmc.2017.04.007

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9. Implantable cardioverter defibrillators (ICDs) are devices used for treatment of tachyarrhythmias. ICDs are equipped with both demand pacing functionality as well as the ability to deliver high-voltage shock. They might also be programmed to provide specialized therapeutic intervention such as anti-tachycardia pacing (ATP).
10. A pacemaker magnet moves a programmable switch in the pacemaker which will change the pacemaker mode, commonly DOO at a predetermined high rate. Magnets will also turn off ICD therapy so that it will not be able to deliver a shock.

When should pacemaker implantation be considered?

In a community hospital, it is important to have a basic understanding of the indications for implantation of a permanent pacemaker. The most recent guidelines were published in 2012 as an update to the 2008 American College of Cardiology

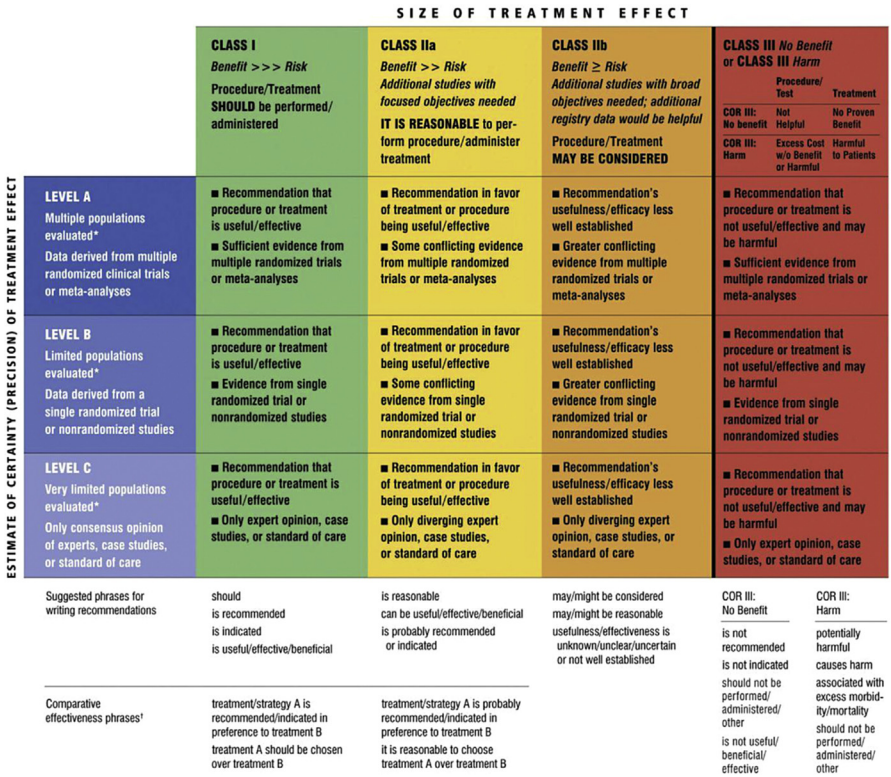

Fig. 1. Applying classification of recommendations and level of evidence. (*From* Epstein AE, DiMarco JP, Ellenbogen KA, et al. 2012 ACCF/AHA/HRS focused update incorporated into the ACCF/AHA/HRS 2008 guidelines for device-based therapy of cardiac rhythm abnormalities: a report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines and the Heart Rhythm Society. J Am Coll Cardiol 2013;61(3):e6–75; with permission.)