1. Assessment of underlying rhythm:
   - The need for ongoing pacing should be regularly reassessed. This is best done by turning down the pacing rate and allowing the endogenous rhythm to appear.
   - Sensitivity (as numerically represented on the pacing generator) is the minimum current that the pacemaker is able to sense. A lower number thus corresponds to a greater sensitivity.
   - The pacemaker rate should be set below the endogenous rate (if present), and placed in VVI, AAI or DDD modes.
   - Pacing should then occur asynchronously in the chamber being tested.
   - Sensitivity number is then turned down (making the pacemaker more sensitive) until the sense indicator flashes with each endogenous depolarization (in time with the P or R wave on the surface ECG). The number at which this first occurs is the pacing threshold.
   - Most institutional protocols recommend leaving the pacing generator set at half the pacing threshold, to allow for detection of abnormally small signals, and for the possibility that perilead fibrosis over the course of the day will reduce the threshold.
   - If it is safe to check the pacing threshold, the pacemaker rate should be set above the patient's endogenous rate, such that the chamber of interest is being consistently paced.
   - The pacemaker energy output is then reduced until a QRS complex no longer follows each pacing spike. This is the capture threshold.

   - Complications of wire removal include:
     - (i) Infarction
     - (ii) Myocardial damage
     - (iii) Perforation
     - (iv) Lamponade
     - (v) Undersensing, oversensing, failure to capture, unstable lead position

   - MRI involves the application of both magnetic fields and radiofrequency pulses. A temporary pulse generator contains too much ferrous material to be allowed into the magnetic field with the patient. MRI is therefore not possible in a patient dependent on temporary epicardial pacing.

   - MRIs are removed by constant gentle traction, allowing the motion of the heart to assist dislodgement from the epicardial surface. Excessive traction should not be applied: occasionally the wires are caught by a tight suture either in the epicardium or somewhere along their course through the chest. In this case they should be pulled as far as is felt safe, and cut as close to the skin as possible. This will allow the cut ends to retract. There is no evidence that wires left like this have any adverse effect.

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   - IABP:
     - If the IABP is timed according to a cardiac monitor with the high frequency filter disabled, to allow pacing spikes to be recorded, it may be misinterpreted by the IABP as QRS complexes. In the case of isolated ventricular pacing, the adverse effect of this small timing difference can be easily overcome by manual adjustment of the IABP timing parameters. However, if both atrial and ventricular spikes are misread as two QRS complexes, this will not be correct to follow either the atrial or ventricular spikes. The problem is lessened with bipolar leads, which have a smaller ECG representation than unipolar leads.

   - Conduction abnormality
     - Prolonged AV delay (common after cardiac surgery; artificially shortening this using AV sequential pacing may improve mechanical coupling between the atria and ventricles)
     - AV block: third degree, or type II second degree

   - During the insertion of a pulmonary artery catheter in a patient with left bundle branch block (although this is noted to be controversial)

   - Bilateral atrioventricular block
     - New onset bradycardia (block of active ischemia)
     - Prolonged QT syndrome in the presence of significant bradycardia (to prevent tomotades of points)

   - Tachycardia
     - AV junctional tachycardia (common after cardiopulmonary bypass)
     - May be terminated by a brief period of pacing, which can then be discontinued

   - Other
     - Sinus bradycardia (as an alternative to pharmacologic treatment)

   - Prophylaxis of atrial fibrillation

2. Test sensitivity:
   - The pacing rate should be set below the endogenous rate (if present), and placed in VVI, AAI or DDD modes.
   - (i) The pacemaker rate should be set below the endogenous rate (if present), and placed in VVI, AAI or DDD modes.
   - (ii) Sensitivity number is increased (making the pacemaker less sensitive) until the sense indicator stops flashing.
   - (iii) Pacing should then occur asynchronously in the chamber being tested.
   - (iv) Sensitivity number is then turned down (making the pacemaker more sensitive) until the sense indicator flashes with each endogenous depolarization (in time with the P or R wave on the surface ECG). The number at which this first occurs is the pacing threshold.
   - (v) Most institutional protocols recommend leaving the pacing generator set at half the pacing threshold, to allow for detection of abnormally small signals, and for the possibility that perilead fibrosis over the course of the day will reduce the threshold.

3. Test the capture threshold:
   - The capture threshold is the minimum pacemaker output required to stimulate an action potential in the myocardium. The capture threshold should not be checked if there is no underlying rhythm (which will have been established in the first step of these checks), for fear of losing and not being able to regain capture.

   - Complications of wire removal include:
     - (i) Infarction
     - (ii) Myocardial damage
     - (iii) Perforation
     - (iv) Lamponade
     - (v) Undersensing, oversensing, failure to capture, unstable lead position

   - MRI involves the application of both magnetic fields and radiofrequency pulses. A temporary pulse generator contains too much ferrous material to be allowed into the magnetic field with the patient. MRI is therefore not possible in a patient dependent on temporary epicardial pacing. Whether a patient with epicardial wires in place, which are not being used, may have an MRI scan is more controversial.