

EXTERNAL PACEMAKER

By Pat Hock, RN

The function of an external temporary pacemaker is to provide a timed electrical impulse to the heart that result in depolarization and mechanical contraction of the targeted chamber. Epicardial wires are temporary wires that are surgically placed directly on the RA and /or RV after open heart surgery. The atrial wires exit on the right side of the chest, the ventricular wires exit on the left. The wires are unipolar; there must be two wires to complete the circuit. Exposure to MRI will inhibit pacemaker output. Electrocautery equipment (Bovie) may cause interference and pacemaker outputs may be inhibited.

Pacemaker function is described by a code devised by the North American and British pacing societies. The NBG code is a five letter coding system for identifying pacemaker modes. The first letter represents the heart chamber being paced. The second letter represents the heart chamber being sensed. The third letter represents the mode of response to sensing. The 4th and 5th letters pertain to permanent pacemakers. Reading from left to right:

First letter: Chamber paced

- A=atrium
- V=ventricle
- D=dual
- O=none

Second letter: Chamber sensed

- A=atrium
- V=ventricle
- D=dual
- O=none

Third letter: Response to chamber sensed

- I=inhibited (a pt initiated beat will inhibit the unit from firing)
- T=triggered (pt initiated beat originating in the chamber being sensed will cause the pacemaker to function)
- D=dual (inhibited and triggered)
- O=none(the pacemaker does not respond to the pt's underlying beat)

Pacemaker Definitions:

Output is the energy delivered by the pulse generator to initiate depolarization and is measured in milliamps (mA)

Sensitivity is the ability of the pacemaker to recognize the patient's own intrinsic rhythm. The lower the number on this dial the more

sensitive the pacemaker will be to the pt's intrinsic rhythm.

Failure to capture occurs when the output stimulus fails to depolarize the myocardium. Causes include lead disconnect or fracture, low battery, low output setting, or an increase in the pacing threshold because of edema or scarring.

Failure to sense occurs when the pacemaker fails to detect native rhythm.

Nursing assessment of a pacemaker should include that pacer settings are reflective of current orders. The pacemaker needs to be visible and secured to the bed at all times. Pacer wires should be looped and secured to the patient's body. The cardiac monitor should be placed in the *paced mode* to highlight pacing activity. Touch *pulse* on monitor touch screen and change **alarm source** to **pulse**. Change **system pulse** to **ABP** (make sure art line is labeled ABP not art) or **pleth**. Batteries are changed every 72 hours (the pacemaker will continue to function for 10-15 seconds without a battery) A rhythm strip needs to be placed in the pt chart every shift and with any changes made to the pacemaker settings. A backup pacemaker (with current settings programmed) should be at the bedside when a pacemaker is in use. The pacer site dressing is changed every 24 hours. Cleanse exit sites with chloroprep swab and cover with tegaderm (site visible).

There is an increased risk of microshock with pacer wires in place. To prevent microshock do not use any non grounded equipment near the patient and always wear gloves when handling the electrodes. When not in use, pacer wires need to be individually wrapped to electrically isolate them.



Perfectly perpendicular pacer spikes, when followed by a QRS complex, are an indication of 100% capture.