

CLINICAL STANDARD

TRANSVENOUS/TRANSTHORACIC (EPICARDIAL) PACEMAKER – ICU/ED

- PURPOSE:** To outline the management of the patient with a transvenous or transthoracic (epicardial) pacemaker.
- SUPPORTIVE DATA:** Pacemakers are self-contained battery powered devices used to deliver an electrical stimulus to the heart to initiate depolarization. The goal of cardiac pacing is to improve cardiac output by increasing heart rate or by overriding life-threatening dysrhythmias. They are used to manage conditions including: 2nd and 3rd degree heart blocks, symptomatic bradycardia, and asystole. Complications include migration of the catheter resulting in non-pacing, dislodgment of pacer wires resulting in non-pacing, right ventricular perforation, or diaphragmatic pacing and lethal dysrhythmias.
- ASSESSMENT:**
1. Assess the following within the first hour of assuming care:
 - Pacemaker settings
 - Mode, rate, output (mA), sensitivity (mV)
 - Pacemaker wires/catheter for breaks, kinks, loose connections
 - Battery (label intact with date and time battery was changed)
 - Battery function (check for battery warning light flashing)
 - Pulses
 - ECG (for rate, rhythm, capture, percent of pacing)
 2. Assess the following a minimum of q4h:
 - ECG for rate, rhythm, capture, and percent of pacing
 - Assess peripheral pulses, noting strength and rhythm
 - Hiccups
 - Signs of decreasing cardiac output (CO):
 - Dizziness, decreased level of consciousness
 - Decreased B/P
 - S/S of infection
 - Dressing for dampness
 - Battery function
 - Pain Anxiety
- MANAGEMENT:**
3. Replace battery a minimum of every 96 hours or when battery low warning light begins to flash (If underlying rhythm is asystole, provider must be easily accessible).
 4. Change transthoracic wires dressing daily after first surgical dressing has been removed, ensure all connections are secure.
 5. Change transvenous pacing catheter introducer dressing according to Central Venous Catheter: Care, Maintenance, Troubleshooting and Removal Procedure.
 6. Notify provider and perform the following intervention as ordered, in case of emergency:
 - Non-capture: increase mA one mark at a time until capture is attained and notify provider
 - Non-sensing: increase the sensitivity by lowering the number, (e.g., decrease the mV)
 - Non-pacing: decrease the sensitivity by increasing the number, (e.g., increase the mV)

SAFETY:

- 7. Wear gloves when handling the pacemaker wires/catheter.
- 8. Cover pacemaker generator (if attached to the patient) with a clear plastic bag or holder on transport.
- 9. Cap and isolate pacemaker wires by covering exposed ends of transthoracic pacemaker wires with insulated material, (e.g., tip of non-powdered rubber gloves), when not in use (**do not** allow positive and negative wires to touch).
- 10. Ensure the pacemaker setting on the bedside monitor is turned on.

**PATIENT/
CAREGIVER
EDUCATION:**

- 11. Instruct on the following:
 - Purpose of pacemaker
 - Insertion procedure
 - Need for frequent monitoring
 - Signs/symptoms of adverse effects, e.g, dizziness, hiccups
 - Importance of not touching the pacemaker generator or wires

**REPORTABLE
CONDITIONS:**

- 12. Notify the provider for the following:
 - Non-capture
 - Non-sensing
 - Non-pacing
 - Pacemaker wire / catheter problems
 - Pacemaker generator not functioning properly
 - Signs of decreased CO
 - Abnormal vital signs or electrolytes
 - Uncontrolled pain
 - Ectopy
 - Hiccups
 - Infection
 - Absent pulses

**ADDITIONAL
PROTOCOLS:**

- 13. Implement the following as indicated:
 - Central Venous Catheter
 - Pain Management
 - Restraints

DOCUMENTATION:

- 14. Document in accordance with documentation standards:
 - In iView on Systems Assessment Navigator Band

Initial date approved: 11/94	Reviewed and approved by: Critical Care Committee Professional Practice Committee Nurse Executive Council Attending Staff Association Executive Committee	Revision Date: 10/00, 03/05, 12/13, 08/17, 09/22
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References:

Spotts, V., *Temporary Transvenous and Epicardial Pacing*. AACN Procedure Manual for High Acuity, Progressive, and Critical Care. 7th Edition. Debra L. Wiegand. Elsevier. (2017)