**Subject:** Insertion Of A Transvenous Pacemaker, Nursing Assistance Of

**Policy:** Insertion of a transvenous pacemaker will be performed by Medical Doctor with appropriate credentials with nurse assistance.

**Definition:** Insertion of a Transvenous Pacing Catheter into the right ventricle for short-term treatment of unstable conduction and other rhythm disorders of the heart.

**Purpose:** To stabilize a patient by means of electrical stimulus to the heart, a transvenous catheter electrode, to correct varying degrees of A-V block and/or in management of a number of tachyarrhythmia not associated with heart block.

**Additional Information:**
1. Notify supervisor. Check with a physician to see if radiologist has been notified, and if anesthesiologist is desired.
2. Notify family. Explain procedure to patient and family. Have permit for "Insertion of Temporary Transvenous Pacemaker" signed, if possible.
3. Ensure patency of IV. More than one IV line may be needed if patient is unstable, or multiple medications need to be infused.
4. If it is necessary to transfer patient, transfer should be done by bed or cart with portable monitor/defib/pacer, multifunction resuscitation pads, and portable O₂.
5. Monitor patient condition, vitals and rhythm. Administer medications as indicated by ACLS protocols, or by physician’s orders. Be prepared to defibrillate or apply temporary external pacemaker.
6. Prepare transvenous pacemaker by inserting a new 9 volt battery and checking pacer to assure proper function. See #7-E to determine proper function. Connect patient cable, insert + and - prongs into top of unit by squeezing the upper rear corners of pacer unit to disengage gripping mechanism, insert probes, release corners.
7. Control dials:
   A. Output/MA - regulates the amount of energy delivered to the distal electrode. It is reported in milliamperes (MA), and ranges from 0.1 to 20 ma.
   B. Rate control (beats per minute or BPM) allows adjustment of the pacing rate from 30 to 180 BPM.
   C. Sensitivity/MV or asynchronous/demand. The fixed rate or asynchronous mode disregards electrical impulses and fires continuously at a predetermined rate (per rate control dial). The demand, or synchronous, mode fires only after awaiting a signal through the electrode. If no signal is received the pacers will fire at predetermined rate. The sensitivity range in demand pacing allows adjustment of the amplitude level of R-wave signals required to suppress the pulse generator output. Each range is marked with a millivolt value - from 1.5 to 20 mv. A 3 mv setting is adequate for most patients.
   D. On-off switch. Unit is turned on by sliding switch to left. A safety lock feature prevents unit from being shut off accidentally. To shut pacer off, push on black button and slide on/off switch to the right.
   E. Sense/Pace - Each time an R-wave is sensed the dial moves to the "sense" position or a light flashes depending on the model. Each time the pacemaker fires, the dial moves to the "pace" position or a light flashes.
F. Always disconnect generator before defibrillation.

The battery can be checked in older 5880A model by observing the amount of deflection on dial, or on newer 5375 model by depressing battery check button. Both the sense and pace lights flash simultaneously indicating battery voltage is sufficient. Use a 9 volt alkaline battery.

**Equipment List:**

Note: If a side port is desired on the introducer, the 8.5 Fr. Arrow introducer kit must be used. It should be noted there may be some leakage or movement of the catheter with this system. If no side port is necessary the physician should use the 7.0 Fr. Sorenson Introducer for the 7 Fr. Pacing Catheter and the 6.0 Fr. Sorenson Introducer for the 5 Fr. Pacing Catheter.

1. Pacemaker tray
2. Pacemaker
3. Portable O₂ tank and nasal cannula or mask per Physician order
4. CPR crash cart and monitor
5. Nurses notes for documentation
6. Portable BP cuff and stethoscope/NIBP
7. Portable IV poles, IV infusion pump as needed
8. Bedside table near physician
9. Gloves
10. 250 cc IV**NS or LR with tubing ** If side port desired
11. SpO₂ Monitor
12. Benzoine
13. Transparent dressing

**Content:**

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<th>Procedure Steps</th>
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<tr>
<td>1. Assemble equipment from pacer tray.</td>
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<td>2. Wash hands</td>
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<td>3. Assist physician in applying mask, sterile gown and gloves, as needed.</td>
<td>3. Universal precautions.</td>
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<td>4. Prep insertion site of choice with Chloraprep solution</td>
<td>4. Insertion site is usually subclavian or jugular. Prep may be done by a physician or nurse.</td>
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<td>5. Open sterile towels or drape for physician using sterile procedure.</td>
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<td>6. Assist physician as necessary with insertion of introducer. Continue to monitor patient condition.</td>
<td>6. Invasive procedure documentation requires vital signs 30 minutes before and within 30 minutes after procedure.</td>
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<td>7. Peel open Transvenous Pacing electrode package, keeping contents sterile</td>
<td>7. 5 or 7 French size available per physicians choice.</td>
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<td>8. Prepare external pacer unit. Set dials per physicians request, or:</td>
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<tr>
<td>a. Set output MA on 6.</td>
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<td>b. Turn rate (BPM) to 10 beats per minute above patient’s rate.</td>
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<tr>
<td>c. Turn sensitivity dial fully clockwise.</td>
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9. Continue to monitor patient during catheter insertion. Treat arrhythmias as needed.


11. Turn on pacemaker. Observe ECG monitor.

12. Adjust rate and MA appropriately for effective capture.

   a. Gradually decrease output/MA until 1:1 capture is lost.
   b. Gradually increase output until 1:1 capture is regained, this is the stimulation threshold.

   a. Turn rate to 10 beats/minute less than patients rate.
   b. Start sensitivity/MV or async/demand at full clockwise position. Slowly turn counter clockwise until pacemaker begins to fire. This is the sensitivity threshold. (Adequate threshold is in the 6 mV. range)

15. Set Rate/BPM at desired rate; set output at ms. of 3 to 5 increments above threshold. Sedate patient as ordered if pacing causes patient discomfort.

16. Assist physician with securing the electrode wire at the site by suturing or taping.

17. Skin surface to be clean and dry. If patient diaphoretic, apply Benzoine and allow to dry. Apply Tegaderm transparent dressing over site, or physician preference of dressing.

18. Mark dressing with date and your initials, label "pacing wire".

19. Secure pacer with leg strap and keep near wire insertion site so no tension is placed on wires.

20. Facilitate physician's order for chest X-ray post insertion to validate position of pacing electrode.

21. A. Check threshold profile daily, verify that pacemaker system is functioning properly and document.
   B. Monitor MA setting; insufficient MA may result in loss of capture and dangerously slow rhythms; excessive MA may result in irritability and lead to ventricular dysrhythmias.


9. Ventricular arrhythmias may develop due to irritation of the myocardium with the pacing catheter.

12. Capture is indicated by a ventricular response after each pacemaker impulse.

14. b. The sense/pacer indicator will deflect to the pace zone as it begins not to sense the R-waves. A low sensitivity Threshold is indication for repositioning.

15. P- or T-wave sensing may require sensitivity to be decreased.

16. This prevents dislodgement of the electrode catheter.

17. Variety of sizes of Tegaderm available from Central Sterile Supply (CSS).
23. Change site dressing Monday, Thursday and PRN
   Check site for any signs of infection and document.
23. A thoroughly dry dressing provides a protective measure against infection.
24. Wash hands.
25. Chart procedure to include: all vital signs, patient tolerance and condition, location of introducer and size, size of pacing catheter, MA, Rate, sensitivity, threshold profile, and presence of capture.
25. Document last 5 items in #25 every 4 hours and PRN.
26. Pacemaker tray to be restocked after each use and checked for completeness every month.
27. Chart procedure on CSS Procedure and Supply Form Intensive Care Section by marking Pacemaker Insertion and Pacemaker Rental.
28. Send the Pacemaker Information sheet to the Business Office. The form must be submitted with any claims for Cardiac Pacemaker Procedures. Complete the following sections:
   1) Patient name
   2) Procedure date
   3) Present date
   4) Date of admission
   5) Medical Record Number
   6) Physician ordering Implant/Explant (Name)
   7) Operating Physician (Name)
   8) Manufacturers Identification Number:
      circle 013 Medtronic
   9) Pacemaker Information Explants
      #7) MFG. ID# = 013
      Model Name or # = 6700-125
      Serial # J85-033986
      Date

   Originated by: Care of Patient
   Effective date: December 1988
   Authorized by: Prof. Prac. 8/10
   Authorized by: ________________________________
   Nurse Executive
   Date
   Review date: November 2000
   Revision date: 3/95, 11/97, 3/2001, 3/08, 8/10
   Distribution: ICU, ED, OR, PACU, Radiology

Reference: Springhouse