

Section: Division of Nursing

PROCEDURE

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HACKETTSTOWN REGIONAL MEDICAL CENTER

PACU/OR

(Scope)

TITLE: TRANSCUTANEOUS (EXTERNAL) PACING

PURPOSE: To outline the nursing role in temporary transcutaneous pacing.

SUPPORTIVE DATA:

- Used to stimulate myocardial depolarization through the chest wall. External pacing is initiated as a temporary measure when there has been a failure of the normal conduction system of the heart to produce an electric impulse resulting in hemodynamic compromise or other debilitating symptoms in the patient.
- Should not be used for more than 24 hours. If patient still needs the external pacemaker a transvenous should be considered.
- RN with ACLS training can initiate external pacing. After initiating treatment physician must be contacted.
- Indications for transcutaneous pacing include the following:
 - Symptomatic bradycardia
 - Temporary bridge in presence of long term pacemaker failure
 - Before placement of temporary transvenous pacemaker
 - Symptomatic Type II second degree heart block or 3rd degree heart block
- Emergent over drive suppression or documentation of supraventricular and ventricular tachy dysrhythmias before placement of temporary transvenous pacemaker

EQUIPMENT

LIST:

1. External pacing generator and monitor unit
2. Pacing cable and pacing patches. (quik-combo pads)
3. ECG electrode patches
4. ECG monitor and cable
5. Scissors/clip to remove body hair
6. Emergency medications and resuscitation equipment

CONTENT:

PROCEDURE STEPS:

KEY POINTS:

- | | |
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| 1. Wash hands per hospital policy. | Reduces transmission of microorganisms; standard precautions. |
| 2. Turn on pulse generator and monitor. | Ensures that equipment is functional. Many devices work on battery or alternating current (AC) power. |
| 3. Prepare the skin on the chest and back by washing with soap and water and trimming body hair with scissors/clippers, if necessary and time permits. | Removal of skin oils, lotion and moisture will improve patch adherence and maximize delivery of pacing energy through the chest wall. Optional step in an emergency. Skin preparation is an |

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- important consideration if high levels of energy are required for capture. Avoid use of flammable liquids to prepare skin (alcohol, benzoin) because of increased potential for burns. Avoid shaving chest hair because the presence of nicks in the skin under the pacing patches greatly increases patient discomfort.
4. Apply ECG electrodes of conventional three-lead, single channel monitoring system. Connect ECG cable to monitor inlet of pulse generator. Checks intrinsic rhythm and pacer sensing function. Attachment of the ECG cable is optional in an emergency if asynchronous pacing is initiated (i.e., asystole).
 5. Adjust ECG lead and size to maximum R wave size. Detection of intrinsic rhythm is necessary for proper demand pacing. Lead II usually provides the most prominent R wave. (This step is unnecessary with asystole or asynchronous pacing).
 6. Apply the back (posterior, +) pacing electrode between the spine and left scapula at the level of the heart. Placement of pacing patches in the recommended anatomic location will enhance the potential for successful pacing. Avoid placement over bone, because this increases the levels of energy required to pace, causing greater discomfort and the possibility of noncapture.
 7. Apply the front (anterior, -) pacing electrode at the left, fourth intercostal space, midclavicular line. Placement of the pacing patches in the recommended anatomic location will enhance the potential for successful pacing. Adjust position of electrode below and lateral to breast tissue to ensure optimal patch adherence. Avoid placement of electrodes over permanently placed devices such as implantable cardioverter defibrillators (ICDs) or permanent pacemakers.
 8. When the patient is too unstable to allow posterior placement, the back electrode may be placed over the patient's right sternal area at the second or third intercostal space. The front electrode will be maintained at the apex (fourth or fifth

- intercostal space, midclavicular line; i.e., standard anterior-anterior defibrillation paddle placement).
9. Connect pacing electrodes to cable and connect to external pulse generator. Necessary for the delivery of electric energy.
10. Consider administering sedation before initiating pacing. Transcutaneous pacing can be uncomfortable for the patient. Evaluate the patient's hemodynamic status before administering sedation because of the potential for hypotension.
11. Set pacemaker settings as prescribed by the physician, including rate and mode. Each patient may require different pacemaker settings to provide safe and effective external pacing. Pacing should be maintained at a rate that maintains adequate cardiac output but does not induce ischemia. Attempt to use the lowest level of energy necessary to pace consistently. The average adult can usually be paced with a current of 40 to 70 mA². Use demand mode if available and nondemand mode only in the absence of an intrinsic rhythm.
12. Set rate higher than patient's rate while assessing the threshold. Return rate back to rate requested in the physician order.
13. Initiate pacing by slowly increasing the energy level (mA) delivered until consistent capture occurs at the prescribed rate. This is the threshold. Use the lowest amount of energy that consistently results in myocardial capture and contraction to minimize discomfort. Follow the manufacturer's specific recommendations for setting the energy level (mA) above threshold to maintain assurance of consistent capture and to maximize patient comfort.
14. Monitor ECG tracing pacer artifact and associated capture or sensing. Ensures adequate functioning of the pacer. It is possible to see pacer artifact without consistent myocardial depolarization. Reevaluate threshold and increase energy levels as appropriate. Evaluate the ability of the pacer to recognize or sense an early native QRS complex.
15. Palpate patient's carotid or femoral pulse. Ensures adequate blood flow with complexes. It is possible to have electrical activity without associated mechanical contraction.

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16. Evaluate patient comfort.

Pacing may be tolerated or uncomfortable for the patient. Adjustments in threshold or change in pacer patch location, medication for sedation may be required.

16. Discard used supplies and wash hands in accordance with hospital policy.

Reduces transmission of microorganisms; standard precautions.

Documentation:

- In nurses notes document date and time of procedure initiated, description of events prior to use transcutaneous pacemaker.
- Vital signs and assessment before and after procedure , then per unit protocol.
- ECG before and after procedure.
- Patient tolerance to procedure and comfort level.
- Medication administered during and after procedure.
- Pacing rate, threshold level, MA, mode of pacing, percentage of time paced is frequently monitored and documented at a minimum of every 4 hours while the patient is on the external pacemaker.
- If in demand/synchronized mode.

Reference: AACN Procedure Manual for Critical Care (2001), Mosby p. 271-277
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