

B-271 R -Respiratory Pacers

Purpose

Provide guidelines for home health nurses and other caregivers who care for respiratory pacer dependent clients.

Promote safety in management of high tech care in the home setting.

Promote self care in the home.

Applies To

Registered Nurses

Licensed Practical/Vocational Nurses

Guidelines

- Caregivers who are willing and able to help with client care needs are necessary for discharge to the home setting.
- Individual manufacturers of respiratory pacer equipment have handbooks for recommendations on safe use in the home.
- Prior to discharge the home care team including the home vendor and physician and associates participate in establishing the plan.
- All family and care giving staff must be familiar with respiratory pacer alarms and how to appropriately respond.
- The client/caregivers are instructed in how to use the manual resuscitation bag.
- A backup battery and electrical source should be available and local utility companies notified of the client home needs.

Equipment/Supplies

- Respiratory pacer transmitter and back up, antennas and back up antennas and batteries, apnea monitor and pulse oximetry.
- Materials to secure transmitter and/or pacing wires (adhesive hypoallergenic tape, tincture of benzoin, gauze and clear Tegaderm type dressings).
- Ventilator, BiPAP machine and/or oxygen as ordered.
- Back up batteries for transmitter.
- Ambu bag and mask.
- Disinfectant (as defined in infection control guidelines and policy).

Procedure

Assessments to be performed at start of care and at regular intervals during client care:

1. Clinical assessment to include observation of respiratory effort, color, secretions (amount color and odor), vital signs, signs and symptoms of infection or distress.
2. Apply tincture of benzoin to skin around receiver until dry and secure antennas over center of receivers with tape/Tegaderm type dressing and then attach to transmitter. Or, remove pacing wires from dressing and attach to transmitter. Clean sites around pacing wires with alcohol and apply gauze.
3. Turn transmitter on and assess baseline oximeter (SPO₂ and CO₂ as indicated). Use client's plan of care verified by MD to adjust settings.
4. Adjust alarm settings. Set high and low for ETCO₂, SPO₂ and Pulse (if applicable).
5. Monitor client every 15-20 minutes and prn. f monitoring when asleep or awake, follow client's plan of care to adjust settings, readings (client's responses), alarm adjustments, repositioning of client and or equipment and accessory breathing apparatus if present.
6. Assess ventilator/BiPAP and adjust settings per plan of care for breathing pacer and effectiveness of plan of care.
7. Perform a safety check on all equipment:
 - a. Is battery charged and functioning? Use battery tester. Is amplitude set per MD orders? Are antennas properly centered? Change as needed.
 - b. Evaluate whether Ventilator or BiPAP set correctly.
 - c. Call customer service per device instruction manual to report or discuss any equipment problems or failures and notify case manager or RN on call as applicable.
 - d. Assess alarm settings. Assess other machine settings, oxygen settings, and oxygen source.
8. Information must be present in the home that includes troubleshooting guidelines, emergency phone numbers, and guidelines for emergency intervention.
9. Back-up systems are in place in case of mechanical or electrical failure.
10. Caregivers should be trained in cardiopulmonary resuscitation (CPR).

Documentation Guidelines

Document in clinical record as determined by agency flow sheet and in narrative for exceptions for each individual client needs determined on admission and updated as needed by agency or MD order:

- a. Respiratory pacemaker status with settings, readings and client response.

- b. Ventilator/BiPAP/O₂ settings or any changes made. Note pressures and pressure limit settings.
- c. Assessment findings of cardiopulmonary assessment.
- d. Any teaching done with family or client.
- e. Any procedures performed such as oximetry (SPO₂), ETCO₂ readings, blood draws, repositioning or suctioning.
- f. Care coordination activities including contact with physician and/or other members of health care team.
- g. Any other pertinent findings or concerns.

Warnings, Precautions and Adverse Side Effects

- Diaphragm pacers may interfere with demand type cardiac pacers.
- Use an apnea alarm (apnea alarm may be set on client's ventilator if applicable).
- Do not manipulate metal pins in the connector and allow it to lie flat against the skin.
- Keep extra cables near.
- Antennas should be checked frequently for wear and tear, green discoloration indicative of conductor corrosion and be replaced every six months.
- Sedation of any kind should not be used with central sleep apnea.
- Label right and left phrenic nerve transmitters accordingly as the amplitude and threshold may be different for each side.
- Physician airway instructions must be followed for proper pacing.
- Protect the transmitter from impact and moisture. If it gets wet, turn it off and remove the battery, place client back on previous ventilator settings if applicable and return to manufacturer customer service division.
- Respiratory infection or changes in medical condition can alter responses to diaphragmatic/respiratory pacing.
- Exposure to powerful transmitters in the 2MHz range (Radio navigation, Amateur, Maritime Mobile or fixed and mobile systems for aircraft) can interfere with signal. Contact customer service if this problem is suspected.
- Learn to swallow between inspirations to avoid aspiration during eating.
- Do not use pacer at 50 millisecond pulse interval (usual factory setting) greater than 12 hours per day in order to prevent muscle fatigue.
- Skin irritation at antenna sites may occur if regular washing of the skin and antenna with soap and H₂O is not done.
- Use care in changing batteries to avoid breaking the fragile connector or wires.
- Internal controls should be adjusted by the physician only.

- Toxic reaction or infection of implants may necessitate removal of device.
- Defibrillators may damage the implanted device.
- An unmonitored sudden failure to pace may result in severe hypoventilation and or respiratory arrest.
- Magnetic resonance imaging (MRI), shock-wave lithotrypsers, and diathermy ultrasonic of radio-frequency are contraindicated.

Related Procedures

The following therapies, procedures and equipment may be used in conjunction with respiratory pacers: Oxygen Therapy, Pulse Oximetry, Suctioning, BiPAP or Ventilator Management.

Policy History

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