PROCEDURE:

The EZPAP positive airway pressure system is used to expand the lung by increasing Functional Residual Capacity (FRC). Increasing FRC contributes to the prevention and reversal of atelectasis.

DEFINITION/DESCRIPTION:

EZPAP is a positive expiratory pressure system that delivers continuous positive pressure throughout the breath using flow from an air or oxygen flow meter. It is an air amplifier that uses the coanda effect. This device is used for prevention and treatment of atelectasis.

Settings:
1. Critical Care Units
2. Inpatient floor areas

Indications:
1. To prevent atelectasis
2. To reverse atelectasis
3. To optimize delivery of bronchodilators.
4. To aid in the mobilization of secretions secondary to lung expansion

Contraindications:
1. Inability to tolerate increased work of breathing
2. Intracranial pressure > 20 mg Hg
3. Recent facial, oral, or skull surgery or trauma.
4. Esophageal surgery
5. Untreated pneumothorax
6. Known or suspected tympanic membrane rupture or other middle ear pathology
7. Hemodynamic instability
8. Acute sinusitis
9. Epistaxis
10. Bullae/Bolus Emphysema
11. Active hemoptysis
12. Nausea

Hazards/Complications:
1. Increased work of breathing that may lead to hypoventilation and hypercarbia.
2. Increased intracranial pressure.
3. Cardiovascular compromise.
4. Decreased venous return.
5. Air swallowing with increased likelihood of vomiting and aspiration.
6. Claustrophobia; skin breakdown, and discomfort from mask.
7. Pulmonary barotrauma.
Limitations to Method:
• EZPAP therapy requires a spontaneously breathing patient
• EZPAP therapy is equipment-intensive

Assessment of Need:
The following should be assessed together to establish a need for EZPAP therapy
• Abnormal chest x-ray consistent with atelectasis
• Deterioration in arterial blood gas values or oxygen saturation
• Post operative patient not responding to Incentive Spirometry alone.
• History of pulmonary problems treated successfully with EZPAP
• Decreased Breath Sounds

Assessment of Outcome:
• Change in chest radiograph
• Change in breath sounds
• Change in arterial blood gas values or oxygen saturation
• Change in vital signs
• Patient subjective response to therapy

Resources:
Equipment:
• EZPAP device (manometer)
• Mask or mouthpiece
• Proper PPE
• Gas Source
• Flowmeter x 2

Personnel:
EZPAP must be ordered by a physician and administered by a licensed Respiratory Care Professional (RCP).

Monitoring:
Items from the following list should be chosen as is appropriate for monitoring a specific patient's response to EZPAP:
• Patient subjective response—pain, discomfort, dyspnea, response to therapy
• Pulse rate and EKG if available
• Breathing pattern and rate, chest expansion and movement
• Mental function
• Skin Color
• Breath sounds
• Blood Pressure
• Pulse Oximetry
• ICP in patient for whom ICP is of critical importance
Frequency:

Critical care: Every 3-6 hours as tolerated. Should be re-evaluated at least every 24 hours based on assessment made during and following each therapy session.

Inpatient floor areas: TID. Will be evaluated every 24 hours per the Respiratory department, based on assessment made during and following each therapy session. Therapy will be discontinued when the following goal is met:
- Patient is ambulatory
- Patient is able to achieve > 10 ml/kg with Incentive Spirometer
- Increased aeration throughout lung fields
- Adequate cough effort
- Patient able to achieve 10-20 cmH2O with < 5 liters of flow

RCP will DOCUMENT discontinuation with a note in the patient's chart showing that goal has been met and/or notify physician.

Infection Control Issues:

1. Observe Universal precautions as appropriate.
2. Follow guidelines for the prevention of transmission of tuberculosis in health care settings.
3. Observe all infection control guidelines posted for a specific patient

Special Factors:

1. EZPAP may be used with a jet nebulizer.
2. EZPAP may be safely and effectively administered via a tracheotomy tube using appropriate tracheal adapter. Care should be given to insure the tracheal airway is free of secretions.

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