

Face Mask CPAP

Purpose:

To describe the procedure for providing constant positive airway pressure (CPAP) to the lung without endotracheal intubation.

Description:

CPAP is applied to the patient with a tightly fitted face mask, sealing the mouth and nose. The patient breathes from a pressurized circuit with a gas flow high enough to maintain the desired positive airway pressure. The constant positive pressure is produced by a CPAP valve attached to the end of the circuit or outlet port of the mask.

Indications:

1. To prevent or reverse atelectasis, thus improving oxygenation.
2. To reduce the work of breathing in asthma and COPD by reducing the inspiratory threshold of auto PEEP created by air trapping.

Contraindications/Hazards/Complications:

Relative Contraindications

1. Increased intracranial pressure.
2. Hemodynamic instability.
3. Recent facial, oral, or skull surgery or trauma.
4. Acute sinusitis.
5. Nose bleed.
6. Esophageal surgery.
7. Active hemoptysis.
8. Nausea.
9. Tympanic membrane rupture or other middle ear pathology.
10. Untreated pneumothorax.

Hazards and Complications

1. Increased work of breathing.
2. Increased intracranial pressure.
3. Cardiovascular compromise.
4. Gastric insufflation (NG tube may help relieve gastric pressure).
5. Claustrophobia.
6. Skin break down, necrosis.
7. Eye irritation from flow through leaky mask.

Equipment:

1. Down's high flow generator or similar high flow setup with adjustable FiO₂, capable of meeting patients inspiratory flow demands and maintaining airway pressure.
2. Corrugated tubing.
3. CPAP face mask.
4. Headstrap.
5. CPAP valve.
6. Airway pressure manometer.
7. FiO₂ analyzer.

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Personnel:

Respiratory Care Practitioners; Respiratory Therapy Technicians I and II, Respiratory Therapists I and II.

Procedure:

Down's high flow generator

1. Verify order to include CPAP level and FiO₂ and explain the procedure to the patient.
2. Identify patient by comparing hospital and billing numbers on the armband to those on the physicians' orders for therapy.
3. Connect Down's flowmeter to oxygen source. Place filter or air entrainment port.
4. Attach one end of corrugated tubing to output of Down's flowmeter and other end to CPAP mask.
5. Attach prescribed CPAP valve to expiratory port of CPAP mask.
6. Rotate "On/Off" knob on top of Down's flowmeter clockwise to turn on flow. (Adjust to meet patient's demands and to keep CPAP level constant throughout respiratory cycle.)
7. With an oxygen analyzer in line, rotate the FiO₂ knob on front of the Down's flowmeter to deliver the prescribed FiO₂. Depending on flow conditions, delivered FiO₂ of 30% to 100% may be delivered. (The flow may need to be readjusted after making FiO₂ changes).
8. Place the face mask on the patient, covering the nose and mouth, and attach with the head gear tightly enough to make a firm seal. If an NG tube is used, assure seal around it.
9. Attach an airway pressure monitor to one of the ports on the CPAP mask. Assure prescribed pressure level is being maintained and set low and high pressure alarms at + or - 5 cmH₂O.
10. Assess the patient for comfort and toleration of the CPAP mask. Follow up assessment by the RCP shall be done at least Q4 hours and with any change in prescribed CPAP level. Notify the physician if assessment reveals skin break down or necrosis or other complications from the mask.
11. Age appropriate considerations include assessing appropriate mask size for the patient.

Infection Control:

1. Standard universal precautions shall be observed at all times.
2. Single patient use masks and circuits shall be disposed of after use.
3. Monitors and Down's high flow generator shall be aseptically cleaned between patient use.

References:

1. AARC Clinical Practice Guidelines
2. Vital Signs, manufacturing guidelines

Written: May 1991
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December 1997
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