Indications

Ventilatory assistance for moderate to severe respiratory distress secondary to cardio-pulmonary disease; consider for those patients with high risk for respiratory failure.

1. Diseases with high risk:
   a. COPD
   b. Asthma/Reactive airways
   c. Near drowning
   d. CHF
   e. Pulmonary edema
   f. Pneumonia
2. Signs of high risk:
   a. SaO2 < 90% despite standard O2 and nebs.
   b. ETCO2 > 50 mmHg despite standard O2 and nebs.
   c. Accessory muscle use and retractions.
   d. Wheezes, rales, or rhonchi despite standard O2 and Nebs.
   e. Respiratory fatigue.

Precautions/Contraindications

1. Patient must have an adequate respiration rate. Do not use when patient has agonal respirations, is comatose or is in respiratory arrest.
2. Patient must understand what you want he/she to do when CPAP is applied. Altered mental status, dementia, and other mental disabilities are a relative contraindication.
3. The patient must be able to maintain a patent airway. Trouble with secretions, blood, and vomit or any airway distortions are contraindications. Upper GI bleed would be a contraindication. Not able to sit upright would be a contraindication.
4. CPAP is not to be used for respiratory distress caused by trauma. It is not to be used if pneumothorax is suspected whether spontaneous or traumatic.

5. Hypotension is a relative contraindication. CPAP may worsen hypotension since it increases intrathoracic pressure and thereby decreases cardiac output.
6. CPAP is not to be used in children < 12. But it can be used in teenagers such as those with severe asthma.

Technique

1. Determine whether patient would benefit and is eligible for CPAP.
2. Use all monitoring devices available: Cardiac monitor, SaO2, ETCO2, BP monitor.
3. Document breath sounds and that pneumothorax is not suspected.
4. Document BP is > 90 mmHg
5. Sit pt upright and explain what you are going to do and what you want the patient to do.
6. Put on head strap.
7. Hold delivery device to patient's mouth and nose and attach the straps loosely.
8. Gradually tighten the straps as patient tolerates the delivery device until there are no air leaks.
9. Gradually increase the pressure of O_2 delivery to a maximum of 10 cm H_2O.
10. Attach in line neb for albuterol/atrovent if that is part of the ongoing treatment.
11. Check delivery system, patient's mentation and lungs, vitals at least every five mins.

Notes

1. Patient may not tolerate CPAP despite your best coaching. If so, discontinue the device. Never use physical or chemical restraints to force a patient to accepatient CPAP.
2. If patient deteriorates despite CPAP, switch to assisted BVM and prepare for endotracheal intubation or King Tube placement.
3. Discontinue use if hypotension develops or a pneumothorax is suspected. CPAP may cause an existing pneumothorax to become a tension pneumothorax or it may cause a pneumothorax in a patient with brittle lung tissue that can progress to a tension pneumothorax.

4. Be vigilant about nausea. Vomiting into the CPAP mask creates a high risk for aspiration. CPAP can cause gastric distention that can induce vomiting.
5. In unusual circumstances, comatose patients with adequate respiratory rates can benefit from CPAP as an alternative to intubation. Monitor these patients very carefully to prevent aspiration.
6. Explaining the procedure to the patient:
    a. You are going to feel some pressure from the mask but this will help you breath easier.
    b. Place delivery device over mouth and nose.
    c. I want you to breath in through your nose slowly and exhale through your mouth as long as possible.
    d. I will count out loud to four to help you breath in slowly. Once I reach four then you can exhale through your mouth.