



Craig Schuttenberg EMT-P
BoundTree Account Manager

CPAP

Continuous

Positive

Airway

Pressure

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What is CPAP?

Continuous Positive Airway Pressure (CPAP) is a non-invasive method to provide respiratory support to certain patients. CPAP has been shown to rapidly improve vital signs, gas exchange, the work of breathing, decrease the sense of dyspnea, and decrease the need for endotracheal intubation in patients who suffer from shortness of breath from Congestive Heart Failure (CHF) and Acute Pulmonary Edema (APE).

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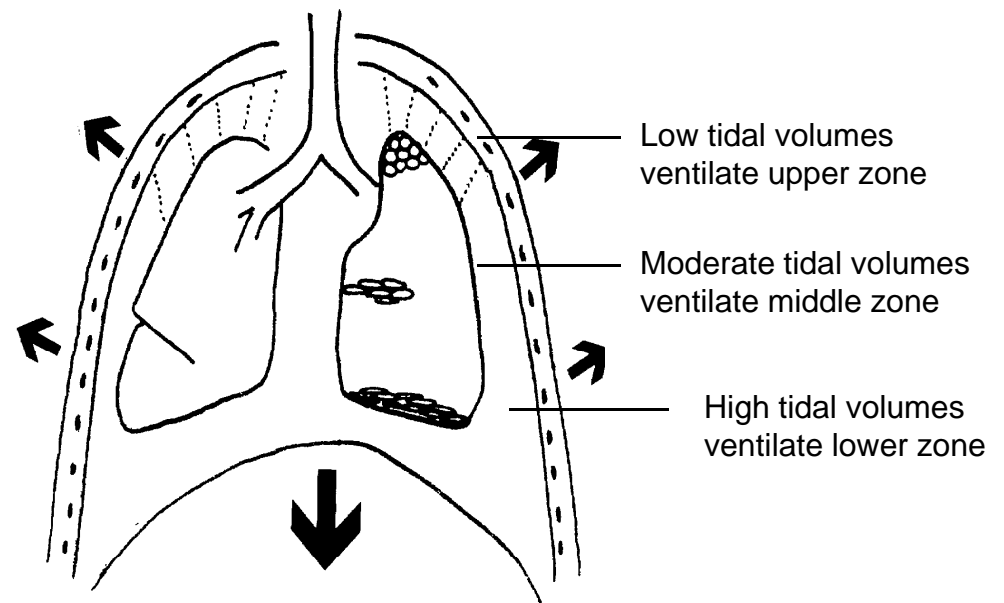
Key Points of CPAP

- CPAP has been successfully demonstrated as an effective adjunct in the management of Pulmonary Edema secondary to CHF
- CPAP allows/buys time for administered medications to be able to work

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Lung Inflation

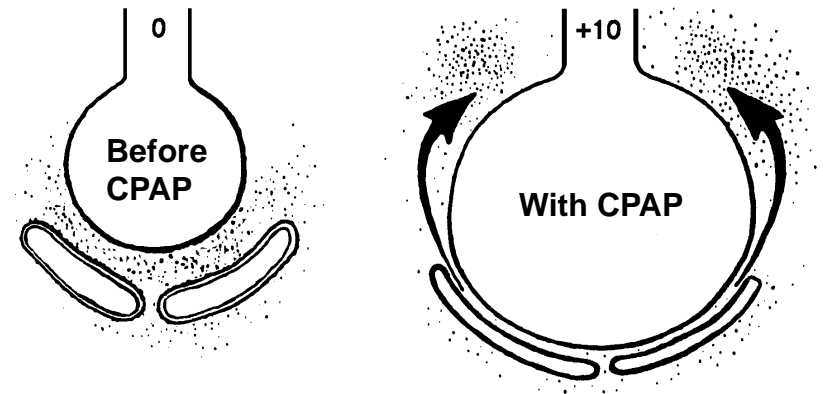
CPAP works by providing increased continuous gas pressures at the level of the *lower* airway structures, improving gas exchange in the alveoli



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CPAP Mechanism

- CPAP increases the airway pressures allowing for better gas diffusion & for re-expansion of collapsed alveoli
- CPAP allows the refilling of collapsed, airless alveoli
- CPAP expands the surface area of the collapsed alveoli allowing more surface area to be in contact with capillaries for gas exchange



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Goal of Therapy With CPAP

- Increase the amount of inspired oxygen
- Decrease the Work of Breathing (WOB)

In turn to:

- ❖ Decrease the need for intubation
- ❖ Decrease the hospital stay
- ❖ Decrease the mortality rate

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Contraindications

- O2-RESQ System
 - Pneumothorax
 - Decreased cardiac output and gastric distention
 - Severe facial injury (noninvasive use)
 - Respiratory Arrest
 - Hypotension secondary to Hypovolemia
- Always follow local established protocol

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The Requirements of CPAP

- The real requirement is for Continuous **CONSTANT** Positive Airway Pressure with **minimal** fluctuations in system pressure between inspiration and expiration
- The CONSTANT pressure will help reduce the patient WOB, which is important since it reduces the resistance to airflow that is present in lung disease

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O2-RESQ™ SYSTEM



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O2-RESQ SYSTEM

- Fixed Flow Generator with filter
- 72" Corrugated Anti-Asphyxia Circuit
- O2-CPAP™ Valve
- Mask & Head Strap
- Single Patient Use



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High Flow Generator

- O2-RESQ Generator is a fixed flow Venturi device that uses an oxygen supply in conjunction with entrained air to generate an output flow
 - Venturi tube ratio of approx. 10:1
 - Flow up to 140 Lpm and 30% FiO_2
- O2-RESQ Generator with DISS fitting hooks up to a 50psi Oxygen source
- Built in filter to protect device



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O2-CPAP Valve & Anti-Asphyxia Valve

- O2-CPAP Valves provide fixed pressure at any flow rate
 - Ensure that valve remains open during inspiration
- O2-CPAP Valves are attached onto the elbow of the circuit
- 5.0, 7.5 & 10.0cm H₂O are the most commonly used pressures
- O2-CPAP Valves can be easily changed to another pressure
 - 2.5, 5.0, 7.5, 10.0, 12.5, 15.0, 20.0cm H₂O
- Circuit has an Anti-Asphyxia valve which allows fresh air intake and prevents exhalation into the tubing in the event of no fresh gas flow



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O2-RESQ Accessories

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O2-RESQ CPAP Valves

- O2-CPAP Valves provide fixed pressure at any flow rate
- O2-CPAP Valves are attached onto the elbow of the circuit
- 5.0, 7.5 & 10.0cm H₂O are the most commonly used pressures
- O2-CPAP Valves can be easily changed to another pressure
 - Available pressures are:
 - 2.5, 5.0, 7.5, 10.0, 12.5, 15.0, 20.0cm H₂O



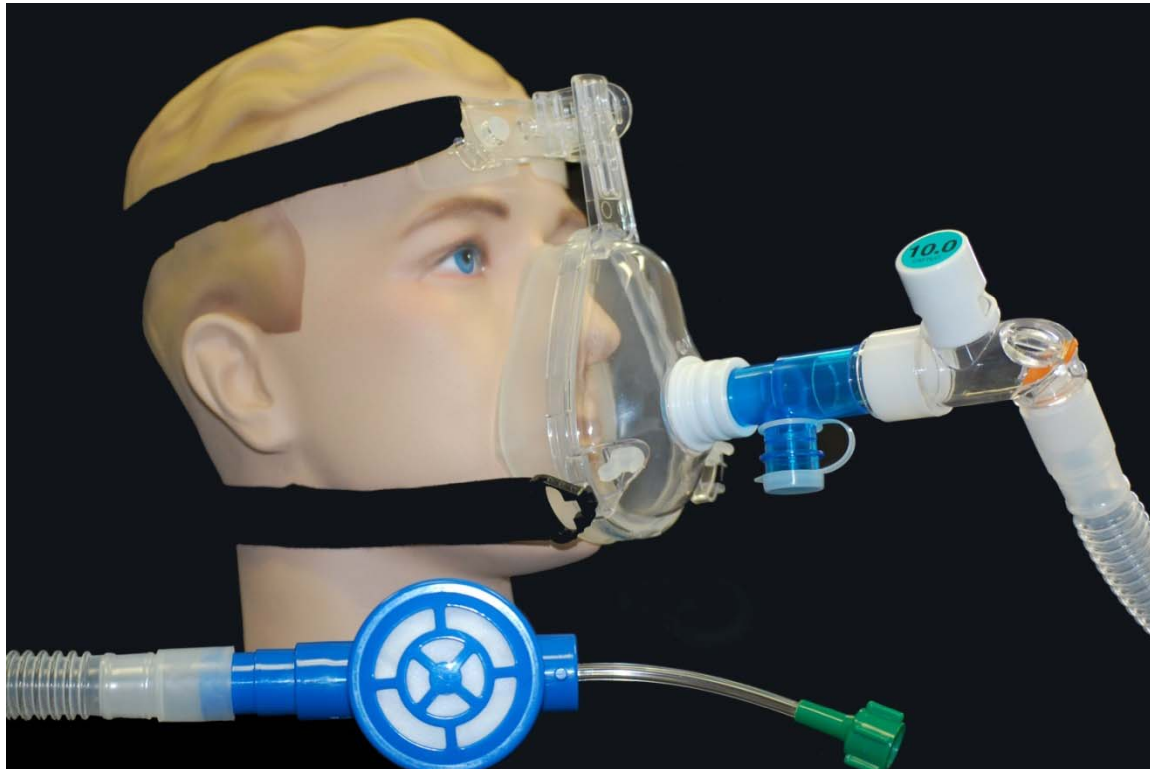
Always ensure that the valve remains open during inspiration

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Valved "T" Adapter

The Valved "T" is an optional accessory used to attach a nebulizer into the O2-RESQ



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O2-RESQ Filter

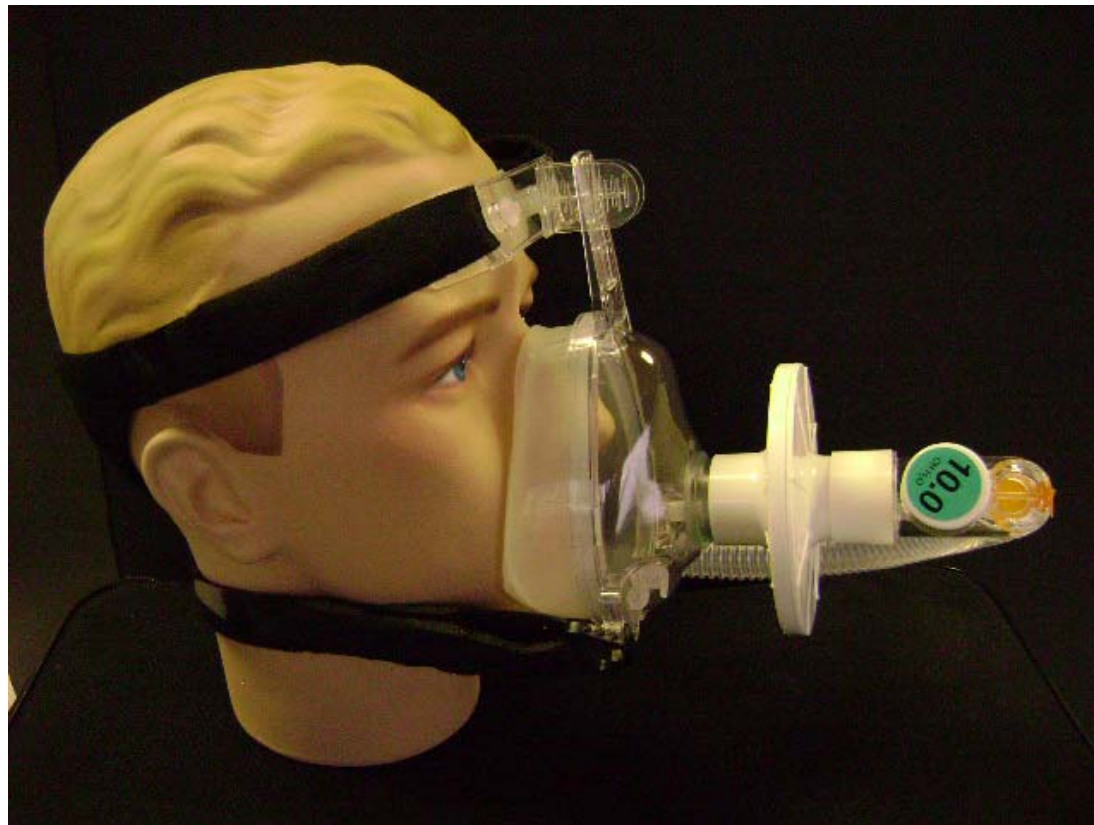
- The O2-RESQ Filter is an optional accessory that reduces the risk of medic infections by filtering exhaled air from patient
 - Bacterial/Viral
Efficiency 99.9999%
- Attach the Filter between the Circuit Elbow and the Mask



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O2-RESQ Filter Position



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O2-RESQ Oxygen Hook Up

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O2-RESQ Connection to a Regulator



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Note: Regulator must be set to “0”



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Typical Flow Meter Connection

-Set Flow to Flush-



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Setting up the O2-RESQ System

Step 1 - Connect Generator directly to a 50psi Oxygen source on a Flow Meter or to a DISS fitting on an O2 tank regulator

Step 2



Remove the mask from Inner bag and attach the circuit to the mask. Turn on oxygen. Hand mask to patient for them to place on their face to get used to the flow. Then proceed to put the Head Strap on the patient.

Step 3



For all mask styles, Flip Head Strap forward and place mask on the patient's face. If using the BiTrac ED Mask, pinch the OmniClip, *slide it up or down* to find the best position on patient's forehead.

Step 4



For all mask styles, Flip Head Strap back over the patient's head, bring tabs forward on the top Head Strap and adjust equally to proper fit. Fold straps back to attach. Next attach the bottom 2 clips and repeat above sequence.

Step 5



Finally if using the BiTrac ED Mask, adjust the OmniClip *in and out* on Head Strap and Mask for best fit: Do Not Over Tighten the Head Strap. Monitor the Patient.

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Coaching The Patient

- Success is highly dependent upon patients tolerance and medics ability to coach the patient
 - Explain the procedure to the patient
 - Anticipate and control anxiety
 - CPAP may produce anxiety in some patients
 - Verbally coach breathing as needed
 - Consider having the patient hold the mask in place for a minute or so to reduce anxiety. As an option, the medic may hold the mask in place if a good seal is obtained.
 - Attach Head Straps loosely at first and gradually tighten until air leaks are eliminated
- Continue to coach patient

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CPAP vs. Intubation

- CPAP
 - Non-invasive
 - Easily discontinued
 - Easily adjusted
 - Use by EMT-B
 - Does not require sedation
 - Comfortable
- Intubation
 - Invasive
 - Usually don't extubate in field
 - Potential for infection
 - Requires highly trained personnel
 - Requires Sedation
 - Traumatic

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