



# Advanced airways and oxygen therapy

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RAP-EMCC continued learning



## Key considerations

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Can this patient communicate?

Is this patient excluded?

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# Oxygen delivery

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# Nasal Cannula and High Flow Nasal Cannula

Traditional nasal cannulas are used to administer 2-6 liters of oxygen per minute to the patient through their nose. The patient should be able to speak comfortably and will not be in respiratory distress.

High flow nasal cannulas can deliver much higher flow rates of oxygen (up to 50-60 liters per minute) and they are temperature and humidity-controlled. Other physiological benefits: see HIFLOW acronym. Patients can talk and eat while on HFNC, if they are comfortable.

Nasal Cannula



**H: Heated & Humidified** - Provides heated and humidified gas

**I: Inspiratory Demands** - Can better meet elevated peak inspiratory flow demands

**F: Functional Residual Capacity** - Increases FRC likely via delivery of PEEP

**L: Lighter** - More easily tolerable than CPAP or BiPAP

**O: Oxygen Dilution** - Can minimize oxygen dilution by meeting flow demands

**W: Washout of dead space** - Provides high flow rates leading to wash out of pharyngeal dead space (CO<sub>2</sub> removal)

# Non-rebreather

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Non-rebreather masks deliver between 60 percent to 80 percent oxygen at a flow rate of about 10 to 15 liters/minute (L/min).

The patient is likely on this device because they are having difficulty breathing, and they may not be able to talk due to their distress.



# Tracheostomy mask

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Low-flow oxygen delivery. Low flow oxygen is blown by the stoma. The patient may or may not be able to communicate verbally, depending on their other medical needs.



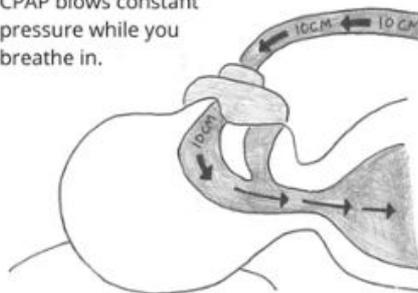
# CPAP/BiPAP

non-invasive high flow oxygen delivery.  
These patients are not able to talk.

## CPAP or APAP

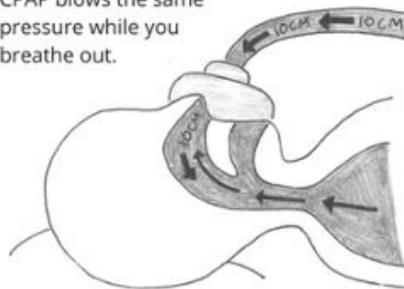
Inhalation (breathing in)

CPAP blows constant pressure while you breathe in.



Exhalation (breathing out)

CPAP blows the same pressure while you breathe out.

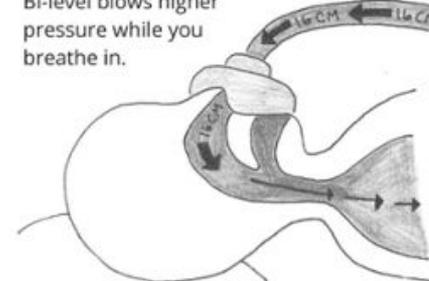


*An APAP may adjust the throughout the night, but it will always be a constant pressure whether you're breathing in or out.*

## Bi-Level PAP (BiPAP)

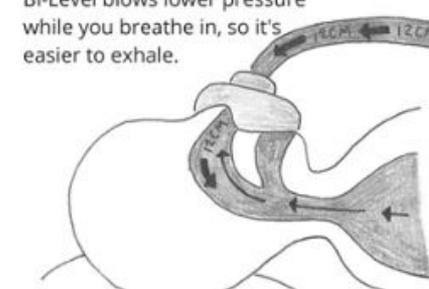
Inhalation (breathing in)

Bi-level blows higher pressure while you breathe in.



Exhalation (breathing out)

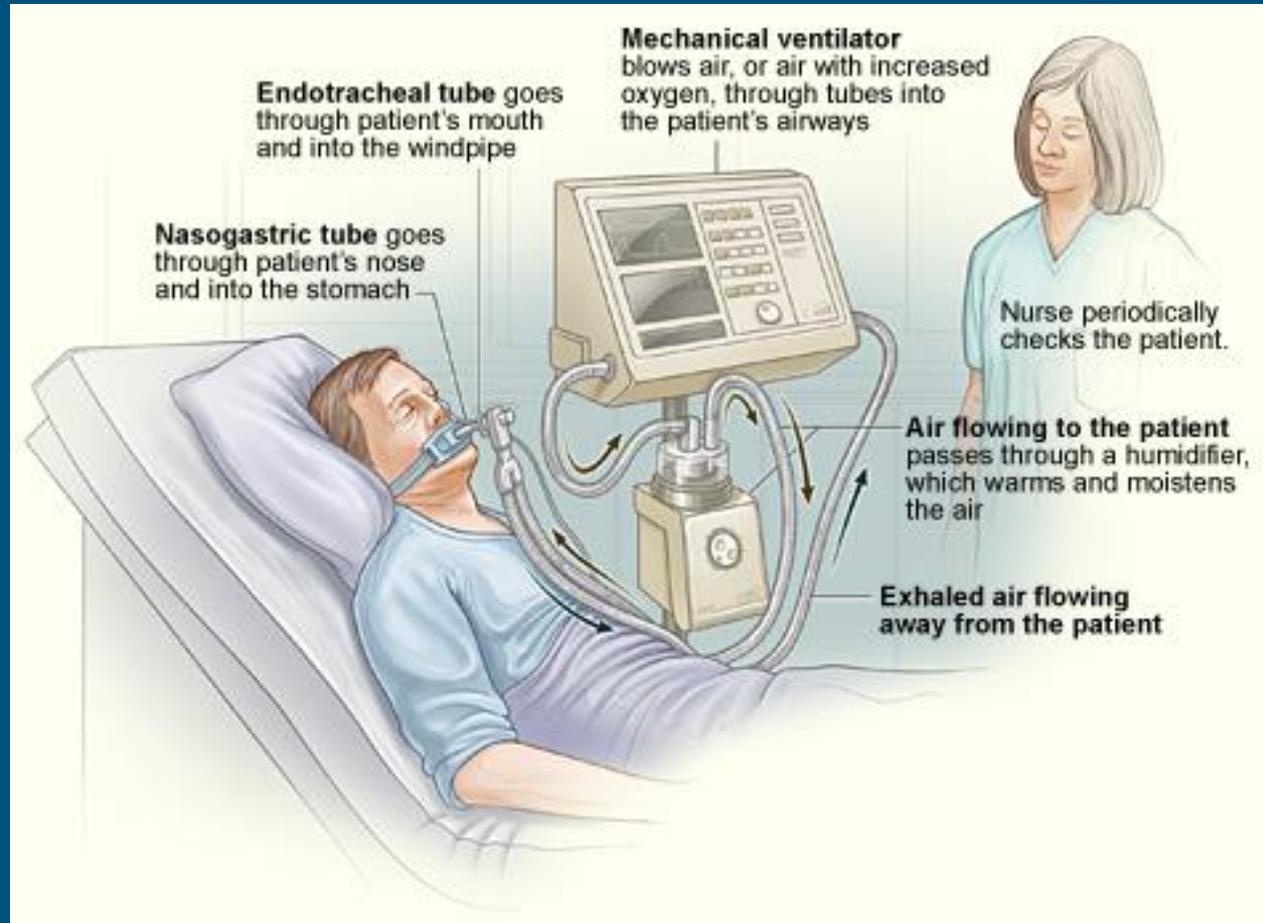
Bi-Level blows lower pressure while you breathe in, so it's easier to exhale.



*ASV is similar to Bi-Level PAP except that there is an additional backup pressure to support regular breathing.*

# Ventilator

Ventilators are a type of invasive oxygen therapy. Ventilators can be connected to an endotracheal tube or a tracheostomy tube. These patients will not be able to talk - they will be sedated and paralyzed.

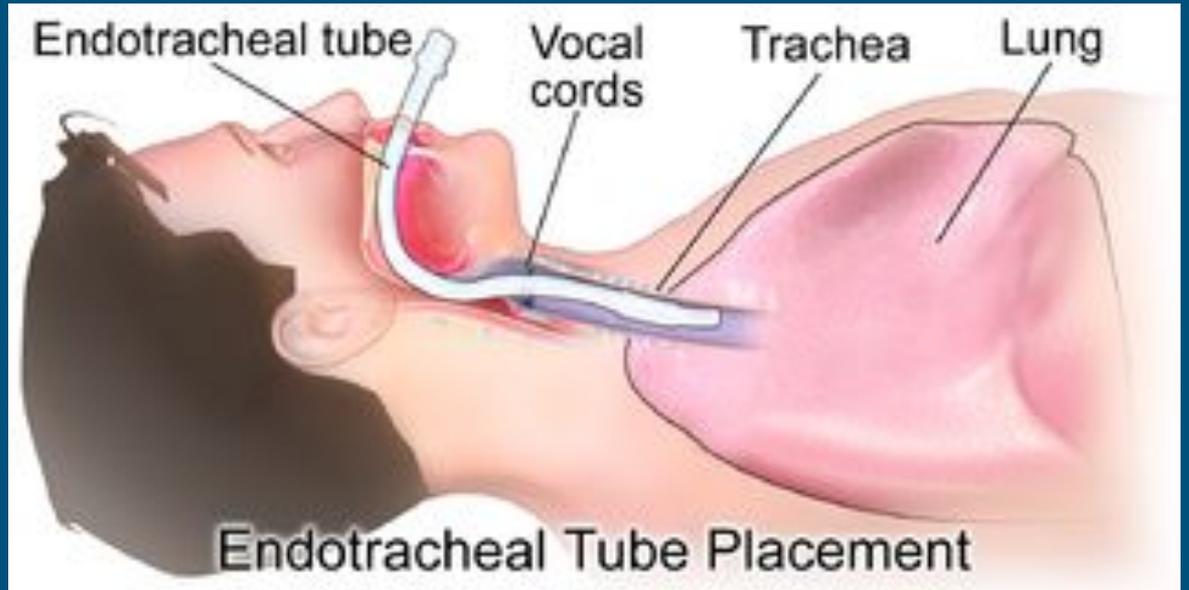


Tubes, circuits, equipment

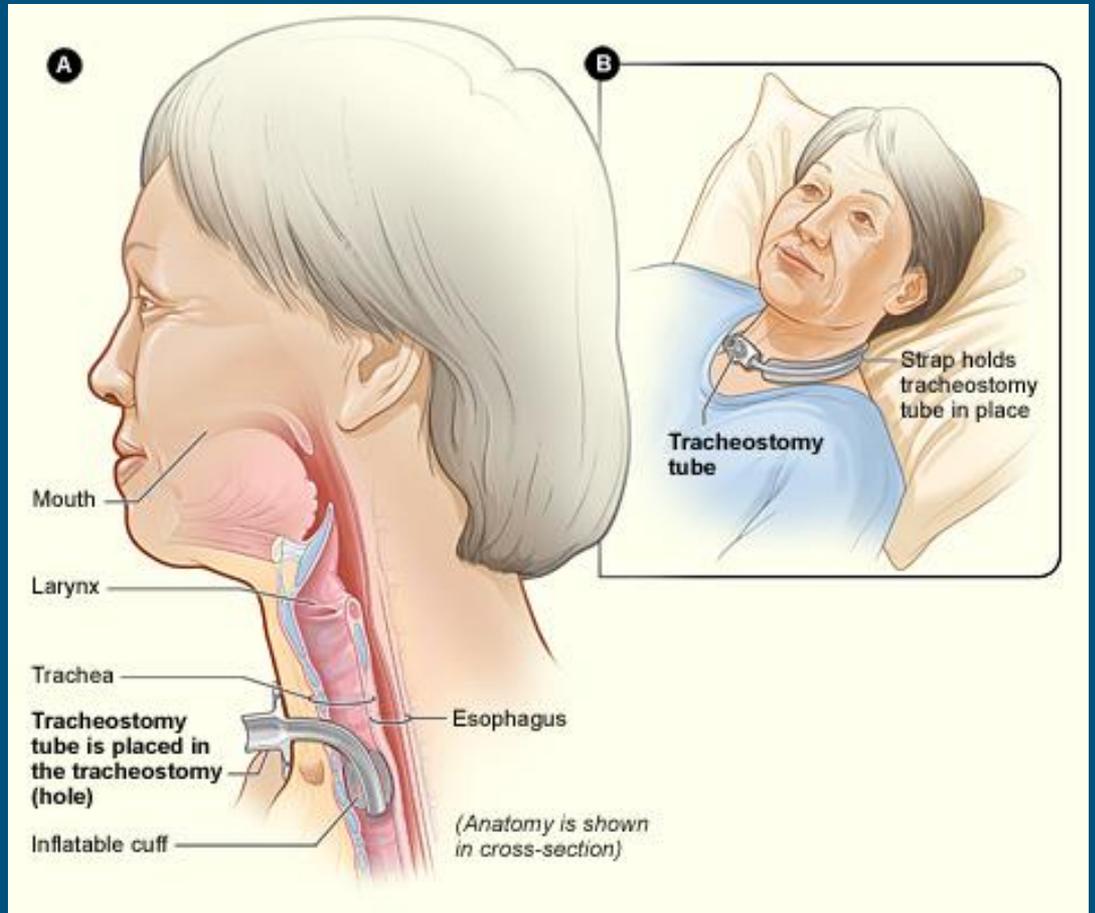
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# Endotracheal tube

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# Tracheostomy tube

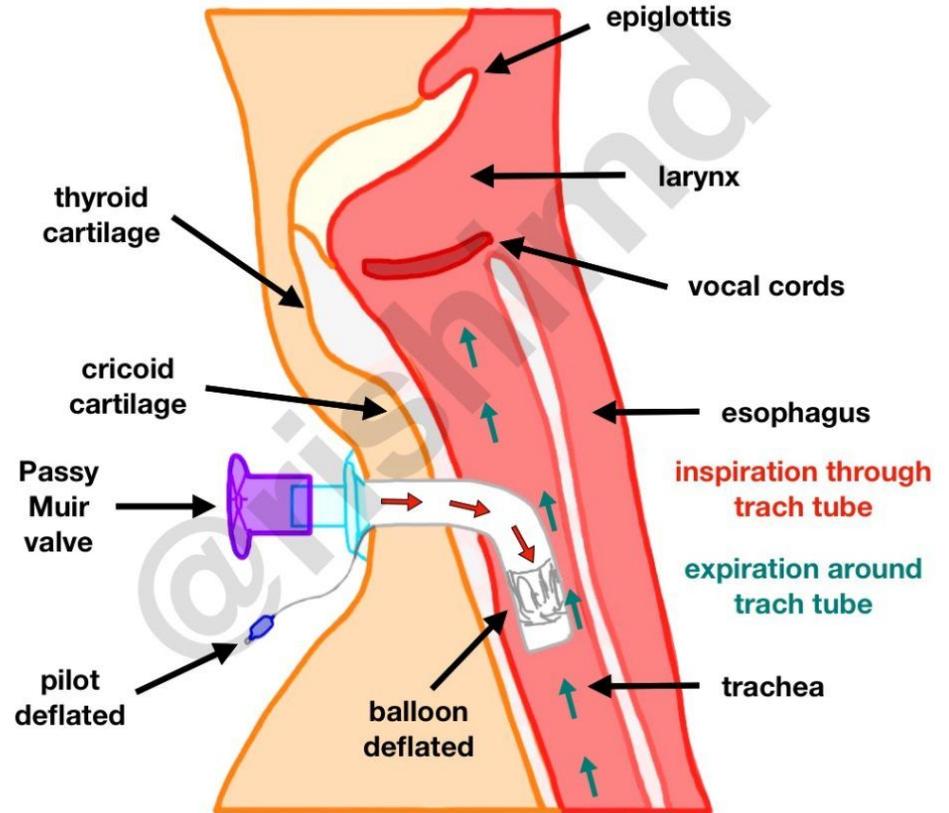


# PASSY MUIR VALVE

## Passy Muir Valve

The passy muir valve is a device that connects to the tracheostomy tube that allows the patient to speak by redirecting airflow through the vocal folds, mouth, and nose. Some patients can tolerate this adjunct for a few minutes, some for longer periods of time.

You may see a sign on the door to a patient's room that says "I can talk!" and it will have info stating that they use this type of valve, and it might say how long the patient can wear it without stress.



## HME connector for tracheostomy tube

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This is a heat moisture exchanger, and it allows the air entering the trachea to be humidified.



# In-line suction

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Patients often need to be suctioned for comfort and because they are unable to control their own secretions. In-line suction is attached to the end of the circuit, it looks like a narrow tube within a plastic bag.



# Nasogastric tube

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This is not related to airways, but a NG tube is inserted through the nose, down the esophagus into the stomach for the patient to be tube fed. This does not affect their ability to communicate and it does not exclude them from any studies.

