

HOW TO USE A VENTILATOR DESIGNED FOR NIV TO PROVIDE INVASIVE VENTILATION

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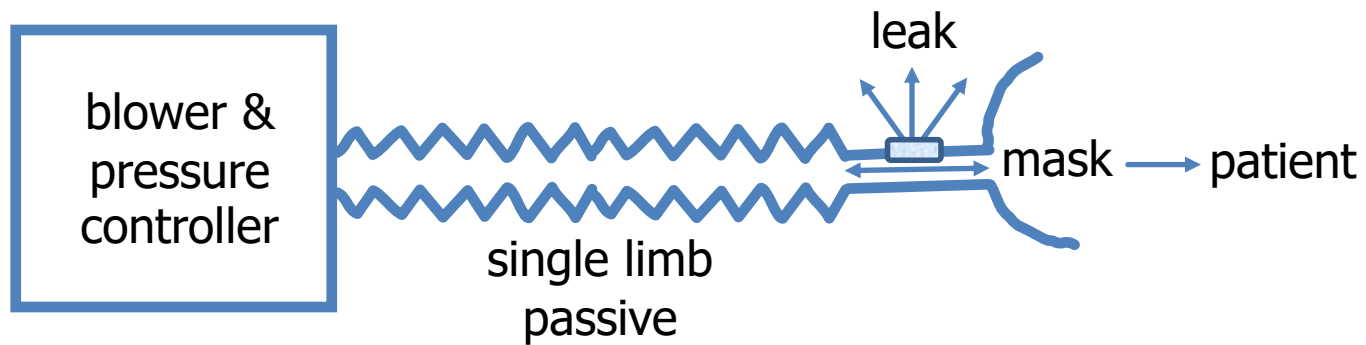
Disclosures

- Ventec Life Systems
- Daedalus
- Jones and Bartlett
- McGraw-Hill
- UpToDate



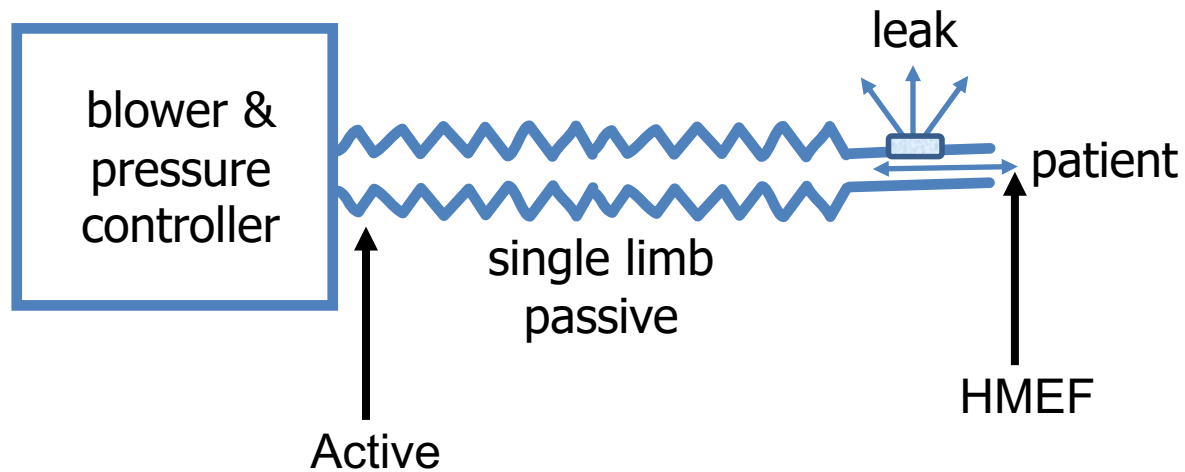
CPAP versus Bilevel

- CPAP devices for OSA cannot be repurposed for invasive ventilation.
 - No ventilation support.
 - Difficult to provide high FIO₂.
- Bilevel (BiPAP is a brand name)
 - Provide positive pressure ventilation (they are ventilators).
 - Some are FDA-cleared for invasive ventilation.
 - Devices used for home ventilation (nocturnal or continuous) can be repurposed to provide invasive ventilation.



Leak port must be present in circuit
Leak port must be filtered

Humidification: Absolutely Necessary



Settings: Similar to NIV, But With an ARDS Strategy

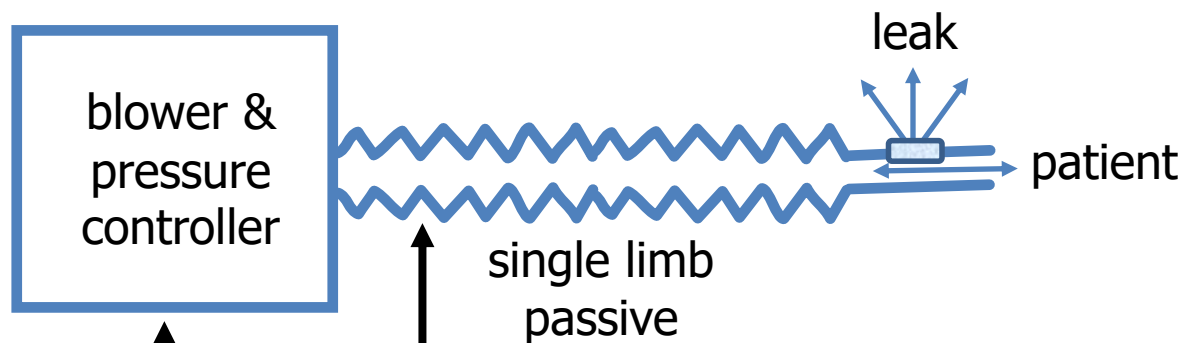
- IPAP: PIP (plateau)] Driving pressure; tidal volume
- EPAP: PEEP]
- Mode: S/T; PC if available
 - Avoid volume-targeted modes and modes for SDB; keep it simple
 - Avoid modes without a backup rate
- Rate
- Inspiratory time
- FIO₂

Starting Settings

- IPAP: 25 cm H₂O
 - EPAP: 12 cm H₂O
- Driving pressure 13 cm H₂O
- Adjust IPAP for tidal volume; target 6 mL/kg PBW (400 mL)
 - Adjust IPAP when EPAP changed
- Mode: S/T; PC okay
 - Rate: 25/min
 - Inspiratory time: 0.8 s
 - FIO₂: 1

Note: These setting are higher than typically used with these ventilators for NIV.

FIO₂



Titration from flowmeter

- High FIO₂ difficult
- FIO₂ varies with minute ventilation
- Target flow to SpO₂

Monitoring

- Tidal volume: target 6 mL/kg PBW (400 mL)
- SpO₂: target 88% - 95%
- Capnography
 - Issues with leak and disease
 - Might serve as disconnect alarm
 - Not absolutely necessary
- Arterial blood gases

Alarms

- Disconnect
 - Set on device
 - Capnometry
- Tidal volume/minute ventilation
- SpO₂
- Additional alarms as available

Triage (If possible)

- ICU ventilators for sickest patients.
- NIV ventilators FDA-cleared for invasive ventilation.
- Bilevel ventilators designed for homecare for least sick patients.

Final Thoughts

- CPAP devices do not provide ventilation.
- Bilevel devices are ventilators.
- Bilevel devices can be used for invasive ventilation.
- The same principles apply to bilevel ventilators for invasive ventilation as for ICU ventilators.