

Bi-level positive airway pressure Ventilation

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the very basics



Inspiratory positive airway pressure (IPAP): controls the peak inspiratory pressure during inspiration.

Expiratory positive airway pressure (EPAP): controls the end expiratory pressure.

- V_T : Tidal Volume
- PIP: Peak Inspiratory Pressure
- Rate: Patient's current rate

Mandatory minimum rate provided by respirator

% FiO₂

Titration Basics

- To improve ventilation: increase IPAP 2-3 cmH₂O Q5 mins up-to a max of 25 cmH₂O
- To improve oxygenation, increase EPAP 2 cmH₂O up to a max of 10. Min is 5cmH₂O
- To improve oxygenation, increase FiO₂
- When increasing EPAP, increase IPAP by same amount to maintain the same level of pressure support.

Is my patient getting worse?

- IPAP > 25 cmH₂O
- EPAP > 10 cmH₂O
- RR > 30 bpm
- SpO₂ < 92%
- Worsening ABG
- Worsening Mental Status
- Hemodynamic instability

--> Consider Intubation

BiPAP Vs Pressure support?

- BiPAP 15/5 = Pressure cycles from 15 to 5.
- PS 15/5 = Vent provides 15 over set PEEP of 5, i.e. pressure cycles from 20 to 5

Contra-indications?

Apnea
Emesis
Noncompliant Patient/AMS
Hemodynamic Instability

References

1. Philips. Respironics V60/V60 Plus Ventilator User Manual. [http://incenter.medical.philips.com/doclib/enc/11191054/Respironics_V60_Ventilator_User_Manual_\(ENG\)_-1047358_M.pdf%3Ffunc%3Ddoc.Fetch%26nodeid%3D11191054](http://incenter.medical.philips.com/doclib/enc/11191054/Respironics_V60_Ventilator_User_Manual_(ENG)_-1047358_M.pdf%3Ffunc%3Ddoc.Fetch%26nodeid%3D11191054). Accessed June 25, 2019.
2. Positively Useful: A Brief ED Guide to NIPPV EMRA. <https://www.emra.org/emresident/article/positively-useful-a-brief-ed-guide-to-nippv/>. Accessed June 25, 2019.
3. BCCH BiPAP Self Instructional Learning Package Acute Inpatient Units BiPAP (Bi-Level Positive Airway Pressure) Self Instructional Learning Package BCCH Acute Inpatient Units.; 2012. [http://policyandorders.cw.bc.ca/resource-gallery/Documents/BC Children's Hospital/00.00 BiPAP Self Instructional Learning Package.pdf](http://policyandorders.cw.bc.ca/resource-gallery/Documents/BC%20Children's%20Hospital/00.00%20BiPAP%20Self%20Instructional%20Learning%20Package.pdf). Accessed June 25, 2019.