CPAP VS BPAP

Quick Guide

Step 1 Check if the patient is suitable for (CPAP or BPAP)

- ✓ Awake, alert, and cooperative
- ✓ Spontaneously breathing, able to protect airway
- ✓ Hemodynamically stable (no severe hypotension)
- ✗ No facial trauma, vomiting, or massive secretions

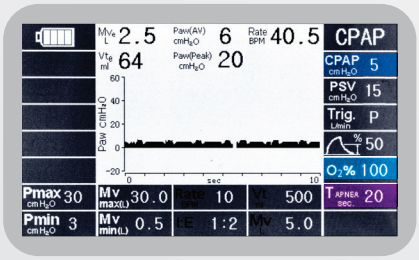
Step 2 Identify the main problem (oxygenation vs ventilation)

OXYGENATION ONLY

- SpO_2 (<92%) despite O2 therapy.
- $ETCO_2$ is normal or low.
- Clinical signs: cyanosis, crackles,pulmonary edema, pneumonia, near drowning.

→ *Use* **CPAP**

- Start **CPAP** level at 5–10 cmH_2O (range 4–20).
- Set **O_2** at 60% or 100%, titrate to target SpO_2.
- Set Apnea backup **T-APNEA** (Default: 20s). If Apnea occurs, the ventilator switches to A/CV mode.
- Monitor comfort, chest rise, work of breathing, and oxygenation.

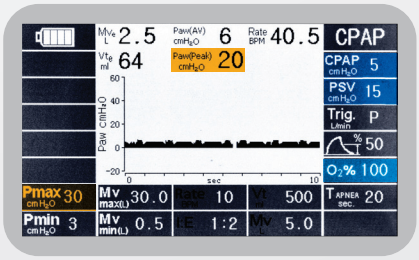


OXYGENATION + VENTILATION

- Low SpO_2 and rising $ETCO_2$ >45 ↑
- Signs of fatigue (↑ RR, shallow breaths, accessory muscle use).
- Example: Acute exacerbation of COPD, Severe Asthma, and Cardiogenic pulmonary edema

→ *Use* **BPAP** (Biphasic Positive Airway Pressure)
CPAP + PSV

- **EPAP:** Set the **CPAP** baseline (Ex: 5 cmH_2O).
- Add **PSV** 5–15 cmH_2O (titrate by 2–3).
- **IPAP** is determined by summing the **CPAP** and **PSV** values.
- Keep Peak Airway Pressure **PAWpeak** ≤30 cmH_2O (set **Pmax** alarm >30 cmH_2O).
  (**PAW peak** in this mode will be the sum of **CPAP+PSV** values)



o_two controlled ventilation

Step 3 Escalate or switch if the patient worsens

- If on **CPAP** → develops ↑ $ETCO_2$ / ↑ work of breathing/ fatigue
  → **Switch to BPAP**
- If on **BPAP** → deteriorates or loses consciousness
  → **Prepare for intubation**

DON'T DELAY AIRWAY IF REQUIRED

Treatment Failure = worsening hypoxemia/hypercapnia, rising $ETCO_2$ despite support, decreasing LOC, inability to tolerate mask, refractory hypotension, or absent improvement within ~10–20 min → move to advanced airway per protocol.

Capnography Quick Guide

Use Capnography ($ETCO_2$) with Pulse Oximetry (SpO_2) to guide mode selection.

This applies only to awake, spontaneously breathing patients appropriate for non-invasive ventilation (**CPAP** or **BPAP**).

$ETCO_2$ (mmHg)	Interpretation	Oxygenation Status (SpO_2)	EMS Action
35–45	Normal ventilation	Low SpO_2 only	Use **CPAP** – recruit alveoli, improve oxygenation
>45 (hypercapnia)	CO_2 retention / impaired ventilation	Low SpO_2 or normal	Use **BPAP** – add pressure support (PSV) to assist ventilation
>50	Significant CO_2 retention	Low SpO_2 or normal	Start urgent **BPAP**; if no improvement, prepare for intubation
Rising trend (+5 – 10 mmHg in minutes)	Worsening ventilation	Any SpO_2 status	Escalate ventilatory support (invasive ventilation), monitor closely

Step 4 Monitor continuously

- SpO_2, $ETCO_2$, RR, HR, BP
- Check mask seal and comfort every few minutes
- Watch for hypotension, gastric distention, or decreased Level of Conciousness (LOC).

If $ETCO_2$ >45 mmHg AND patient shows fatigue or altered LOC, treat as hypercapnic respiratory failure → *Use* **BPAP** (if no contraindications.)

Clinical Signs Supporting Hypercapnia

- Increased work of breathing (accessory muscles, retractions)
- Decreasing respiratory rate with shallow breaths
- Altered mental status or drowsiness (CO_2 narcosis)
- Fatigue, inability to speak full sentences

www.otwo.com
45A Armthorpe Road, Brampton, ON, Canada, L6T 5M4
Telephone: +1 905 792-OTWO (6896) N.A. Toll Free: +1 800 387 3405
Facsimile: +1 905 799 1339 Email: resuscitation@otwo.com

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