CPAP/BiPAP

REFRESHER

RECOGNIZE IT

- NIPPV supports ventilation and oxygenation; used in acute respiratory failure to avoid intubation
- EPAP (expiratory pressure) = PEEP = CPAP
- Consider when ventilation is inadequate and the patient has adequate mental status and respiratory drive
- Indications: near drowning, asthma, pneumonia, other causes of respiratory failure
- Indications: COPD exacerbation (reduces intubation and mortality)
- Indications: cardiogenic pulmonary edema (reduces mortality); DNI status

ASSESS

- Flowchart first: if NIPPV is contraindicated or intubation is indicated — intubate
- If not contraindicated: start CPAP; BiPAP is preferred if available
- Reassess: high air leak or poor patient comfort? Achieving oxygenation and ventilation goals?
- Monitor: adjust IPAP to achieve vT of 5–7 mL/kg
- Increase IPAP and EPAP by 2 for persistent hypoxemia; increase IPAP only by 2 for hypercapnia

ACT — FIRST MOVES

1. Rule out contraindications: unresponsiveness/coma, inability to trigger a breath
2. Rule out: inability to protect airway or remove mask, risk of emesis or copious secretions, recent head/neck surgery
3. CPAP: continuous pressure all cycle; patient triggers all breaths; settings — adjust FiO2, IPAP 10, EPAP 5
4. O2 Max (Pulmadyne) CPAP: default is 5; therapeutic dose is 10
5. S/T (BiPAP): inspiratory (IPAP) and expiratory (EPAP) pressures with a backup rate; settings — adjust FiO2, IPAP 15, EPAP 5

PEARLS

- Ensure adequate oxygen supply; consider an NPA
- Instruct and coach the patient through the process; ensure proper mask seal
- CPAP improves oxygenation and is relatively well tolerated, but does not assist ventilation (risk of hypoventilation)
- S/T improves ventilation and oxygenation; useful in COPD to avert intubation — but can cause volutrauma
- Patient comfort: trigger default −2.0 (−0.5 easy to −6.0 hard); cycle-off default 25% (lower is easier to breathe)
- Rise time: speed to target pressure, 1 (100 ms) to 10 (1000 ms)

Take Home Message:

If ventilation is inadequate, the patient is awake with a respiratory drive, and nothing contraindicates it — start CPAP, prefer BiPAP, then reassess.