

Penn Medicine COVID-19 Clinical Guide: Helmet CPAP

Updated 4/7/21 – Recommendations may evolve rapidly – See latest version at Penn COVID-19 Learning Homepage



Indication

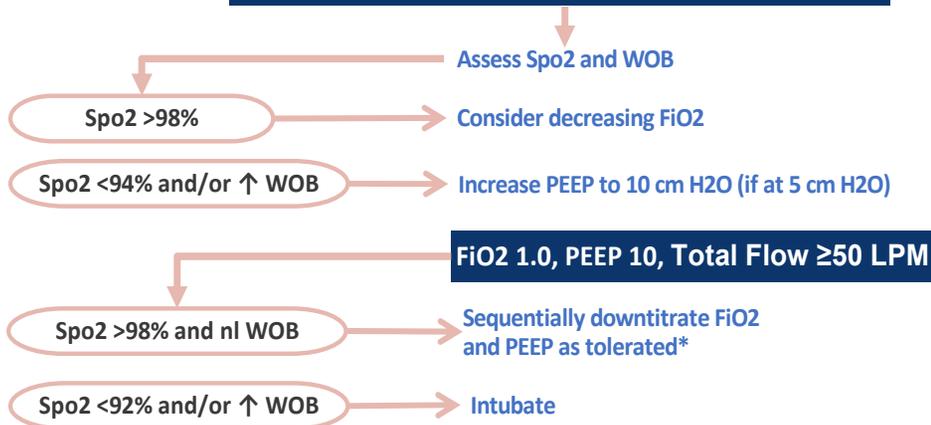
- SpO₂ < 94% despite HFNC or NRB with FiO₂ 0.6-0.8
- Absence of hypercapnia (if RR>30 or increased WOB must check PaCO₂ prior to use)



Use & Titration

- Duration determined by patient comfort – typically 4-6 hour sessions with breaks for PO meds and meals. Sleeping in semi-recumbent position with helmet is safe.
- During breaks, transition to HFNC or alternate oxygen device
- Mobilize patient OOB with helmet as tolerated.

Initial Settings: FiO₂ 1.0, PEEP 5-10, Total Flow ≥50 LPM



*Consider weaning off helmet (to HFNC or NC) once stable on FiO₂ 40-50% and PEEP 5



Oxygen Delivery Configurations

Device	Image	Flow	Notes
MaxVenturi (preferred)		50-60 LPM	<ul style="list-style-type: none"> ➢ Easy transition to HFNC during breaks ➢ Provides natural humidification (decreased at FiO₂ > 60%) ➢ Use for patient transport
Ventilator		50-60 LPM	<ul style="list-style-type: none"> ➢ Ventilator with HFNC mode needed (Servo-U/Hamilton C-1)
Oxygen Blender		50-60 LPM	<ul style="list-style-type: none"> ➢ No natural humidification; monitor for discomfort with longer use



Safety

- ✧ Consider ICU transfer at HFNC settings ≥ FiO₂ 0.6/50 LPM.
- ✧ Helmet recommended for use only in ICU or during transport to ICU
- ✧ Always maintain total gas flow above 50 LPM to avoid CO₂ rebreathing
- ✧ Monitor for mental status changes; avoid use in patients with AMS or agitation
- ✧ If helmet deflates, check oxygen device and tubing connections for leak
- ✧ RT should be present whenever helmet is placed or removed



Tips

- ✧ An inflatable neck cushion may be placed inside helmet to provide neck support
- ✧ Monitor for skin breakdown at neck. Can use mepilex for skin protection
- ✧ Feeding tubes and IJ central lines can be threaded under rubber collar
- ✧ Straw can be fed through port at base of helmet for short periods of drinking
- ✧ Self-proning has not been tested for safety with helmet