

## WAHT COVID and NIV Guideline (CPAP/BiPAP)

### Indications for NIV: • ceiling of treatment • trial to avoid intubation + as a holding measure prior to intubation

- All patients need a clear **Treatment Escalation Plans and RESPECT form** completed
- NIV must only take place in a **negative pressure sideroom, neutral pressure sideroom or NIV cohort area** attended by staff in PPE appropriate for Aerosol Generating Procedures (currently WRH ARU / Alex ward 1)
- The patient must be able to tolerate the mask/hood for NIV to be considered
- If the patient is a candidate for IPPV but obtunded or unable to tolerate NIV, refer to ICU

### Escalate oxygen therapy for T1RF, SpO<sub>2</sub> 92-94% (via Venturi or non-rebreathe mask (NRM)):

RR ≥ 20bpm with SpO <sub>2</sub> <92% on 35% FiO <sub>2</sub> 35%	→	Escalate to FiO <sub>2</sub> 40%
RR ≥ 20bpm with SpO <sub>2</sub> ≤92% on FiO <sub>2</sub> 40%	→	<b>Resp Referral<sup>‡</sup> and Escalate to FiO<sub>2</sub> 60%</b>
RR ≥ 25bpm with SpO <sub>2</sub> ≤92% on FiO <sub>2</sub> 60%	→	Escalate to 10 - 15L/min O <sub>2</sub> via NRM
RR ≥ 30bpm with SpO <sub>2</sub> ≤92% on 15L/min NRM, PaO <sub>2</sub> <8 kPa	→	<b>Inform ICU if candidate for IPPV</b>

Non Invasive Ventilation		
	CPAP	BiPAP
<b>Indications:</b>	No underlying lung disease Type 1 Respiratory Failure Hypoxia without Hypercapnia	Chronic Lung Disease Type 2 Respiratory Failure Hypoxia with acute hypercapnia on chronic respiratory disease
<b>SpO<sub>2</sub> target:</b>	<b>92-94% (see box above)</b>	<b>88-92%</b>
<b>Trigger for escalation to NIV:</b>	<b>Consider CPAP if: RR &gt; 20 bpm with SpO<sub>2</sub> &lt; 92% on FiO<sub>2</sub> 40%; perform ABG</b> <ul style="list-style-type: none"> <li>• Senior medical clinical review to assess: Patients unlikely to tolerate or benefit: Delirium, Confusion or dementia with loss of mental capacity to understand treatment, Unable to sit up and on edge of bed unaided, GCS &lt;15, Systolic BP &lt;90, &gt; 2 acute organ failures, Significant comorbidities, Unable to tolerate well-fitted mask or hood.</li> <li>• Contact respiratory team (day) or ICU (night) to discuss CPAP trial on ARU/Ward 1 (<i>Details below</i>)<sup>‡</sup> CPAP trial only on respiratory or ICU advice.</li> <li>• Admit ARU/Ward 1 direct if instructed by ICU</li> <li>• Inform ICU of CPAP trial if candidate for IPPV</li> </ul>	NIV ONLY INDICATED in patients with evidence based underlying lung disease (COPD, Obesity related, chest wall deformity, home ventilation). Cautions and contra-indications to NIV STILL apply – see NIV document Patient First/WHAT-004  Instituting maximal medical therapy for over an hour* <ul style="list-style-type: none"> <li>• pCO<sub>2</sub> ≥6.5 kPa</li> <li>• pH &lt;7.3</li> </ul>
<b>Initiation:</b>	CPAP: 8-10 cmH <sub>2</sub> O; 60-100% oxygen	IPAP 12-14 cmH <sub>2</sub> O; EPAP 4-6 cmH <sub>2</sub> O
<b>NIV setup by:</b>	<b><u>WRH physio: 8:30-6pm bleep 0303; via switch at home out of hour; ARU: ext 39123; AGH nurses: Ward 1: ext 44036 / 43855</u></b>	
<b>Hourly Monitoring:</b>	RR, SpO <sub>2</sub> , HR, work of breathing <b>ABG after first hour</b> or change in settings Avoid unnecessary ABGs	RR, SpO <sub>2</sub> , HR, work of breathing <b>ABG after first hour</b> or change in settings Avoid unnecessary ABGs
<b>Escalation:</b>	Titrate CPAP: 12-15 cmH <sub>2</sub> O; 60-100% oxygen <b>and</b> <b>If IPPV candidate, bleep ICU: WRH 0702; AGH 0933</b> <ul style="list-style-type: none"> <li>• Excessive work of breathing; RR &gt;30 on CPAP 10cmH<sub>2</sub>O, FiO<sub>2</sub> 80% with SpO<sub>2</sub> &lt; 92%, PaO<sub>2</sub> ≤ 8.0kPa</li> <li>• Obtunded or not tolerating CPAP</li> </ul>	Titrate IPAP/EPAP as per WHAT-004 guideline <ul style="list-style-type: none"> <li>• Respiratory Team</li> <li>• ICU if a candidate for IPPV if: pH &lt; 7.25, and PaCO<sub>2</sub> &gt; 6.5</li> </ul>
<b>Weaning:</b>	Conventional oxygen weaning ; CPAP breaks using 15L/min O <sub>2</sub> NRM; wean CPAP once FiO <sub>2</sub> <40%	Consider when pH >7.35
<b>Failed Trial:</b>	Consider low dose opioids or benzodiazepines to reduce sensation of breathlessness Ensure end of life care commenced, anticipatory medicine given and quick oxygen wean	

#### \*MEDICAL THERAPY FOR CHRONIC LUNG DISEASE

- Controlled O<sub>2</sub> therapy (Venturi)
- Antibiotics if infective exacerbation
- Salbutamol Neb 2.5mg 4hrly
- Ipratropium Neb 500mcg 6hrly
- Prednisolone 30mg orally (or iv hydrocortisone) ONLY IF KNOWN COPD
- Consider Aminophylline IV: loading dose [if not on a theophylline] 5mg/Kg IVI over 20mins and maintenance IVI 0.5mg/Kg/hr
- Consider IV Magnesium 2g over 30mins if possible of co-existent asthma OR any single blood eosinophilia > 0.3
- Consider doxapram under respiratory or ITU specialist guidance

#### <sup>‡</sup>**Respiratory Team contact details:**

**WRH: 8.30am-10pm bleep 0743; out of hours medical registrar or ICU**

**AGH: 9am-9pm respiratory consultant via AGH switch; out of hours medical registrar or ICU**

**Admission criteria to COVID-19 Complex Respiratory Assessment Pods on ARU/Ward 1**

Acute Respiratory Ward Admission (WRH ARU / Alex Ward 1), irrespective of Covid-19 status, ONLY indicated for patients with:

- Type 1 RF, candidate for ICU and documented in notes by ICU or respiratory consultant
- Type 1 RF, for trial CPAP under respiratory team guidance
- Type 2 RF, hypercapnic acute on chronic ventilatory failure
- Exacerbation of underlying respiratory disease in patients known to the respiratory team, not requiring CPAP/NIV (clean bay)

**1. CPAP: Type 1 RF ONLY****Accepted by ICU for intubation**

Admission for close monitoring with shared care between ICU and respiratory team:

- Seen by ICU: suitable candidate and accepted by ICU for intubation but needs bridging respiratory support
- Seen by ICU and deemed suitable for a trial of ward based CPAP (ICU inappropriate or bed unavailable)

**Reviewed by respiratory team and considered trial CPAP appropriate in non-ICU patients**

- Not for ICU but ward based care including trial of CPAP

**Patients unlikely to tolerate and benefit from ward based CPAP:**

- Delirium
- Confusion or dementia with loss of mental capacity to understand CPAP treatment and decisions
- Unable to sit up and on edge of bed unaided
- GCS <15
- Systolic BP <90
- > 2 acute organ failures
- Significant comorbidities making CPAP futile

**2. Exacerbation of underlying respiratory disease in patients known to the respiratory team**

- Not requiring CPAP/NIV (clean bay)
- Requiring specialist respiratory input

**3. Acute hypercapnic Type 2 respiratory failure requiring BiPAP**

- BiPAP ONLY INDICATED in patients with evidence based underlying lung disease (COPD, Obesity related, chest wall deformity, home ventilation)
- Ensure maximal medical management (As per NIV WHAT-004 guidance)
- **NOT indicated if T2RF develops following T1RF (tiring patient)**
  - If for IPPV inform ICU
  - If not for escalation, consider palliation

**Home CPAP: Home circuits (masks and tubing) not to be used.**

**If purely for obstructive sleep apnoea (OSA) may not be required during admission.**

Contact respiratory ward or Respiratory Nurse Specialist (Bleep 695 or 669) for advice

**Only to be used with** hospital issued mask and tubing in negative pressure, side room or cohorted respiratory bay.

**Home NIV/BiPAP: Home circuits (masks and tubing) not to be used.**

Contact respiratory ward or Respiratory Nurse Specialist (Bleep 695 or 669) for advice

**Only to be used with** hospital issued mask and tubing in negative pressure, side room or cohorted respiratory bay.

If home machine available, to continue with home machine using hospital tubing / circuit.

**Humidification:** For any patient who has a humidifier in the community, the humidifier should be removed from the circuit.

NIV: non-invasive ventilation CPAP: continuous positive pressure; BiPAP: bilevel positive airway pressure; RF: respiratory failure; RR: respiratory rate; SpO<sub>2</sub>: peripheral oxygen saturations; ICU: intensive Care Unit; IPAP: inspiratory positive airway pressure; EPAP: expiratory positive airway pressure