

ADULT NON-INVASIVE VENTILATION (NIV) ALGORITHM

Potentially reversible Acute Hypercapnic Respiratory Failure (AHRF) and/or increased work of breathing

Disease Specific Indications:

COPD: pH < 7.35 AND PaCO₂ ≥ 6.5
RR > 23 despite one hour of medical management

Neuromuscular Disease: Respiratory illness with RR > 20 if usual VC < 1L or pH < 7.35 AND PaCO₂ ≥ 6.5

Obesity: pH < 7.35 AND PaCO₂ ≥ 6.5, RR > 23 or daytime PaCO₂ ≥ 6.0 and drowsy

*Please see guideline on The Source for additional evidence-based indications

NIV is not usually indicated in Asthma

Contraindications:

Absolute: undrained pneumothorax, facial burns, fixed upper airway obstruction, for at least two weeks post oesophagectomy

Relative: pH < 7.15, GCS < 8, confusion/agitation, cognitive impairment, vomiting (consider NG tube)

Indication for ICU referral:

- AHRF in Asthma
- AHRF with impending respiratory arrest
- NIV treatment failure: decreased chest wall movement, unable to decrease PaCO₂
- Inability to maintain target SpO₂ on NIV
- Need for IV sedation, closer monitoring +/- possible difficult intubation

If NIV is declined by the patient or deemed not appropriate by the lead clinician, please consider referral to palliative care

Complete NIV Care Bundle and Prescription on Cerner

NIV set-up:

- Select appropriate interface with exhalation port and complete machine set up by a competent practitioner. Select correct mask/port/interface type in 'Menu'

Starting pressures (S/T Mode):

IPAP: 10-15 and EPAP: 4 (higher in OSA)

- Activate emergency alarms and set back-up rate (12-16)
 - Explain treatment to patient prior to fitting mask
- Increase IPAP over 10-30 minutes to 20-30 cmH₂O (IPAP to not exceed 30 or EPAP 8 without expert review)
- Rise time, I-Time and I:E ratio (1:2-1:3 (COPD) or 1:1 (NMD/OHS)) set by competent practitioner
 - Repeat ABG at 1 hour and at 4 hours from initiation -> consider need for arterial line

Monitoring while on NIV:

- Continuous cardiac and SpO₂ monitoring for at least the first 12 hours
 - Ensure PaCO₂, PaO₂ and SpO₂ parameters are set
- **Alter NIV settings: If PaCO₂ remains high, increase tidal volume (TV) by increasing IPAP. If remains hypoxic, increase EPAP or FiO₂ (remember you may need to increase IPAP to maintain TV) – update NIV prescription and repeat ABG one hour after any settings change**
- Use NIV for as much time as possible in first 24 hours, allowing breaks as indicated/required and wean over next 48-72 hours dependent on ABGs and clinical review.

If pH < 7.25 on optimal NIV, RR > 25 continuously or new onset confusion -> clinical review. Check synchronisation, mask fit, exhalation port. Consider chest physio, bronchodilators, ICU review/IMV. If the patient is struggling to tolerate NIV or continues to deteriorate and is not for escalation, please consider referral to palliative care.