

## Type 2 Respiratory Failure - V60 Bipap Guidelines

### Initial BIPAP settings

#### ST Mode

IPAP - 10cm

EPAP - 4cm

Back up rate - 10breaths/min

Select Correct Mask Number (On Pack)<sup>1</sup>

Set RISE TIME<sup>2</sup> at 2 (0.2)

CONSULT WITH MEDICAL STAFF AND  
ESTABLISH TARGETS AND PARAMETERS OF  
THERAPY

ABG within 15-  
30 minutes

Improved?

Ye

No

Adjust Settings

Continue with  
current settings

Repeat ABGs as clinically indicated  
and after every change

Once ABGs normalised for patient consider  
weaning – see suggestions overleaf

### Escalation plan

Must be discussed with  
ITU as appropriate and  
clearly documented in the  
notes prior or upon  
initiation of treatment

Monitor SaO<sub>2</sub> continuously and check ABGs frequently.  
Consult medical staff if patient condition does not  
improve or if patient deteriorates.

### Management Tips

#### PaO<sub>2</sub> low but PaCO<sub>2</sub> improved

- CHECK ALL O<sub>2</sub> CONNECTIONS
- increase FiO<sub>2</sub>
- increase EPAP (MAX 5cm. NB: 8cm for obese patients only)

#### PaCO<sub>2</sub> remains elevated

- reduce FiO<sub>2</sub> if P<sub>O</sub><sub>2</sub> high
- patient/machine asynchrony – check circuit, check for leakage, check mask fit
- ? rebreathing – check exhalation port, consider increasing EPAP (MAX 5cm)
- ? inadequate ventilation – consider increasing IPAP (by 2cm increments - MAX 20-22cm)

#### PaCO<sub>2</sub> low

- ? is minute volume too high – consider decreasing IPAP
- ? is ventilation still required

#### Asynchrony

- check rise time<sup>2</sup> is fast enough for resp rate 1 = 0.1 (fastest) 5 = 0.5 (slowest)
- if tachypnoeic consider increasing IPAP

<sup>1</sup>Different mask elbows  
available-

**Blue** for ICU dual limb  
ventilators only such as Draegar  
V500

Clear for single limb ventilators  
such as V60.

**Orange** for increased leak  
allowance such as full face visor

<sup>2</sup>RISE TIME - speed at which IPAP rises to set pressure. Acts as a  
comfort control.

1 = 0.1 (fastest) 5 = 0.5 (slowest)

If RISE TIME is too slow for the resp. rate, target pressure will not be  
achieved for each breath – Monitor TV and peak pressure.

If the patient has an infective respiratory condition, a **bacterial/viral  
filter** should be attached to or before the disposable exhalation port  
(DEP) on the tubing. **MUST** be changed 24 hourly.

## Critical Care Guidelines FOR CRITICAL CARE USE ONLY

### **Troubleshooting**

#### **Persistently elevated PaCO<sub>2</sub>:**

Is there excessive leak? **Check mask fit.** Consider total face mask.

Is the system set up correctly? **Check connections** and identify leaks.

Is there re-breathing? **Is the expiratory port patent?**

Consider **increase in IPAP**

Is the patient spending sufficient time on the ventilator? Encourage **longer periods of use.** Address compliance.

Consider **decrease in EPAP** (if very high set level > 8cm H<sub>2</sub>O)

#### **Persistent hypoxaemia:**

Check **correct O<sub>2</sub>** into the circuit

If there is OSA or atelectasis consider **increase in EPAP** (need to **increase IPAP too**, to maintain pressure support)

Deteriorating clinical condition with hypoxaemia should lead to **urgent re-evaluation** with reference to the agreed **escalation plan**

**Turn off Ramp as patient may not have reached peak pressures.**

#### **Mask Leak:**

Large leaks can cause inefficient ventilation, eye irritation, noise, dry mouth and nasal symptoms. Consider trying **different masks** and **headgear**, and customised **foam or granuflex** for comfort

#### **Asynchrony between patient and the machine:**

Check **correct tubing** is being used

If the patient is **very tachypnoeic increase in IPAP** may help

Ensure the **IPAP rise time** is as quick as possible

#### **Difficulty inflating the chest:**

Maybe due to bronchospasm, mucus plugging, pneumothorax, atelectasis/collapse, consolidation, pulmonary oedema: **Clinical examination** is necessary and possible **CXR**

Rarely is due to **circuit tube obstruction/kinking**: Check the circuit

#### **Nasal problems:**

Is there nasal soreness/redness/nasal bridge sores? Appropriate **padding or change of mask** is required

Is there **rhinitis/nasal crusting/bleeding**?

#### **Gastric distention:**

Try to reduce IPAP if possible and consider nasogastric tube (accepting a small leak)

#### **Patient position:**

Patient should be positioned sitting upright with head up

Consider additional support (soft collar/rolled up towel) if necessary

When using the Fischer and Paykel humidifier, if you need to remove

the mask from the patient this **device should always be put on**

**standby.** This will stop water from back trapping up the tubing.

#### **Non cooperative/aggressive behaviour:**

Maybe due to **hypoxaemia and/or hypercapnia**, consider holding the mask. Relatives may help. Adjust settings as necessary.

Look at RISE TIME – could it be increased for more comfort and better tolerance?

#### **Sedation must be discussed ONLY with Senior Medical Staff:**

Haloperidol might reduce agitation and increase NIV tolerance. Or consider oramorph.

### **Weaning Considerations**

Patients who appear to benefit from NIV during the first few hours of treatment should receive NIV for as long as possible (min 6 hours). In patients who have clinically improved (i.e. improved respiratory rate, heart rate, PaO<sub>2</sub> and PCO<sub>2</sub> with target range and are no longer acidotic), it is appropriate to start a weaning plan. The gradual reduction of the duration of the treatment should be determined by clinical improvement.

#### **Recommendations**

- Ideally during the day
- Trial extended periods off NIV for meals, physio and nebuliser therapy first
- DO NOT decrease IPAP/EPAP during weaning
- Focus on extending the time off NIV
- After successful weaning during the day some patients will require an additional night on NIV

Always closely monitor patients during periods of weaning and if condition worsens consider restarting NIV as soon as possible and inform medical staff. Always consider the indications (see Critical Care

**Critical Care Guidelines  
FOR CRITICAL CARE USE ONLY**

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