

(PLACE PATIENT LABEL HERE)

SURNAME: \_\_\_\_\_ NHI: \_\_\_\_\_

FIRST NAMES: \_\_\_\_\_

DATE OF BIRTH: \_\_\_\_/\_\_\_\_/\_\_\_\_ SEX: \_\_\_\_\_



Waitemata District Health Board

Best Care for Everyone

# COPD PATHWAY AND CHECKLIST INC. BILEVEL VENTILATION

TOP TIPS	RED FLAGS
<ul style="list-style-type: none"> <li>Patients typically need a smoking Hx to have COPD</li> <li>No benefit to supra-normal oxygenation and it may cause harm</li> <li>Controlled oxygen saves lives</li> <li>Just do the ABG</li> <li>Look for flapping tremor of CO<sub>2</sub> retention</li> <li>Do not confuse metabolic acidosis vs respiratory</li> </ul>	<ul style="list-style-type: none"> <li>Low GCS including confusion</li> <li>Any previous intubation or Bilevel ventilation episodes</li> <li>Senior review NOW for any red flag patient</li> <li>SpO<sub>2</sub>&lt;80%</li> <li>pH &lt;7.2</li> </ul>

**ASSESSMENT**  
Aim is to identify or exclude respiratory failure asap

Does the patient have COPD?  
Diagnosis of COPD needs smoking history and SOB with activity +/-previous spirometry, other clinical info

**Likely Yes**  
Or alternative cause of type 2 respiratory failure  
eg obesity hypoventilation syndrome

**Probably not** → Give appropriate clinical care

Start controlled Oxygen with Venturi or Airvo: Aim for sat range 88-92% – including those patients over-oxygenated on arrival  
Do first Arterial Blood Gas (ABG) document FiO<sub>2</sub>

Bronchodilators: salbutamol nebuliser  
Steroids: prednisone orally (hydrocortisone IV only if poor swallow or very unwell)  
Investigations: CXR, bloods and sputum

Use the first ABG results to identify initial patient management plan

FiO<sub>2</sub> .....

ABG results: pH..... PaO<sub>2</sub> ..... PaCO<sub>2</sub> ..... HCO<sub>3</sub>.....

**PaCO<sub>2</sub>>6kPa and any level of PaO<sub>2</sub>**  
**(type 2 respiratory failure)**

**PaO<sub>2</sub><8kPa AND PaCO<sub>2</sub><6kPa**  
**(type 1 respiratory failure)**

**PaO<sub>2</sub>>8kPa AND PaCO<sub>2</sub><6kPa**  
**(no respiratory failure)**

**PaCO<sub>2</sub>>6kPa AND pH<7.35**  
**(acute hypercapnic respiratory failure)**

**PaCO<sub>2</sub>>6kPa AND pH>7.35**  
**(chronic hypercapnic respiratory failure)**

- Increase FiO<sub>2</sub>
- Target sats 94-98%
- Treat according to cause:  
Pneumonia  
Heart failure  
PE etc  
COPD

- Treat according to cause

If signs of deterioration or worsening hypoxia, repeat ABG and pursue reason for deterioration

- Target sats 88-92%
- Repeat ABG 30-60 minutes
- If pH **remains** <7.35 CONSIDER FOR Bilevel ventilation

- Target sats 88-92%
- Repeat ABG 30-60 minutes
- If pH **falls to** <7.35: CONSIDER FOR Bilevel ventilation

Follow plan A+B

Follow plan A+B

If COPD, Follow plan A

If COPD, Follow plan A



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= yes     = no

## PLAN A: COPD CHECKLIST

### ALL COPD PATIENTS

#### Initial Management – investigations and treatment on arrival

**Oxygen:**

- Oxygen via Venturi mask started at 28%, **OR**
- Oxygen via Airvo high flow nasal prongs at 28%

**Arterial blood gas:**

- Arterial Blood Gas – to be done on admission

**Bronchodilators:**

- Salbutamol 2.5mg – 5.0mg via nebuliser, **OR**
- Salbutamol inhaler via spacer: 8 –10 puffs
- Ipratropium 500mcg via nebuliser

**Steroids:**

- Prednisone 40mg orally, once daily for 5 days **OR**
- Hydrocortisone 200mg IV three times a day until able to be changed to oral medication

**Antibiotics:**

- Antibiotics as per Waitemata DHB guidelines

**Cough:** *if patient has productive cough and cannot expectorate, physiotherapist should be called*

- Physiotherapist paged to attend

#### Initial Investigations

- CXR
- Sputum
- ECG
- ABG

**Bloods:**

- FBC                       electrolytes                       CRP

#### Ongoing Management – investigations and treatment during admission

- Oral steroids for 5-7 days maximum. *Wean steroids only if either on long term or >3 courses in past 12 months*
- Change IV ABs to oral when indicated
- Wean from nebulisers to inhalers using spacer device
- Physiotherapist for breathing technique, sputum clearance and early mobilisation
- HEP (High Energy Protein) diet – *most patients need high energy protein diet during admission*
- Refer to Respiratory CNS for review pre-discharge if possible (therefore refer early in admission)

#### Discharge Planning for COPD

- Smoking cessation** – this is the most important discharge item
- Pulmonary rehab
- Inhaler technique
- Optimise inhaled therapy – *inhaled corticosteroids only indicated for frequent exacerbations with FEV1<50%*
- Flu vaccination and pneumococcal vaccination – *patient should attend GP*
- Give patient COPD booklet (available on all wards) and self-management plan

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## PLAN B: BILEVEL VENTILATION PATHWAY

### BILEVEL VENTILATION IN PATIENTS WITH TYPE 2 RESPIRATORY FAILURE

Patient has acidotic type 2 respiratory failure requiring Bilevel ventilation  
AND has had 1 hour on controlled oxygen (unless GCS<15 or overwhelming clinical concern)  
AND appropriate initial therapy ie nebulisers, steroids, antibiotics, diuretics  
AND CXR has been reviewed  
AND has been referred to General Medical team and Duty Nurse Manager informed of need for Ward 10 bed

Is bilevel ventilation appropriate: discuss with the patient and their whānau  
Document a plan for if bilevel ventilation fails: escalation of care to HDU/ICU or ward ceiling of care?  
Document CPR status

Start bilevel ventilation  
Set machine on Obstruct. setting  
Continue medical therapy

Repeat ABG after 1-2 hours on bilevel ventilation (2 hours if patient improving)

Acidosis Improving

Acidosis Stable

Acidosis Deteriorating

- Continue on bilevel ventilation.
- Continue medical therapy.
- Transfer to ward 10 if stable

Consult original plan:

- 1) Consider referral to HDU/ICU OR
- 2) Consider palliation, OR
- 3) Consider discussing with Gen Med SMO
- 4a) Increase bilevel ventilation pressures: see bilevel policy on respiratory CeDSS.
- 4b) After 1–2 hours repeat ABG: go back to acidosis level above

Transfer to ward 10 if stable

Increase bilevel ventilation pressures: see bilevel policy on respiratory CeDSS.  
After 1–2 hours repeat ABG: go back to acidosis level above

Review patient progress after 4 hours on bilevel ventilation: if there has been no improvement despite good compliance and well-fitting system, there is unlikely to be benefit from continuing

### CONSIDERATIONS

**WAITAKERE NOTE:** all patients will now require transfer to NSH ED for continuation of bilevel ventilation Unless they are for palliation (ie stay at WTK) or intubation pre-transfer (ie too unstable to transfer without)

#### CRITERIA FOR WEANING IN ED

Patient can be weaned from bilevel ventilation in ED if they are alert and awake  
AND respiratory acidosis is reversed  
AND CO<sub>2</sub> narcosis is due to over-oxygenation or opioids

#### CRITERIA FOR TRANSFER TO WARD

Patient has been stable for at least an hour  
AND has clinical plan including for deterioration  
AND has altered NEWS score (RR<30)  
AND has been handed over to ward staff including prescription and mask information (to enable set-up pre-arrival)



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## PLAN B: BILEVEL VENTILATION CHECKLIST

### PLAN B: BILEVEL VENTILATION

#### Criteria for starting bilevel ventilation

- Type 2 respiratory failure
- GCS>8
- Controlled oxygen therapy for 60 minutes UNLESS GCS <15 or overwhelming clinical concern
- Has had CXR: pneumothorax and LVF excluded
- Referred to General Medicine
- Initial therapy started as per COPD checklist
- Patient is appropriate for bilevel ventilation eg. not end stage cancer or other imminent dying process
- Consent obtained from patient – can be verbal (or deemed in best interests if unable to consent)

#### Admission planning

- CPR status confirmed and documented
- Documented plan in case of failure ie escalation or palliation
- Duty Nurse Manager informed (To allocate ward 10 bed)

#### Consent – items to discuss

##### Common risks:

- Failure of treatment
- Gastric distension
- Nausea +/- NG tube
- Mask related problems – sore eyes, nose, skin, mouth  
– pressure areas

##### Rare but serious:

- Pneumothorax
- Haemodynamic instability

#### Starting bilevel ventilation

- Machine is set up correctly (*see card on machine for advice*)
- Settings for this patient in machine (*machine retains last settings so reset to default*)
- Circuit learnt - and FiO<sub>2</sub> calibrated
- Suitable mask size for patient face available
- All oxygen tubing and connections checked

#### Criteria for transfer to ward 10

- Patient has been stable for at least 1 hour
- Patient is suitable for hourly observations or less frequently
- Patient is requiring nebulisers no more than 2 hourly
- RR < 30 AND oxygen saturations within target range on FiO<sub>2</sub> 35% or less
- NEWS score altered to clinically appropriate levels
- Oxygen and bilevel ventilation prescription charted
- CPR status and ceiling of care documented
- Ward 10 aware of bilevel ventilation prescription and patient-specific mask information

#### Additional Discharge Planning for CO<sub>2</sub> retaining patients

- Oxygen alert card (via respiratory CNS or ward-based respiratory box) with target range
- ACP (advanced care planning)
- If no respiratory CNS review pre-discharge: please refer for respiratory follow up

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