Clinical Practice Procedures:
Respiratory/Non-invasive ventilation – CPAP

<table>
<thead>
<tr>
<th>Policy code</th>
<th>CPP_RE_NIV_1017</th>
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<tbody>
<tr>
<td>Date</td>
<td>October, 2017</td>
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<tr>
<td>Purpose</td>
<td>To ensure a consistent procedural approach for non-invasive ventilation – CPAP.</td>
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<tr>
<td>Scope</td>
<td>Applies to Queensland Ambulance Service (QAS) clinical staff.</td>
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<tr>
<td>Health care setting</td>
<td>Pre-hospital assessment and treatment.</td>
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<tr>
<td>Population</td>
<td>Applies to all ages unless stated otherwise.</td>
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<tr>
<td>Source of funding</td>
<td>Internal – 100%</td>
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<td>Review date</td>
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Continuous positive airway pressure (CPAP) is a form of non-invasive ventilation used in spontaneously breathing patients. CPAP reduces the work of breathing, improves pulmonary gas exchange and is associated with decreased intubation rates and hospital length of stays.²

When CPAP is administered to patients with acute cardiogenic pulmonary oedema the increased intra thoracic pressure leads to reduced venous return (preload), reduced afterload and improved cardiac function.

The o_two®² is a single use open CPAP system that uses a vectored flow valve to create additional flow during inspiration and resistance with expiration. By varying the oxygen flow the baseline airway pressure can be increased or decreased to maintain a constant accurate positive airway pressure.

**Indications**

**CCP**
- Acute pulmonary oedema
- Severe OR life-threatening asthma
  (only in patients who are unresponsive to 3 x 5 mg continuous salbutamol NEBs)

**ACP2**
- Acute pulmonary oedema

**Contraindications**

- Patients < 16 years
- GCS ≤ 8
- Inadequate ventilatory drive
- Hypotension (SBP < 90 mmHg)
- Pneumothorax
- Facial trauma
- Epistaxis
Complications

- Aspiration
- Gastric distension
- Hypotension
- Corneal drying
- Barotrauma

Procedure – Non-invasive ventilation – CPAP

1. Place patient in a seated position.
2. Explain procedure to the patient (their understanding and cooperation is essential for successful CPAP).
3. Prepare equipment.
4. Select the appropriate size face mask ensuring the inner circumference of the air cushion encompasses the bridge of the nose, side of the mouth and inferior border of the bottom lip (with mouth slightly open).
   - **Size 4** – Small adult (identified by a red harness connector).
   - **Size 5** – Large adult (identified by a blue harness connector).
5. Attach the vectored flow valve to the mask and the oxygen tubing, ensuring harness connector remains in place.

6. Connect the oxygen tubing to a standard 15 L/min oxygen flow metre.

7. Adjust oxygen flow rate to 8 L/min to generate 5 cm H₂O continuous positive airway pressure (refer to scale on vectored flow valve).

8. Position mask on face and secure using the supplied harness to achieve a comfortable air tight seal.

9. Monitor patient’s response to treatment (i.e. respiration rate, SpO₂, blood pressure, chest sounds & work of breathing) and increase airway pressure every 3–5 mins (as required) to a maximum of 15 cmH₂O.

10. If the patient shows evidence of deterioration, discontinue CPAP immediately and treat in accordance with appropriate CPG.
Additional information

- Do not deny the patient oxygen therapy prior to equipment preparation or CPAP procedure.
- At no times should the vectored flow inlet of the CPAP device be occluded when connected to a patient.
- The brief interruption of CPAP is authorised for the administration of sublingual medications as indicated.
- CPAP O₂ concentration:

<table>
<thead>
<tr>
<th>O₂ L/min</th>
<th>cm H₂O</th>
<th>O₂ % (approx.)</th>
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<tbody>
<tr>
<td>8</td>
<td>5.0</td>
<td>54</td>
</tr>
<tr>
<td>12</td>
<td>10.0</td>
<td>62</td>
</tr>
<tr>
<td>15</td>
<td>15.0</td>
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