Clinical Practice Procedures:
Airway management/Surgical cricothyrotomy

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<th>Policy code</th>
<th>CPP_AM_SUC_1017</th>
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<tr>
<td>Date</td>
<td>October, 2017</td>
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<td>Purpose</td>
<td>To ensure a consistent procedural approach to surgical cricothyrotomy.</td>
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<td>Scope</td>
<td>Applies to Queensland Ambulance Service (QAS) clinical staff.</td>
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<td>Health care setting</td>
<td>Pre-hospital assessment and treatment.</td>
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<td>Population</td>
<td>Applies to all ages unless stated otherwise.</td>
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<td>Source of funding</td>
<td>Internal – 100%</td>
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All clinicians conducting rapid sequence intubations (RSIs) must be skilled in failed airway techniques. Cricothyrotomy is a definitive rescue technique for the failed airway if time (i.e. preservation of oxygenation) does not allow for other approaches or if they fail.[1] In addition, mental preparations to perform a surgical airway should be undertaken each time RSI is considered.

The QAS has adopted an open cricothyroid technique in adults as numerous studies have shown higher success rates in novice operators compared to ‘over the wire’ techniques.[2]

**Indications**

- Can’t Intubate, Can’t oxygenate (CICO) with decreasing SpO₂
- Primary airway attempt if ETT, LMA or BVM not feasible (e.g. massive facial trauma or burns)

**Contraindications**

- Child < 12 years of age
- Open tracheal injury
- Cardiac arrest

**Complications**

- High likelihood of blood obscuring the surgical field, this is a tactile rather than visual procedure
Procedure – Surgical cricothyrotomy

1. Maintain ventilation with bag valve mask or supraglottic airway as best as possible.
2. Prepare the neck with antiseptic solution.
3. With the non-dominant (ND) hand, identify the laryngeal landmarks (thyroid cartilage, cricoid cartilage and the cricothyroid membrane).

If the laryngeal landmarks are not identifiable (e.g. secondary to soft tissue swelling, burns or obesity):
- Make a longitudinal, midline incision at least 6 cm in length through skin and the subcutaneous tissue.
- Using fingers, separate strap muscles and identify the laryngeal landmarks.
4. Once laryngeal landmarks are identified, stabilise the structures with the ND middle finger and thumb, ensuring the ND index finger is on the cricothyroid membrane.

5. Lift the ND index finger and use a scalpel to make a stab incision, followed by a transverse extension through the cricothyroid membrane.
6. Switch hands so that the ND hand stabilises the scalpel.

7. Insert the trousseau tracheal dilator alongside the scalpel blade.

8. Lift the handle to carefully position the dilator within the longitudinal axis of the trachea and gently expand.
9. Remove and retract scalpel and immediately dispose in sharps container.

10. With the intubating catheter pointing away from the head and parallel to the floor, gently insert into the trachea until resistance is felt.

11. Remove 15 mm connector and railroad a lubricated size 6.0 ETT over the intubating catheter until the skin is positioned between the 2 ETT position markers. If incision is too narrow, gentle ETT rotation may be required.
12. Retract and remove trousseau tracheal dilator.

13. Whilst holding the ETT carefully remove the intubating catheter.

14. Inflate the ETT cuff with the minimum amount of air required to provide an effective seal and prevent ETT dislodgement.

15. Remove syringe from the ETT to effect the closing of the one-way valve, ensure pilot balloon remains inflated.

Skin positioned between the two ETT position markers
16. Connect resuscitation bag and commence ventilation.

17. Confirm correct tracheal placement by observing an appropriate continuous EtCO$_2$ waveform (minimum of 6 ventilations of moderate tidal volume required for confirmation).

18. Administer post intubation sedation as required (titrated aliquots of morphine/fentanyl and midazolam).

19. Assess and adjust ETT cuff pressure as required.

**Additional information**

- The potential for scalpel injury during this procedure is **HIGH**. All precautions that serve to minimise risk to the clinician and patient are to be applied.

- The QAS supplies the High Acuity Response Unit with the following non-standard QAS equipment for use when performing a surgical cricothyrotomy:
  - trousseau tracheal dilator (single use item)
  - tracheal hook

- The **tracheal hook** is a **re-usable** medical instrument that requires reprocessing and sterilisation in accordance with the QAS Infection Control Framework.