

**Clinical Guideline**

**Title:** Emergency Anaesthesia within the ED

<b>Related documents</b>	None
<b>Published date: Jan 2015</b>	Author: A Kehoe
<b>Review date: Jan 2016</b>	

All Trauma Units will have a written policy for the rapid sequence induction of anaesthesia within the Emergency Department (ED) consistent with the recommendations in the NAP4 report.

All relevant staff should be trained in the delivery of the policy and rescue surgical airway insertion in the event of failure to intubate / ventilate.

MTC and TUs should regular audit adherence with the guidance and monitor time to intubation from TARN data.

Examples of RSI SOPs are presented in appendices 1

## Appendix 1

<h1>Emergency Department</h1>	 Plymouth Hospitals <b>NHS</b> NHS Trust
Standard Operating Procedure (SOP)	
<b>Rapid Sequence Induction of anaesthesia (RSI) and tracheal intubation for major trauma patients in the resus room</b>	
Related documents	
Published date: January 2015	Author: Tony Kehoe/Elfyn Thomas
Review date: January 2017	

### **Aim:**

To promote patient safety during resus room RSI in major trauma.

To maximise the chance of successful endotracheal intubation on first attempt.

To minimise time to CT scan or definitive care for trauma patients requiring resus room RSI.

### **Background:**

Tracheal intubation in trauma patients is frequently difficult because of the need for c- spine control, presence of blood and other debris in the airway, distortion of normal facial and airway anatomy and chest injury.

ICU middle grades and EM physicians have a variable level of experience in trauma RSI. In addition, they are often assisted by ED staff with little or no anaesthetic room experience. In resus there is limited access to additional equipment or extra help. ICU staff are asked to perform this procedure in an unfamiliar environment.

Safety and speed while performing RSI can be promoted by a common SOP for assembling, preparing and checking equipment, allocating roles within the trauma team, inducing anaesthesia and muscle relaxation, conducting endotracheal intubation and failed intubation drills. Anaesthetic, ICU and ED staff attending trauma calls will be familiar with this SOP, ensuring clarity around roles and responsibilities and providing an additional layer of quality control.

The responsibility for the decision to perform RSI in major trauma patients **always** resides with the **consultant trauma team leader**, in consultation with other colleagues. The need for RSI will usually be identified during the primary survey.

#### ***Indications for RSI include:***

Actual or impending airway compromise

Oxygenation or ventilatory failure

Unconsciousness or suspected severe traumatic brain injury

An agitated or unmanageable injured patient

Humanitarian reasons - to facilitate adequate analgesia and decision making

## Team Roles:

**Team leader** (ED or Trauma Consultant)

**Airway Doctor** (ICU registrar/ consultant or other anaesthetist > ST3; if none available a competent, trained ED physician > ST3)

**Airway Nurse** (Senior ED nurse or ODP)

**Cricoid pressure (CP)** (ED Nurse or doctor)

**Manual in-line stabilisation (MILS)** (ED nurse or doctor)

**Drug giver** (ED doctor or nurse under instruction from airway doctor)

## Responsibilities:

### Team leader

Responsible for overall patient and team safety and allocation of roles. Ensure any deviation from SOP is justified. Decides on need for RSI **in consultation** with airway doctor. The consultant trauma team leader is always the final, responsible, decision maker.

### Airway doctor

Ensure adequate pre-oxygenation. Decide what sizes of airway equipment are required. Choose induction agent and dosages. Ensure drug giver, CP and MILS operators are adequately briefed. Run through challenge response checklist (see appendix 1) with airway nurse. Perform ET intubation and verifies tube position by appropriate ET<sub>CO<sub>2</sub></sub> trace. Secure ET tube. Initiate ventilation. Ensure ongoing sedation and muscle relaxation. Perform a rapid GCS assessment prior to induction of anaesthesia / sedation

### Airway Nurse

Assemble equipment required and lay it out in standard format on top of airway trolley (see appendix 2). Demonstrate presence and function of equipment using checklist. Ensure ET<sub>CO<sub>2</sub></sub> detector and module are attached to the monitor and incorporated with the filter and catheter mount into the waters' circuit. Hand equipment sequentially to airway doctor.

### MILS operator

Ensure movement of c-spine is minimised.

### CP operator

Maintain CP as instructed by Airway doctor.

## Intubation algorithm

### Pre-oxygenation

Pre-oxygenate using a Waters circuit. Assisted ventilation should not routinely be used unless O<sub>2</sub> saturation is <95% after 60 seconds of pre-oxygenation. Assisted ventilation if needed should be performed with a 2-person technique. Consultant advice / support should be sought for agitated patients if sedation is being considered to facilitate pre-oxygenation.

### Equipment:

#### Standard equipment laid out on top of airway trolley (for adults)

- Laryngoscope handles and MAC blades 3 & 4
- Intubating bougie
- ETT in preferred size (♂9.0; ♀8.0) and backup one size down
- 10ml syringe
- Waters circuit connected to oxygen with catheter mount, HME filter & ET<sub>CO<sub>2</sub></sub> detector connected via module to monitor.
- Tube tape or elastoplast tape pre-cut into "trousers"
- 2 x nasopharyngeal and guedel airways for rescue ventilation
- Cuff inflation pressure gauge

In the difficult airway trolley:

- Magill's forceps
- McCoy Laryngoscope
- iGels size 3-5
- Airtraq's - size 1-3
- Quicktrach II.
- VBM surgicirc / "formal" surgical airway kit

Choice of anaesthetic drugs:

Standard induction agents are **fentanyl** and **midazolam**.

Thiopentone, ketamine and propofol can also be used according to clinical need remembering that shocked patients need significantly lower doses and also need significantly more time for any drug to have its effect.

Standard relaxants are **suxamethonium** followed by **atracurium**.

The circulation nurse will prepare these agents using the **pre-prepared pack** from the fridge.

Drugs in pre-prepared pack (checked daily by resus nurse) Blunt drawing-up needles x10 (non-filtered)

**Midazolam** 10mg ampoule plus 10ml NaCl 0.9%, 10ml labelled syringe

**Suxamethonium** 2 x 100mg ampoules, 2 ml labelled syringes

**Atropine** 600 ug , 2 ml labelled syringe

**Atracurium** 2 x 50 mg ampoules, 5 ml labelled syringes

**Metaraminol** 10mg ampoule, 20 ml 0.9% NaCl plus 20ml labelled syringe

**Ketamine** 200 mg (10 mg/ml) ampoule plus 20 ml labelled syringe

**Propofol** 200 mg ampoule plus 20 ml syringe

**Thiopentone** 500 mg ampoule plus 20 ml H<sub>2</sub>O plus labelled 20ml syringe

**Fentanyl** 500 ug ampoule plus 10ml labelled syringe – **in CD cupboard**

For maintenance of sedation a propofol or midazolam infusion plus fentanyl should be used with atracurium for muscle relaxation.

All drugs should be given into a large cannula with fluid running.

*Prior to induction the airway doctor and nurse check equipment using the checklist ([appendix 1](#)).*

Yankauer sucker is switched on and placed under trolley end

## Technique for intubation:

Remember – patients die from failure to oxygenate not failure to intubate.  
Involve consultant colleagues early if you anticipate problems

- Cervical collar should be removed
- MILS and cricoid pressure (if used) should be applied from the side of the patient with operators facing the airway doctor
- The airway nurse/ODP stands on the airway doctor's right
- If first laryngoscopy view is good – intubate
- If not, make one adjustment and look again
- At second look, if a clear view is obtained then intubate, if not use a bougie immediately
- Difficult / failed intubation protocol will follow [appendix 3](#)
- Confirm tube placement with appropriate ETCO<sub>2</sub> trace
- Secure ETT with either adhesive tape (to avoid vascular congestion raising ICP), or non-adhesive (standard) tape ensuring it is secure to the ETT but not too tight around the neck
- Initiate mechanical ventilation and establish ongoing sedation
- Place a NGT or OGT as indicated

As part of the secondary survey or during a 'calm' moment, cuff pressure in the ETT should also be verified with the cuff inflation pressure gauge (aim for less than 25-30 cm water)

# Appendix 1 – Pre-RSI Challenge / response checklist

(a laminated copy is attached to the airway trolley)

INDUCTION CHECKLIST (EMERGENCY DEPARTMENT)			
Prepare Patient	Prepare Equipment	Prepare Team	Prepare for difficulty
<p><b>TEAM LEADER &amp; AIRWAY TEAM:</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Is preoxygenation optimal? Can the patient's condition be optimised further before intubation?</li> <li><input type="checkbox"/> Is the patient's position optimal (30° if neuro)?</li> <li><input type="checkbox"/> Adequate IV/IO access connected to running fluids if appropriate?</li> <li><input type="checkbox"/> Is all monitoring applied?                             <ul style="list-style-type: none"> <li><input type="checkbox"/> ECG</li> <li><input type="checkbox"/> Blood pressure</li> <li><input type="checkbox"/> Sats probe</li> <li><input type="checkbox"/> Capnography</li> </ul> </li> </ul>	<p><b>AIRWAY TEAM:</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Is equipment checked and available?                             <ul style="list-style-type: none"> <li><input type="checkbox"/> Water's circuit + BVM</li> <li><input type="checkbox"/> Facemask + adjuncts</li> <li><input type="checkbox"/> Suction – on?</li> <li><input type="checkbox"/> Correct size ET tubes</li> <li><input type="checkbox"/> 2 laryngoscopes</li> <li><input type="checkbox"/> Stylet/Bougie</li> <li><input type="checkbox"/> Tube tapes/ties</li> <li><input type="checkbox"/> HME + catheter mount</li> <li><input type="checkbox"/> Cuff pressure gauge</li> </ul> </li> <li><input type="checkbox"/> Do you have all the drugs required, including vasopressors, fluid boluses and ongoing sedation/ paralysis?</li> </ul>	<p><b>TEAM LEADER who is...?</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Drug giver</li> <li><input type="checkbox"/> Cricoid Pressure</li> <li><input type="checkbox"/> Manual In-Line Neck Stabilisation (if indicated)</li> </ul> <ul style="list-style-type: none"> <li><input type="checkbox"/> Is everyone aware of their role?</li> <li><input type="checkbox"/> How do we contact further help if required?</li> </ul>	<p><b>AIRWAY TEAM:</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> If the airway is difficult, could we wake the patient up?</li> <li><input type="checkbox"/> If the intubation is difficult, how will you maintain oxygenation? (Plans A,B...)</li> <li><input type="checkbox"/> Difficult airway equipment located?</li> <li><input type="checkbox"/> Are any specific complications anticipated?</li> </ul>

This Checklist is not intended to be a comprehensive guide to preparation for induction

Customised for Derriford ED RTC 2016



### Appendix 3 – Failed intubation algorithm for major trauma



