Pre-hospital Anaesthesia & Rapid Sequence Intubation (2001)

FIRST DO NO HARM

General anaesthesia & RSI is a complex & advanced procedure in the hospital environment. It requires experience, equipment, assistance, time & expertise. It's use in the pre-hospital setting is always controversial, rarely indicated and fraught with difficulty. Moreover pre-hospital emergency care doctors often lack regular exposure to the procedure and up-to-date training. Its use is therefore difficult to justify but there are occasional indications to perform the procedure outside hospital by suitably trained immediate care doctors.

There are situations where a patient who is NOT obtunded requires a secure airway or where a patient who requires sedation or analgesia needs to subsequently have their airway protected.

RSI will provide:
A protected & secure airway
A sedated +/- paralysed patient
Control over respiration
Control over behaviour
Surgical anaesthesia
Analgesia with respiratory control

You will loose your best piece of patient monitoring equipment, the patient's conscious level!
AND Every pre-hospital intubation WILL be a difficult one!

Indications for use

Where the patient requires any of the above but is too alert to tolerate an ETT without the use of drugs.

- Head injured patients whose A_cBC management is not straightforward and cannot wait.
- Combatant patients who compromise their own management.
- To gain firm control over A_cBC prior to entering an environment where decline in the patient would be difficult or impossible to manage e.g. air transport.
- Inhalational burns where the opportunity to intubate may be lost if delay in management occurs necessitating resort to a surgical airway.
- Cardio-respiratory arrest aftercare.
- Pre-hospital surgical procedures or rapid release of an entrapped patient.

Having attended to A_cBC and established one or more of the above indications exist; examine other options.

- Do prior steps in the airway management hierarchy provide a safer & adequate solution?
- Can a more experienced practitioner be available without delay?
- Can telephone or radio advice be sought?
- Is an alternative management strategy available including transport or moderate sedation?
- Is there a resolvable clinical problem which will remove the need for RSI & intubation (hypoxia, shock, pain or anxiety leading to combatant patient)

Ask the following questions:

Do I carry the drugs & equipment to perform the procedure?
Do I have a suitable assistant?
Am I competent to perform the procedure?
Has the primary survey and those urgent parts of the secondary survey requiring a responsive patient been performed?

Preparation & Equipment

If circumstances or equipment are not sufficient, the procedure should be aborted.

Monitoring

Experienced human eyeball, stethoscope, NIBP & pulse oximetry, ECG & $EtCO_2$ are expected.

Airway management

ET tubes appropriate & fall-back sizes
10ml syringe +/- water for balloon
LMA
Lubricating jelly
Gum-elastic bougie
ETT introducers
Surgical airway kit
Laryngoscope
Bag-valve-mask
Catheter mount
In-line HME Filter
Oro-pharyngeal & naso-pharyngeal airways
Oxygen
Non re-breather mask
ETT tape, narrow sleek tape
Suction yankeur & fine bore ET catheter
Assistant fully familiar with cricoid pressure & ideally BURP manoeuvre
Stethoscope
Surgical airway kit

Circulatory management

2 secured IV lines
1 running 1 litre crystalloid (not glucose)
Optimum correction of hypovolaemia
Needles, syringes & spare IV cannulae

Drugs

Induction & maintenance for analgesia, sedation & paralysis.
To manage iatrogenic effects e.g. bradycardia, hypotension & anaphylaxis.

Morphine/Fentanyl
Midazolam
Ketamine
Suxamethonium
Propofol/Etomidate
Vecuronium/Pancuronium
Atropine/Glycopyrrolate
Naloxone
Adrenaline
Spare IV fluid
Enough oxygen supply : RR (eg 12) x TV (eg 600ml) =MV (7.2 l/min)
Lasts 2x longer if oxylog/pneupac can do 50% FiO2

Assistance

Lead doctor
Assisting Paramedic or Doctor
To manage airway, drugs & cricoid pressure
Runner familiar with equipment

Procedure

Attend to A_cBC

In doing so:
Assess (grade) the patient's airway with respect to ease of intubation, may require airway adjunct.
Assess the patient's oxygenation and pre-oxygenate +/- BVM care not to inflate the stomach.
Consider delegating pre-oxygenation to assistant & use the time to prepare & brief for RSI.
Take care to fully examine patient's chest for signs of life threatening chest injuries & pneumothorax which may covertly tension during IPPV & air transport. Consider need for prophylactic chest drainage or needle thoracocentesis.
Assess & record the patient's haemodynamic status consider 10-20ml/kg crystalloid bolus prior to induction.
Assess & record the patient's current conscious level ideally full GCS.
Obtain & record whatever AMPLE history is available.

Brief the patient on what will occur.

Assess whether verbal consent can be obtained & if the patient is competent to provide this.
Brief the team and delegate tasks.

Intubator	Paramedic or doctor. Assemble intubation & difficult airway kit. (see airway equipment) liaise with airway assistant discuss how MILCSI is to be achieved.
Airway assistant	apply cricoid pressure +/- BURP
IV therapy	Doctor to titrate sedation, analgesia, fluids & administer suxamethonium.
Runner	Assist MILCSI, scene safety & equipment provision.

This may be achieved using 3 people if appropriately organised airway assistant & runner may be same person or the intubator sits astride the patient's head. Team leader is either IV therapy or intubator member.
Generally the IV therapy team member will instruct when to commence cricoid pressure. The intubator after checking ETT placement is the only team member who should instruct release of cricoid pressure or use of BURP.

Is everybody ready?

Connect monitoring equipment

Pre-oxygenate patient (if inadequate respiration use gentle synchronised BVM +/- airway adjunct.

Check patency of both IV lines.

Record vital signs.

Remove or loosen semi-rigid collar, head blocks & institute MILCSI.

Administer anaesthetic dose of chosen agent(s) through running IV line.

Apply cricoid pressure

Administer suxamethonium through running IV line & await fasiculation response (don't get this every time.)

Open airway, insert laryngoscope & consider need for suction.

Visualise laryngeal anatomy.

Consider if modification of cricoid pressure or BURP required to improve view of chords.

Pass bougie through cords

Pass ETT over bougie through chords to chosen length & attach catheter mount & inflate lungs.

Auscultate both axillae & epigastrium.

Inflate ETT cuff with appropriate quantity of air/water whilst listening for seal. Cricoid off.

Secure ETT in place & re-check position.

Repeat A_cBC assessment

Re-apply semi-rigid collar & head blocks. OP Airway/bite block.

Record vital signs. Observe EtCO2 normality. Ensure EtCO2/Disconnection alarm set.

Prepare patient for transport.
Re-check ETT placement after any patient movement or procedure.
Package & transport of ventilated patient not remit of this SOP.

Consider needs:

Maintenance:

Sedation
Analgesia
IV Fluids
Oxygen
Paralysis

Warmth (ever seen a paralysed patient shiver?)
Consider NG/OG Tube

Ensure fall back airways in your top pocket.

OP Airway, LMA/iGEL. BVM on patient for transport.