



Rapid Sequence Induction in the Emergency Department

For on site tutorials as part of the remote simulation program
Airway module A3
(last reviewed Oct 27th 2012)

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Introductions



General Aims

- Learn in a team setting
- Blend clinical skills with team skills
- Reflect critically on practice

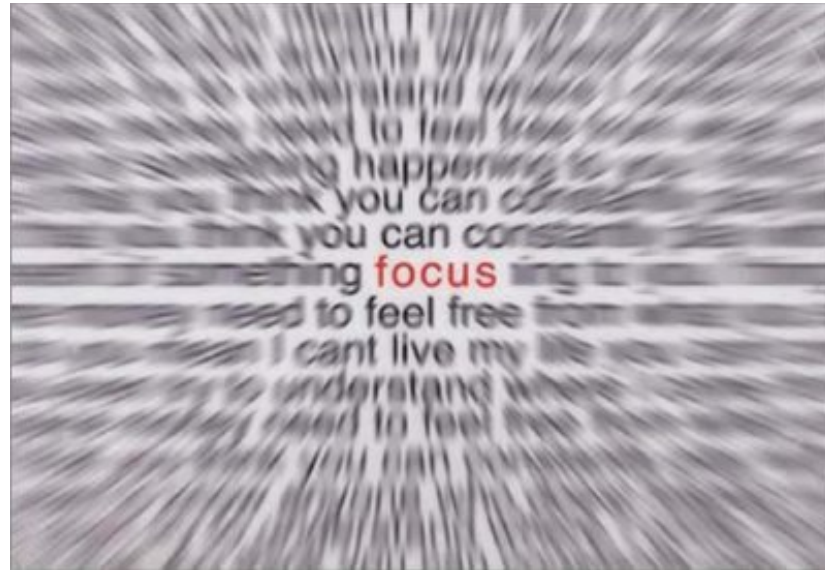
Ground Rules

- Participation
- Privacy
- Confidentiality
- Disclaimer
- Debriefing
- Mobile phones

Objectives

- To discuss the role of Rapid Emergency Intubation (REI) in the emergency department
- Practice skill of intubation
- Prepare and plan to perform a REI
- Use an emergency algorithm in the event intubation is difficult
- Trouble shoot problems post RSI, such as desaturation.
- Develop skills with video laryngoscopy

Patients don't die from failure to
intubate.....they die from failure to
oxygenate.



DON'T GET FIXATED ON THE PLASTIC

Emergency Department Airways

- Assessment

- History
- Examination
 - Look
 - Listen
 - Feel
- Difficulty
 - BOOTS
 - LEMON
- Available Skills

Management Options

- Simple airway maneuvers
- Nasal Prongs
- Oxygen Masks – variable and fixed
- Airway Adjuncts
- Bag Valve Masks
- Non-Invasive Ventilation
- Laryngeal Masks
- **Intubation**
- Surgical Airway

What is Rapid Sequence Induction?

It is the most common technique used in ED. In experienced hands it is a safe and successful

Fast method of securing the airway in those who have a greater risk of aspiration

Uses sedation and rapid paralysis. 3 components:

1. Preoxygenation;
2. Rapid acting muscle relaxant
3. Cricoid pressure

7 P's of RSI

Preparation (space, staff, stuff)

Pre-oxygenation

Planning

Positioning +/- cricoid pressure

Paralysis with induction

Procedure

Post ETT confirmation and care

Preparation Prevents Piss Poor Performance

Preparation is vital

In order to perform safe endotracheal intubation in an ED you need:

SPACE—Ideally in a well equipped resuscitation room.

STAFF---At a minimum you require an airway assistant, procedure doctor and a scribe.

STUFF---The acronym **STOP I C BARS** is useful to assist you to remember.

STOP I C BARS

S Suction

T Tubes

O Oxygen

P Pharmacology.

I IV access and IV Fluids

C Connect to monitors

End Tidal CO₂.

B Blades and bougie

A Alternative devices
CMAC position

R Rescue techniques
LMA

S Surgical technique

ED Intubation Checklist

Team

- In hours, ED Senior Dr aware of RSI?
- Out-of-hours, if difficulty anticipated, anaesthetics contacted?
- All members introduced by name & role and each briefed in turn by TL
- Difficult intubation plan briefed?
- Difficult airway trolley at hand?
- Anticipated problems – does anyone have questions or concerns?

Patient

- Pre-oxygenation optimal?
 - Add nasal prongs or NIV
- Patient position optimal?
- Patient haemodynamics optimal?
 - Fluid bolus?
 - Pressor?
- Does it look like it might be difficult:
 - Difficult BVM?
 - Difficult laryngoscopy?
 - Difficult supraglottic airway?
 - Difficult cricothyroidotomy?

IVI/Drugs

- Fluids connected, runs easily?
- Spare IVC?
- Monitor: ECG, BP, SaO₂.
- RSI drugs drawn up, doses chosen?
- Post-intubation anaesthesia plan - drugs drawn up?

Equipment

- Suction working?
- BVM with ETCO₂ connected?
- OPA and NPA available?
- 2 x laryngoscopes working? Correct blade size?
- Tubes chosen, cuff tested
- Bougie or stylet in tube?
- Tube tie or tapes ready?
- Ventilator circuit attached?
- LMA sized & available?
- Surgical airway equipment available?

Version 1.3

Developed by T Fogg, J Kennedy and J Vassiliadis, RNSH ED 25/10/2012

RSI drugs

Induction: Propofol,
Thiopentone, Ketamine

Paralysis:
Suxamethonium,
Rocuronium

Adjuncts: Metaraminol,
Opiates

Post Intubation: Sedation,
Analgesia and paralysis

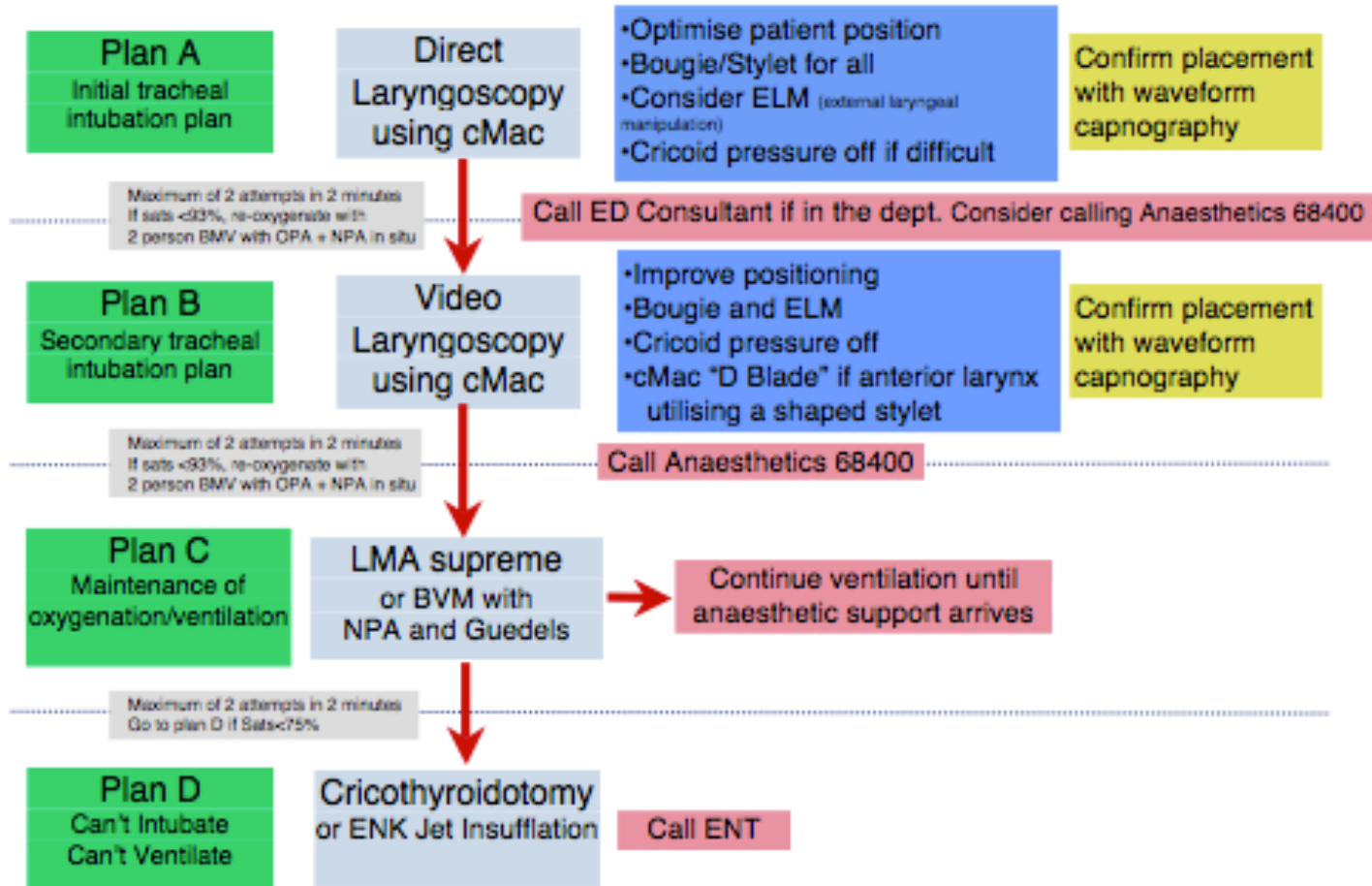


Position and PreOxygenate



Planning

RNSH EMERGENCY DEPARTMENT AIRWAY ALGORITHM



Developed by T. Fogg, J. Kennedy, J. Vassiliadis; Version 1.4 08/09/12.

Based on an algorithm by George Douros from Austin Health

Paralysis and Procedure



Check Positioning

Check correct position by seeing the chest rising symmetrically

Auscultation

End tidal CO2 colorimetric or waveform

O2 saturations

Patient colour

Misting of ETT



Recognising a malpositioned ETT

<p>☑️ 😊 TRACHEA</p> <ul style="list-style-type: none"> Expired end tidal CO₂ capnograph shows a square wave for 5 or more breaths (this is the most reliable method) The ETT was witnessed to go through the cords. The ETT leak is readily obliterated with 4 - 5 ml air Chest wall excursion is easily achieved with BMV Bilateral breath sounds are auscultated in the axillae Mist forms in the ETT The SaO₂ remains above 95 % 	<p>👉 MAIN BRONCHUS</p> <ul style="list-style-type: none"> Chest wall excursion is reduced on the left Breath sounds are reduced on the left The SaO₂ remains 90 – 94 % <p>ACT</p> <ul style="list-style-type: none"> •Withdraw the ETT while auscultating •Confirm with US 	<p>👎👎👎 OESOPGAGUS:</p> <ul style="list-style-type: none"> Chest wall excursion is absent in both axilla The SaO₂ falls below 90% (Can take several minutes in pre-oxygenated healthy people) A persistent burping sound escapes around cuff despite filling with air The stomach expands with ventilation Other signs of tracheal placement are absent <p>ACT</p> <p>Remove the ETT</p>
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Post Intubation Care

- Sedation and Analgesia
- Ventilator settings
- Adjuncts – NGT, IDC, Lines
- DOCUMENTATION

F - luids

A - nalgesia

S - edation

T - hromboembolic prophylaxis

H - ead Up

U - lcer Prophylaxis

G - lycemic Control

DON'T EVER FORGET THE ONGOING CARE OF THE CONDITION, SEEK THE CAUSE, MANAGE CO-MORBIDITIES and AVOID COMPLICATIONS

What if the patient desaturates after intubation?

Is there a disconnection?

Is the ETT in the trachea?

Is the ETT obstructed?

Has the patient developed a pneumothorax or severe hypotension?

Is there a problem with the ventilator?

Is there breath stacking? Bronchospasm?

Systematic approach to desaturation in an intubated patient

STEP 1. EXCLUDE CAUSES ABOVE THE AIRWAY

1. Check O2 supply
2. Check connection of O2 tubing to ventilation device
3. Detach patient from the ventilator and manually bag with bag-mask device
4. Consider replacing existing bag and mask device with alternative bag-mask

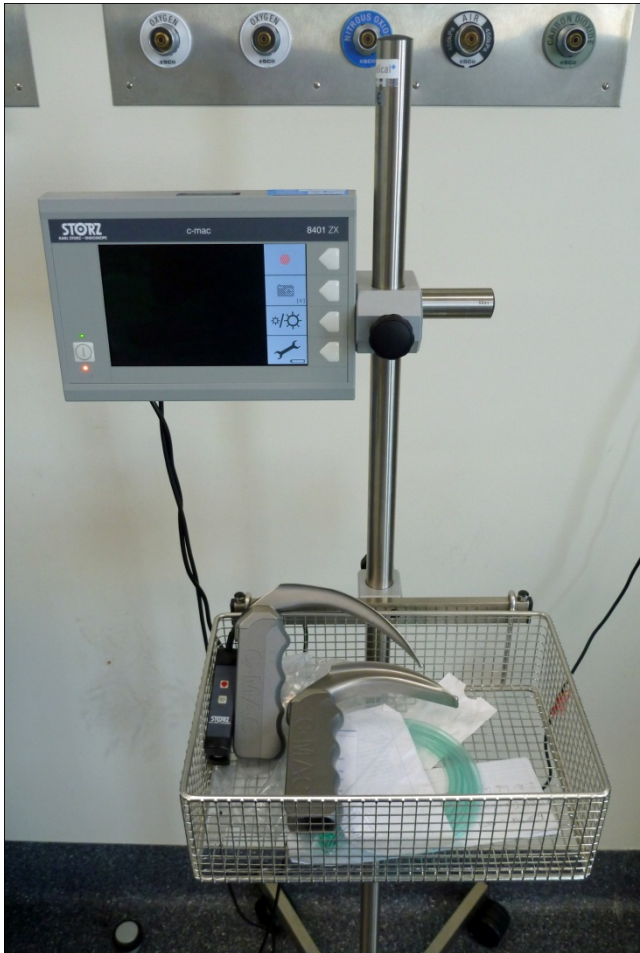
STEP 2. EXCLUDE CAUSES IN THE AIRWAY

1. Check the position of the ETT at the lips
2. Inspect the ETT for external obstruction (eg. kinking)
3. Check the filter
4. Confirm the position of the ETT in the trachea (CHECKS ETT)
5. Suction the ETT

STEP 3. EXCLUDE "PATIENT" CAUSES

1. Inadequate Minute Ventilation (V_m) – hypoventilation, bronchoconstriction
2. Alveolar gas exchange: endobronchial intubation, atelectasis, pulmonary venous
3. Congestion, aspiration
4. Space occupying lesion: eg. Pneumothorax
5. Circulation causes: hypotension, reduced venous return

Now the C-MAC video laryngoscope





Scenario

BAT call

50 year old male

Head injury – GCS 7

BP 156/78

HR 70

Sats 98%

BSL 7.2

ETA 2min

Summary

- Assessment for difficulty is essential
- Preparation and Planning provides the optimum environment for intubation
- In ED airways the first go should be the best go
- Everyone should know the Plan A/B and C
- Re-assess the patient with ABCs if there is deterioration
- Remember to continue to manage the patient

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