IRISH ASSOCIATION FOR EMERGENCY MEDICINE

IAEM Clinical Guideline

# Assessment and Management of Patients Requiring Emergency Intubation in the Resuscitation Room

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**DISCLAIMER**
IAEM recognises that patients, their situations, Emergency Departments and staff all vary. These guidelines cannot cover all clinical scenarios. The ultimate responsibility for the interpretation and application of these guidelines, the use of current information and a patient's overall care and wellbeing resides with the treating clinician.

## GLOSSARY OF TERMS

| | |
|---|---|
| BVM | Bag Valve Mask |
| DSI | Delayed Sequence Induction |
| ED | Emergency Department |
| ENT | Ear Nose and Throat |
| $ETCO_2$ | End-Tidal Carbon dioxide concentration |
| $ETO_2$ | End-Tidal Oxygen Concentration |
| ETT | Endo-Tracheal Tube |
| IV | Intravenous |
| LMA | Laryngeal Mask Airway |
| NIBP | Non-Invasive Blood Pressure |
| NIV | Non-Invasive Ventilation |
| NP | Nasal Prongs |
| NRBM | Non Re-Breather Mask |
| PEEP | Positive End-Expiratory Pressure |
| RSI | Rapid Sequence Induction* |
| $SpO_2$ | Peripheral Capillary Oxygen Saturation |

* The authors acknowledge that the terms “rapid sequence induction” and “rapid sequence intubation” are used interchangeably within the assumed limitations

## Assessment and management of patients requiring emergency intubation in the resuscitation room

### INTRODUCTION

Advanced airway management is a well established core skill in Emergency Medicine in Ireland and is a cornerstone of resuscitation.

Rapid Sequence Induction (RSI) is a life-saving procedure and is a skill that emergency physicians must be able to deliver a safe, and timely manner. It should be performed in a predictable and reproducible manner that ensures highest likelihood of success. It is, however, a high-risk procedure known to have increased rates of complications (failed intubation, hypoxia, hypotension or surgical airway) when performed in the Emergency Department, compared to controlled hospital environments (e.g. the operating theatre).

Since the original technique of RSI was first described in the 1970s, the advent of new research, drugs and equipment has led to widespread inter-practitioner variation. As a result of this, a set of modern robust guidelines is required.

This guideline have been developed to act as a resource for the multidisciplinary Emergency Department (ED) team to aid advanced airway management of acutely ill or injured patients requiring a definitive airway in the resuscitation room. This guideline and the associated algorithms are intended to be used for all cases where patients require emergency intubation, irrespective of the grade or discipline of the person performing the procedure.

These guidelines are not intended to replace sound clinical judgement.

## PARAMETERS

Target audience:

This guideline is intended for use by Emergency Medicine and Anaesthesiology / Intensive Care staff involved in advanced airway management in the resuscitation room.

Patient population:

Critically ill patients requiring a definitive airway.

Contraindications:

Lack of formal training in advanced airway management.

Relative Contraindications:

An established ceiling of care which excludes intubation.

## AIMS

To provide a standardised, evidence-based guide for the assessment and management of acutely ill or injured patients requiring a definitive airway which is predictable, reproducible, generalisable and safe.

The airway proforma gives the team leader a standardised approach to plan and perform an emergency intubation in the resuscitation room.

Standardisation of practice will ensure safe and effective airway management, decrease peri-intubation morbidity and mortality and improve patient outcomes.

The proforma also includes an audit tool to be used to assist local review of practice, and forms the basic building blocks for a national airway registry. This will provide data required to audit local and national practices in order to highlight areas of potential improvement and enact change.

## ASSESSMENT:

1. Indication for intubation:

   It is responsibility of the team leader to established and document the need for definitive airway. (fig. 1)

   Indications for emergency intubation in the ED include, but are not limited to situations where there is loss / anticipated loss of a patent secondary to:

   a. Trauma:

      - Traumatic cardiac arrest
      - Shock
      - Neck / facial trauma
      - Burns / inhalation injury
      - Drowning
      - Chest trauma
      - Penetrating trauma
      - Head injury – airway not patent
      - Head injury – threatened airway

   b. Medical:

      - Respiratory failure
      - Airway obstruction
      - Anaphylaxis
      - Cardiac Failure
      - Sepsis
      - GI bleed
      - Seizure
      - Altered mental status
      - Overdose/ poisoning

- Cardiac arrest
- Intra-cranial haemorrhage / stroke

2. Patient:

   The patient's medical history should be assessed and documented using the AMPLE acronym (fig. E1):

   A – Allergies

   M – Medications

   P – Past medical history

   L – Last intake

   E – Events

3. Airway assessment (fig. E1) will include consideration and formal recording of:

- Predictors of difficult bag-valve-mask ventilation – MOANS

  M – Mask seal. Facial features (e.g. beards), saliva or blood, anatomical disruption such as facial fractures or retrognathia.

  O – Obesity or obstruction. Parturient or at-term mothers, angioedema, Ludwig's angina, upper airway abscess, epiglottitis

  A – Age > 55 years

  N – No teeth, edentulous

  S – Sleep apnoea or stiff lung, COPD, asthma, ARDS

- Predictors of difficult intubation – LEMON

  L – Look externally. Use clinical gestalt, evidence of lower facial disruption, bleeding, small mouth, etc.

  E – Evaluation 3-3-2 rule:

  - Mouth opening - 3 fingers
  - Mandibular space: Chin to hyoid – 3 fingers

- Glottic space: Hyoid to thyroid notch – 2 fingers

M – Mallampati class. In order of increasing difficulty (Class I – IV)

O – Obesity, obstruction.

- Obesity: poor glottic views
- Obstruction - 4 cardinal signs of upper airway obstruction:
  1. Stridor
  2. Muffled voice
  3. Difficulty swallowing secretions
  4. Dyspnoea

N – Neck immobility. Trauma, arthritis, ankylosing spondylitis

- Predictor of difficult extraglottic device use – RODS

  R – Restricted mouth opening

  O – Obstruction

  D – Disrupted or distorted airway

  S – Stiff lung, cervical Spine

- Predictor of difficult surgical airway – SHORT

  S – Surgery or other airway obstruction

  H – Haematoma (includes infection and abscess)

  O – Obesity

  R – Radiation distortion (and other deformity)

  T – Tumour

## MANAGEMENT

1. If a difficult airway has been predicted, seek expert help from the most senior available anaesthesiologist / ENT surgeon.

2. Pre-intubation preparation:
    - Pre-intubation challenge-response checklist must be undertaken. (fig. E3)

    - The team leader should make sure that clear roles have been assigned, verbalise the indications for intubation, verbalise and rehearse each step of the airway strategy (plans A, B, C and D) and invite questions or concerns from members of the team.

    - Equipment and drugs should be prepared and checked. Pre-oxygenation techniques can occur simultaneously.

    - Ensure standard monitoring available and functioning.
        - This includes: pulse-oximetry, waveform capnography, non-invasive blood pressure, heart rate, ECG and end-tidal oxygen concentration (if available).

    - Optimisation of patient's position, haemodynamics and pre-oxygenation is paramount. The use of apnoeic oxygenation is recommended.

In the event that adequate pre-oxygenation is not possible due to a patient's altered mentation, delayed-sequence induction should be considered. (fig. E2)

3. Procedure – Rapid Sequence Induction

On completion of the challenge response checklist, discussion and agreement of the airway strategy, intubation can then be performed following each step of the Difficult Airway Algorithm. (fig. E4)

In the event of declaration of a "*Can't Intubate, Can't Oxygenate"* situation (C.I.C.O.), immediate transition to the Surgical Airway Algorithm is mandated. (fig. E5)

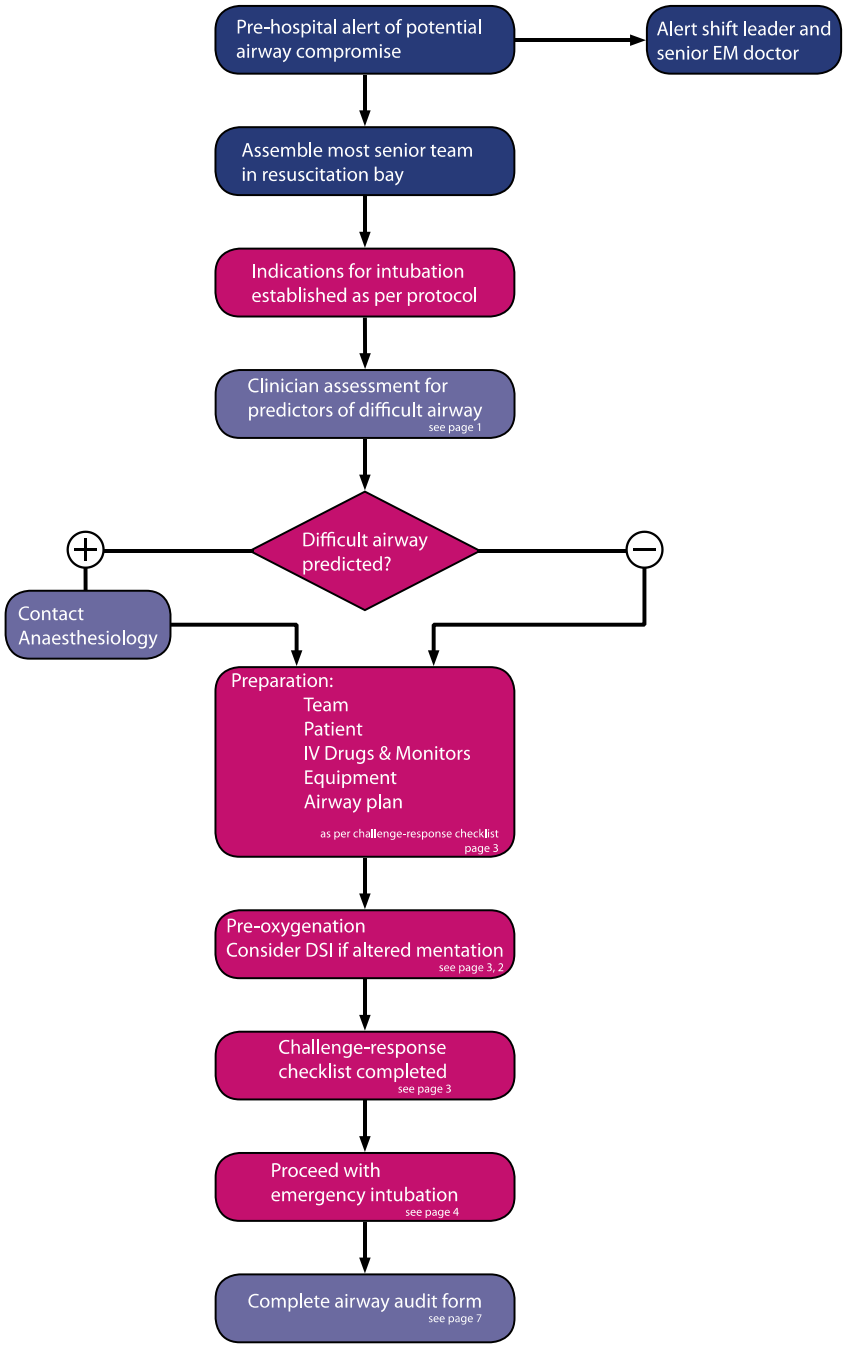
4. Post-intubation Care

Following the confirmation of successful endotracheal intubation by waveform capnography, post-intubation management is immediately commenced.

Patient should be referred to a team in accordance with local guidelines.

It is recommended that the details of the procedure are recorded in the Airway Audit Form included in the proforma. (fig. E7, E8)

**Figure 1.** Flowchart for Patients Requiring Emergency Intubation



## SPECIAL CONSIDERATIONS

## COMPANION DOCUMENTS

Appendix 1: Emergency intubation proforma

Appendix 2: Airway registry form

Link to Evidentiary Table / References