

DAS VEMS AirDrills: Critical Care

Based on DAS 2025 Guidelines – Unanticipated Difficult Tracheal Intubation (Plans A-D)

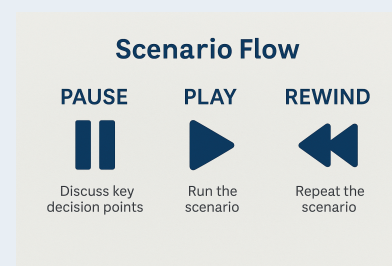
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Format: Pause→Play→Rewind (low-fidelity / table top drill)

Learners: Critical Care teams including doctors (all grades), all nursing staff, anaesthetic teams

Facilitators: 1—2 Intensive Care Unit educator(s) / Airway Lead



1. OVERVIEW

Scenario: A patient on the Intensive Care Unit (ICU) receiving non-invasive ventilation is clinically tiring and has a significant escalation in their oxygen requirement. The decision is made to intubate the patient. This is a scenario of a failed intubation in an unanticipated difficult airway in the ICU. The focus is on decision-making, declaration, communication, and transition through the DAS 2025 algorithm. This AirDrill is designed to be performed as a **Visually Enhanced Mental Simulation (VEMS)** using the printable resources on the DAS Education Package. It can also be run simply as a mental rehearsal for critical care teams.

2. INTENSIVE CARE UNIT SPECIFIC CONSIDERATIONS

Airway management in the non-operating theatre environment is associated with a higher risk of adverse events including failed intubation, oesophageal intubation, hypoxia and cricothyroidotomy.¹ The reasoning for this is complex but includes issues of urgency, staffing, few opportunities for awake intubation in obese patients or those with anatomical difficulties, limited physiological reserve (the physiologically difficult airway) and aspects of ICU logistics.¹ Senior input should be sought early given the recognised risks; these should be communicated during ICU handover where a deliverable plan should be agreed with the staff on duty that day.

A checklist should be used for all intubation of all critically unwell patients. This allows preparation of the patient, gathering of all required equipment and drugs, and facilitates preparation for difficulty.¹ It also prompts interventions to improve the physiological status of the patient and help create 'flash teams' which come together at short notice to perform urgent procedures. This is where the 'shared mental model' is created. Scoring systems such as the MACOCHA and HEAVEN scores can aid in identifying critically ill patients at risk for difficult intubation (see appendix).



The 2018 'Guidelines for the management of tracheal intubation in critically ill adults', provides an algorithm and intubation checklist for use in all hospital locations including the ICU.² The 2025 DAS guidelines contain an updated 'Emergency Tracheal Intubation Checklist' (see appendix). Some differences exist between the 'Guidelines for the management of tracheal intubation of critically ill adults' algorithm and the DAS 2025 guidelines, these will be considered in the 'Discussion points' whilst progressing through the scenario.

3. SESSION STRUCTURE

The scenario below involves a **clinician** competent in basic airway management and an **airway assistant**. The airway assistant may be an ICU nurse, Operating Department Practitioner or Anaesthetic Nurse.

Each section corresponds to a Plan A—D in the DAS 2025 algorithm. Use pauses to reflect and ensure participants verbalise key standardised phrases such as 'sustained exhaled CO₂', 'failed intubation', 'Stop, Think, Communicate'. Facilitators are there to provide anticipatory prompting with clinical cues (appropriate to the level of the learner), prevent things going off track, and allow for local discussion of context/ equipment/ availability of support that is relevant to this team. Some of these discussions may lead to changes in process, equipment, and locations in your department. Please see accompanying '**Facilitators guide to DAS AirDrills**' and **Demo Videos** for further guidance.

4. PRE-BRIEF

Before running the scenario, facilitators should take a few minutes to set the scene and create optimal conditions for effective learning

Setting the scene: Introduce the session as a low-fidelity Drill, based on the DAS 2025 algorithm. Explain that the aim is to build shared mental models, increase guideline familiarity and rehearse decision-making and communication as a team.

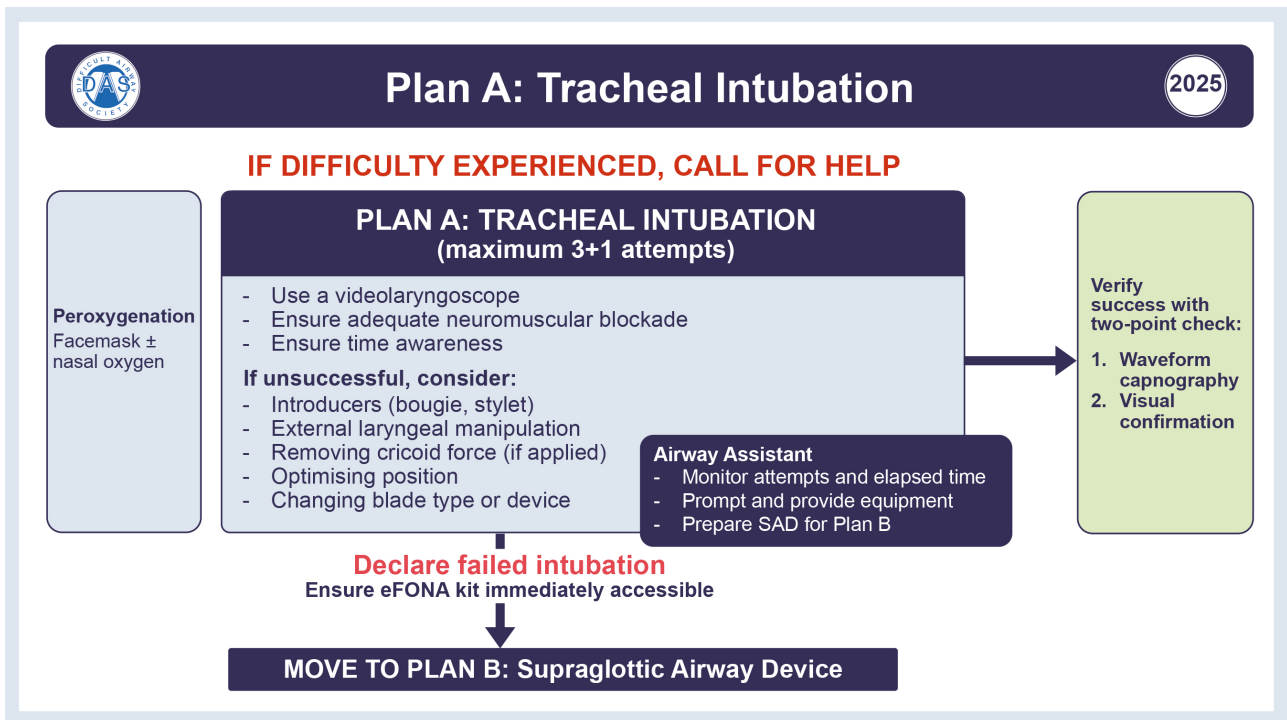
Format: The session uses a Pause–Play–Rewind structure. Facilitators can pause the scenario at key decision points, allow the team to discuss options then play forward or rewind to replay a segment with different decisions. There is no formal assessment. Emphasise that this is a safe space to ask questions, make mistakes, and explore uncertainty. Invite the team to speak up and challenge each other constructively.

Role of the facilitator: Facilitators guide the scenario flow, provide clinical cues, keep the group on track, and prompt reflection at pause points. The level of scenario complexity can be adjusted depending on the level of the learners.



5. BRIEF

- A patient on the ICU is receiving non-invasive ventilation for bacterial community acquired pneumonia. No significant airway risks were identified at admission.
- The patient is clinically tiring, distressed, and their SpO₂ has dropped to 88% on maximal NIV settings. Their blood pressure is trending down, currently 95/60 mmHg, with a heart rate of 125 bpm.
- It is 1 am* and the *On Call Consultant* is at home.* [**Can change the time and availability depending on the team and context*]
- Talk through with your team what you are going to do. Learners can ask for equipment, which will be given in the form of paper representations.
- Allow the learner to state anything they would do prior to commencing intubation, e.g.:
 - Airway assessment including proactive palpation of the cricothyroid membrane and declaration of Plan D incision technique.
 - Ascertain minimum skillset and number of team members needed.
 - Delegate roles including monitoring, drugs, time-keeping.
 - Ask what specific techniques are used to engage the team – e.g. discussing specifics of the different anticipated and unanticipated steps, transition points to be identified, and giving them opportunity to raise concerns before the procedure starts.
 - Optimise cardiovascular system, complete intubation checklist, share plan for failure.



Scenario flow:

- Attempts at **Videolaryngoscopy** confirm a poor glottic view (Grade 3-4)
- Videolaryngoscopy attempts fail (max 3+1)

Facilitator prompts:

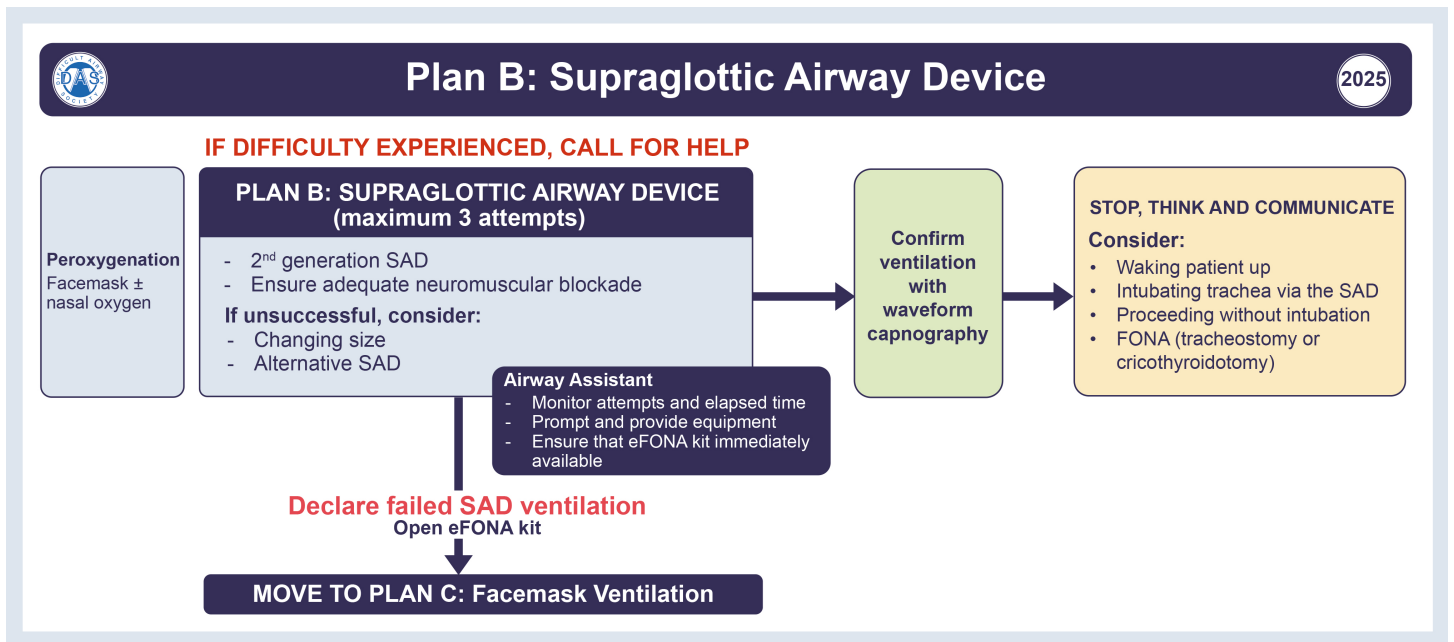
- Allow team to optimise (head-up position, external laryngeal manipulation, introducer use)
- State that the learner is unable to intubate at each attempt
- After each attempt, prompt optimisation and/or transition
- Oxygenation maintained if peroxygenation is achieved between attempts

Discussion points:

- **Checklist:** Did preparation for intubation include completion of an intubation checklist? Discuss Plan A-D
- **Assessment:** Anticipation and predictors of anatomical and physiological airway difficulty. Assess and identify cricothyroid membrane
- **Preoxygenation and peroxygenation:** How was this performed? What if the patient was agitated?
- **Early help-seeking:** Who would make this call, and how would you do it in this situation/context? Who would you ask for help?
- **Declaration:** "Failed intubation declared. Moving to Plan B."
- **Technical reminders:** Max 3+1 attempts, optimisation + peroxygenation, timely transitioning, priming in parallel for eFONA. Management of cardiovascular status
- **Role of airway assistant:** Prompting, monitoring, priming
- **Team challenge:** What if the intubator wanted to continue with multiple attempts?

Moving on

- Options to replay scenario, or to continue to Plan B



Scenario flow:

- 2nd generation SAD insertion after failed intubation.
- First attempt fails; second succeeds with sustained ETCO₂ trace.

Facilitator prompts:

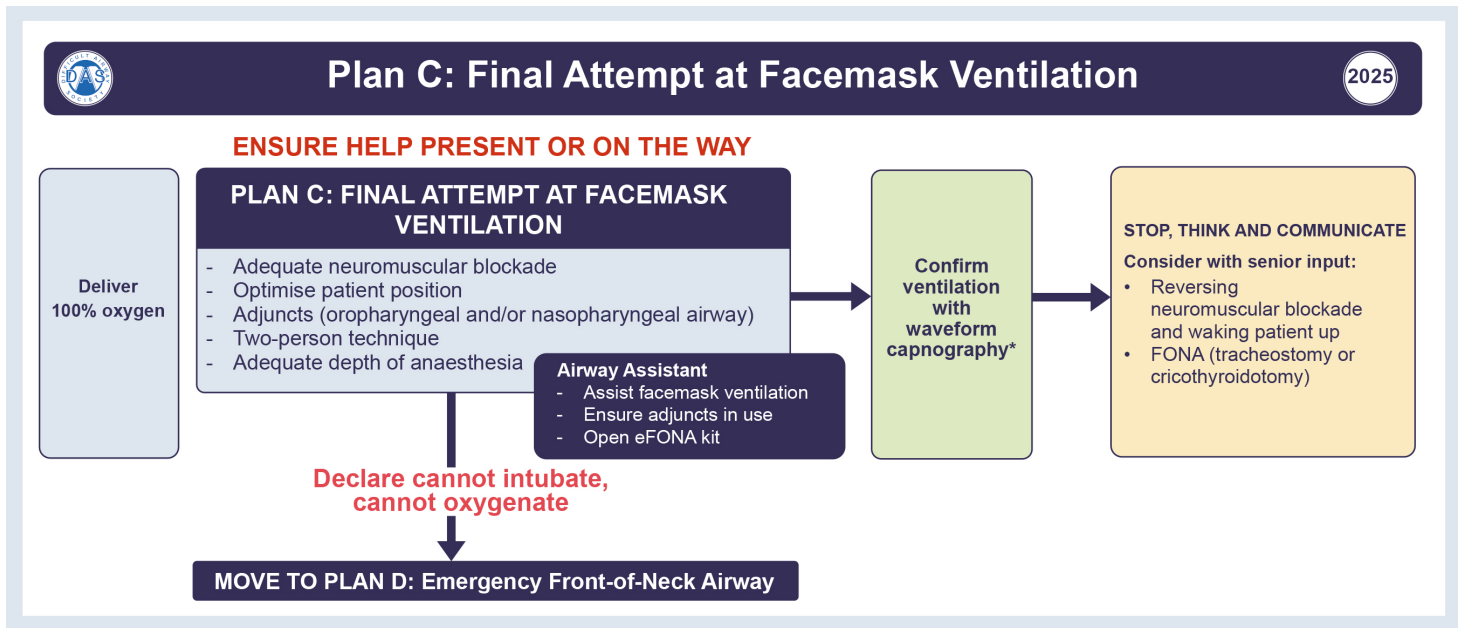
- Allow clinician to alternate between Plan B and Plan C as per DAS ICU intubation guidelines (see appendix), but **maximum 3 attempts** at each
- Pause once effective oxygenation/ sustained ETCO₂ achieved
- Allow team to **STOP, THINK AND COMMUNICATE** options

Discussion points:

- **Declaration:** "We have Oxygenation and sustained ETCO₂ achieved via SAD"
- **Decision-making:** Leave SAD in place to await senior anaesthetic support, intubate via SAD, or obtain front of neck access
- **Technical:** Why a 2nd generation SAD? Why remove cricoid force for SAD insertion? How to intubate via SAD? (dependent on learner)
- **Help and escalation:** Involve ITU consultant on call, senior anaesthetist, surgeon, and theatre coordinator early
- **Team communication:**
 - "We have a functioning SAD, oxygenation stable, default plan is to wake the patient..."
 - If senior anaesthetist arrives now, what would be the ideal handover? "This is a cannot intubate can oxygenate situation in a critically unwell patient with respiratory failure, we have attempted..."
 - Learner should display use of clear, standardised language with SBAR

Moving on

- Options to replay scenario or to continue to Plan C



Scenario flow:

- 3 attempts at SAD insertion fail
- Team attempts mask ventilation, further desaturation.

Facilitator prompts:

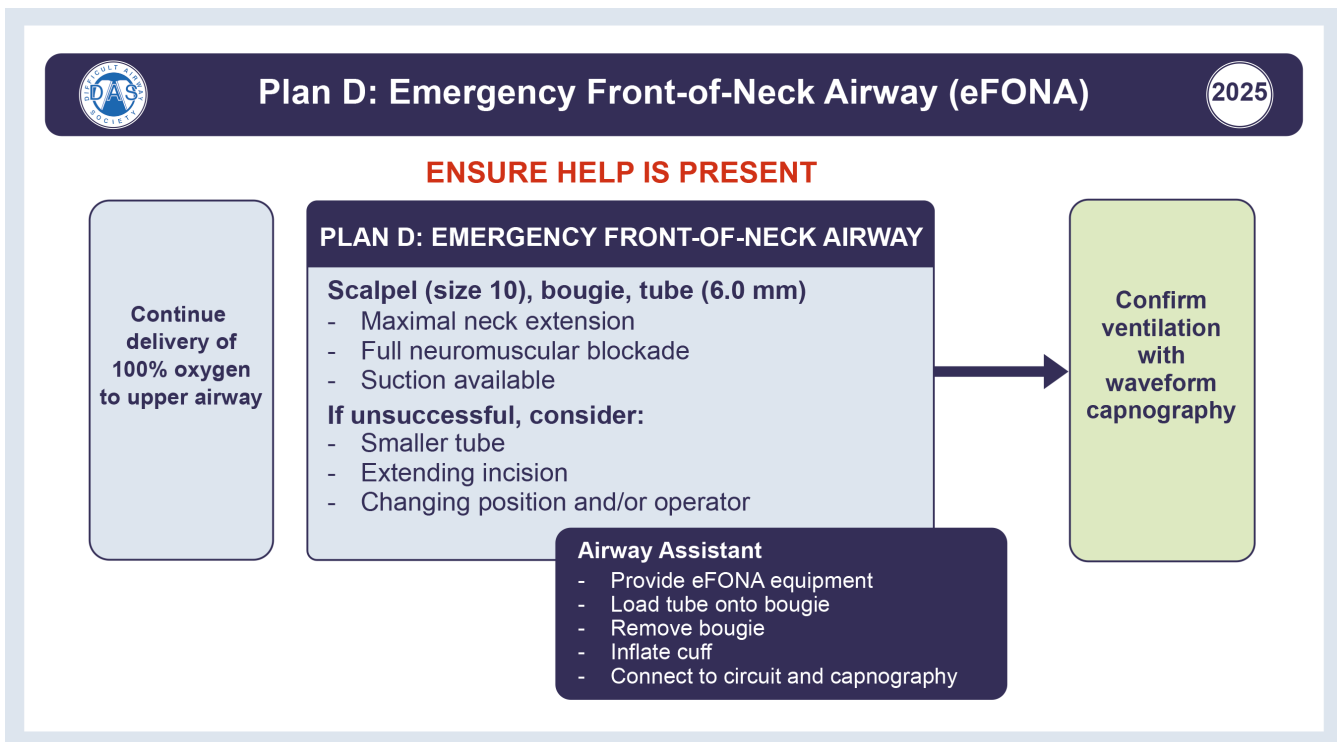
- Optimise (two-person technique, airway adjuncts, full paralysis)
- Ensure patient is asleep and paralysed
- Dependent on learner can state patient is hypotensive
- There is no ETCO₂, help arrives....

Discussion points:

- **Declaration:** *“Failed SAD Ventilation” then “Cannot intubate, cannot oxygenate” and “Move to Plan D – emergency Front of Neck Airway”*
- **Situational Awareness:** Patient likely to be haemodynamically unstable at this point
- **Role allocation:** Evidence of clear leadership and active followship i.e., clinician directs; airway assistant opens eFONA kit; nurse calls ENT support, if available
- **Preparation for eFONA:** Priming by opening of eFONA kit after failed SAD ventilation, verbally confirm cricothyroid technique, confirm paralysed, position patient, transitioning with anticipation of immediate progression to eFONA
- **Team communication:** Closed-loop confirmations: *“ENT called - on their way” and “eFONA kit open and ready”*

Moving on:

- Options to replay scenario or to continue to Plan D



Scenario flow:

→ CICO declared; **perform eFONA** (learners talk through steps of eFONA)

Facilitator prompts:

→ Discuss eFONA steps/method
 → Reinforce leadership, role clarity, and calm communication

Discussion points:

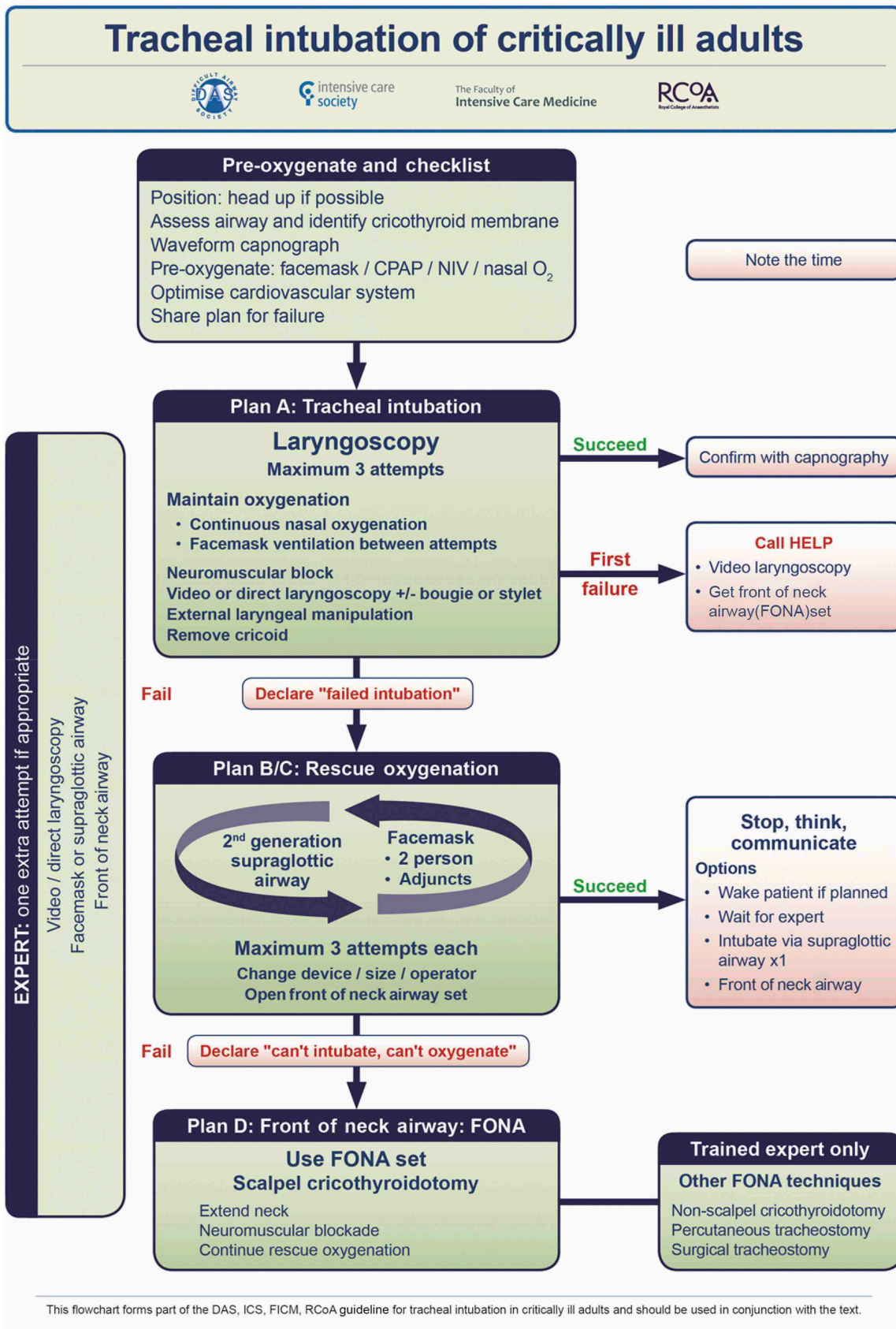
- **Declaration:** “Emergency front-of-neck airway required. Vertical Incision technique.”
 - **Role assignment:** Leader allocates tasks: “XXX attempt to maintain oxygen, XXX perform the incision, XXX assists with kit”
 - **Communication:** Concise handover when help arrives: “CICO declared, eFONA performed, size 6.0 tube in situ, sustained capnography waveform confirmed.”
 - **Discussion points:**
 - Who should do the eFONA? What if a senior anaesthetist arrives at this time?
 - What eFONA technique should be performed, if not previously confirmed?
 - Continuation of oxygen delivery (via SAD) during eFONA
 - Monitors in ICU may be different and have an impedance respiratory waveform which can be mistaken for capnography.
- **What would the next steps be in this situation?**
 (include checking depth of tube, converting to surgical tracheostomy, chest xray +/- bronchoscopy to exclude complications)



6. DEBRIEF THEMES

- **DAS intubation guidelines:** Specific to the critically unwell patient. Differences include alternating between plan B (2nd generation supraglottic airway) and plan C (face mask ventilation) – maximum 3 attempts each, use of other FONA techniques in expert hands e.g. percutaneous tracheostomy.
- **Language consistency:** Use standardised phrases such as *"Failed intubation"* and *"Cannot intubate, cannot oxygenate"*.
- **Help-seeking:** Early escalation and clarity regarding in-hours vs out-of-hours pathways. Anticipate difficulty and consideration of requesting anaesthetic help prior to induction.
- **Checklists:** Ensure an Intubation Checklist is used consistently. Include opportunity for all team members to ask question and express any concerns before starting.
- **Team communication:** Closed-loop communication, graded assertiveness, clear leadership and active followership.
- **Non-technical skills:** Avoid task fixation; ensure timely transitioning between plans; display early priming for eFONA, maintain situational awareness.
- **Effective leadership:** Demonstration of 'hands-off' leadership, short pauses to share mental model and confirm location on the algorithm.
- **Airway planning and strategy (Plan A):** Including palpation of cricothyroid membrane and confirmation of eFONA technique based on assessment.
- **Local departmental feedback:** Where is the equipment found, does everyone know this, and could locations etc be improved?
- **Emotional impact:** Encourage supportive hot and cold debrief and psychological safety

APPENDIX 1 - TRACHEAL INTUBATION OF CRITICALLY ILL ADULTS 2018


 EXPERT: one extra attempt if appropriate
 Video / direct laryngoscopy
 Facemask or supraglottic airway
 Front of neck airway

APPENDIX 2 - EMERGENCY TRACHEAL INTUBATION CHECKLIST DAS 2025

Emergency Tracheal Intubation Checklist 2025			
<p>Prepare the patient</p> <ul style="list-style-type: none"> <input type="checkbox"/> Reliable intravenous access <input type="checkbox"/> Assessment <ul style="list-style-type: none"> <input type="checkbox"/> Aspiration risk <input type="checkbox"/> ATI considered <input type="checkbox"/> Cricothyroid membrane identified <input type="checkbox"/> Physiologically optimised <ul style="list-style-type: none"> <input type="checkbox"/> Fluid / vasopressor / inotrope <input type="checkbox"/> Aspirate / consider nasogastric tube <input type="checkbox"/> Position optimised <ul style="list-style-type: none"> <input type="checkbox"/> Head-up <input type="checkbox"/> Pre-oxygenation <ul style="list-style-type: none"> <input type="checkbox"/> 3 mins or ETC₂ ≥ 90% <input type="checkbox"/> Consider HFNO / CPAP / NIV <input type="checkbox"/> Peroxygenation considered 	<p>Prepare equipment</p> <ul style="list-style-type: none"> <input type="checkbox"/> Apply Monitors <ul style="list-style-type: none"> <input type="checkbox"/> SpO₂ / waveform capnography / ECG / BP <input type="checkbox"/> Check equipment <ul style="list-style-type: none"> <input type="checkbox"/> Tracheal tubes x 2 <input type="checkbox"/> Videolaryngoscope <input type="checkbox"/> Bougie / stylet <input type="checkbox"/> Working suction <input type="checkbox"/> Oropharyngeal / nasopharyngeal airway <input type="checkbox"/> SADs <input type="checkbox"/> Tube tie / tape <input type="checkbox"/> Flexible bronchoscope / Aintree catheter <input type="checkbox"/> Timer <input type="checkbox"/> Check drugs <ul style="list-style-type: none"> <input type="checkbox"/> Induction agent <input type="checkbox"/> Opioid <input type="checkbox"/> Muscle relaxant <input type="checkbox"/> Vasopressor / inotrope <input type="checkbox"/> Maintenance of anaesthesia 	<p>Prepare the team</p> <ul style="list-style-type: none"> <input type="checkbox"/> Allocate roles <ul style="list-style-type: none"> <input type="checkbox"/> Team leader <input type="checkbox"/> 1st Intubator <input type="checkbox"/> 2nd Intubator <input type="checkbox"/> Airway assistant <input type="checkbox"/> Drugs <input type="checkbox"/> Monitoring patient <input type="checkbox"/> Runner <input type="checkbox"/> Timer <input type="checkbox"/> Cricoid force <input type="checkbox"/> Physiological difficulty expected? <ul style="list-style-type: none"> <input type="checkbox"/> Who is assigned to manage this? <input type="checkbox"/> Who will we call if difficulty is encountered? <ul style="list-style-type: none"> <input type="checkbox"/> Where are they? <input type="checkbox"/> Contact details <input type="checkbox"/> Who will perform eFONA? 	<p>Communicate airway strategy to team</p> <ul style="list-style-type: none"> <input type="checkbox"/> If tracheal intubation fails, can we wake the patient? <input type="checkbox"/> Plan A <ul style="list-style-type: none"> <input type="checkbox"/> Videolaryngoscope <input type="checkbox"/> Bougie / stylet <input type="checkbox"/> Drugs <input type="checkbox"/> eFONA kit immediately accessible <input type="checkbox"/> Plan B <ul style="list-style-type: none"> <input type="checkbox"/> SAD insertion <input type="checkbox"/> Open eFONA kit <input type="checkbox"/> Plan C <ul style="list-style-type: none"> <input type="checkbox"/> Final attempt at facemask ventilation <input type="checkbox"/> Plan D <ul style="list-style-type: none"> <input type="checkbox"/> eFONA <input type="checkbox"/> Any questions or concerns for team members?

This is an example checklist and should be adapted in line with institutional policies and procedures.

ATI, awake tracheal intubation; ETO₂, end-tidal oxygen; HFNO, high-flow nasal oxygen; CPAP, continuous positive airways pressure; NIV, non-invasive ventilation; eFONA, emergency front-of-neck airway.

APPENDIX 3: SCORING SYSTEMS TO PREDICT DIFFICULT INTUBATION

HEAVEN CRITERIA

- **Hypoxaemia:** Oxygen saturation value ≤ 93% at the time of initial laryngoscopy
- **Extremes of size:** Paediatric patient (≤8 years of age) or clinical obesity
- **Anatomic challenge:** Any structural abnormality that is anticipated to limit view
- **Vomit/blood/fluid:** Clinically significant fluid noted in the pharynx/hypopharynx
- **Exsanguination:** Suspected anaemia raising concerns about limiting safe apnoea times.
- **Neck mobility issues:** Limited cervical range of motion

MACOCHA SCORE

A higher score corresponds to a higher difficulty of intubation:

- **M**allampati Score III or IV : 5 points
- **O**bstructive Sleep **A**pnoea : 2 points
- **R**educed Mobility of **C**ervical Spine : 1 point
- **L**imited Mouth **O**pening <3cm : 1 point
- **C**oma : 1 point
- **S**evere **H**ypoxaemia (<80%) : 1 point
- **N**on **A**naesthetist Intubator : 1 point



OTHER RESOURCES

DAS AirDrills Facilitator User Guide

DAS AirClips: Priming educational videos

DAS AirBites: Technical skill stations

Supplementary file "Human Factors considerations in Plans A-D', DAS guideline 2025"

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3. Griffiths PR, Abbott MH, Barker DP, Harrop-Griffiths DW, Keenan DG, Kilvington MB, et al. The Anaesthesia Team 2018. 2018 Jul; doi:10.21466/g.tat.2018

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