COVID-19 Airway management principles

COVID-19 airway management: SAS

- Safe – for staff and patient
- Accurate – avoiding unreliable, unfamiliar or repeated techniques
- Swift – timely, without rush or delay

Summary for emergency tracheal intubation of COVID 19 patient

- Tracheal intubation of the patient with COVID-19 is a high-risk procedure for staff, irrespective of the clinical severity of disease.
- In severe COVID-19 it is also a high-risk procedure for the patient
- Limit staff present at tracheal intubation: one intubator, one assistant and one to administer drugs/monitor patient.
- Create a COVID-19 tracheal intubation trolley that can be used in ICU or elsewhere.
- PPE is effective and must be worn. Wear full PPE at all times. Consider double gloving. Defog goggles and/or eye wear if possible. Touch as little as possible in the room to avoid fomites.
- Intubate in a negative pressure room with >12 air changes per minute whenever possible.
- Everyone should know the plan before entering the room – use a checklist to achieve this.
- Plan how to communicate before entering the room.
- The algorithm/cognitive aid you plan to use should be displayed in or taken into the room.
- All preparations of airway equipment and drugs that can take place outside the room should do.
- Use a kit mat if available.
- The best skilled airway manager present should manage the airway to maximise the first pass success.
- Focus on safety, promptness and reliability. Aim to succeed at the first attempt because multiple attempts increase risk to sick patients and staff. Do not rush but make each attempt the best it can be.
- Use reliable techniques that work, including when difficulty is encountered. The chosen technique may differ according to local practices and equipment. With prior training and availability this is likely to include:
    - preoxygenation with a well-fitting mask and a Mapleson C ('Waters') or anaesthetic circuit, for 3-5 minutes.
    - videolaryngoscopy for tracheal intubation;
    - 2-person, 2-handed mask ventilation with a VE-grip to improve seal;
    - a second-generation supraglottic airway device (SAD) for airway rescue, also to improve seal.
- Place an HME filter between the catheter mount and the circuit at all times. Keep it dry to avoid blocking.
- Avoid aerosol-generating procedure, including high-flow nasal oxygen, non-invasive ventilation, bronchoscopy and tracheal suction unless an in-line suction system is in place.
- Full monitoring, including working continuous waveform capnography before, during and after tracheal intubation.
- Use RSI with cricoid force where a trained assistant can apply it. Take it off if it causes difficulty.
- To avoid cardiovascular collapse use ketamine 1–2 $mg.kg^{-1}$, rocuronium 1.2 $mg.kg^{-1}$ or suxamethonium 1.5 $mg.kg^{-1}$.
- Have a vasopressor for bolus or infusion immediately available for managing hypotension.
- Ensure full neuromuscular blockade before attempting tracheal intubation.
- Avoid face mask ventilation unless needed and use a 2- person, low flow, low pressure technique if needed.
- Intubate with a 7.0-8.0 mm ID (females) or 8.0-9.0 mm ID (males) tracheal tube with a subglottic suction port.
- Pass the cuff 1-2 cm below the cords to avoid bronchial placement. Confirming position is difficult wearing PPE.
- Inflate the tracheal tube cuff to seal the airway before starting ventilation. Note and record depth.
- Confirm tracheal intubation with continuous waveform capnography – which is present even during cardiac arrest.
- Use a standard failed tracheal intubation algorithm with a cognitive aid if difficulty arises.
- Communicate clearly: simple instructions, closed loop communication (repeat instructions back), adequate volume without shouting.
- Place a nasogastric tube after tracheal intubation is completed and ventilation established safely.
- If COVID-19 status not already confirmed take a deep tracheal aspirate for virology using closed suction.
- Discard disposable equipment safely after use. Decontaminate reusable equipment fully and according to manufacturer's instructions.
- After leaving the room ensure doffing of PPE is meticulous.
- Clean room 20 minutes after tracheal intubation (or last aerosol generating procedure).
- A visual record of tracheal intubation should be prominently visible on the patient's room.
- If airway difficulty occurs the subsequent plan should be displayed in the room and communicated between shifts.

Figure 5. Checklists. (a) Adapted from [20] with permission (b) from [26]

a

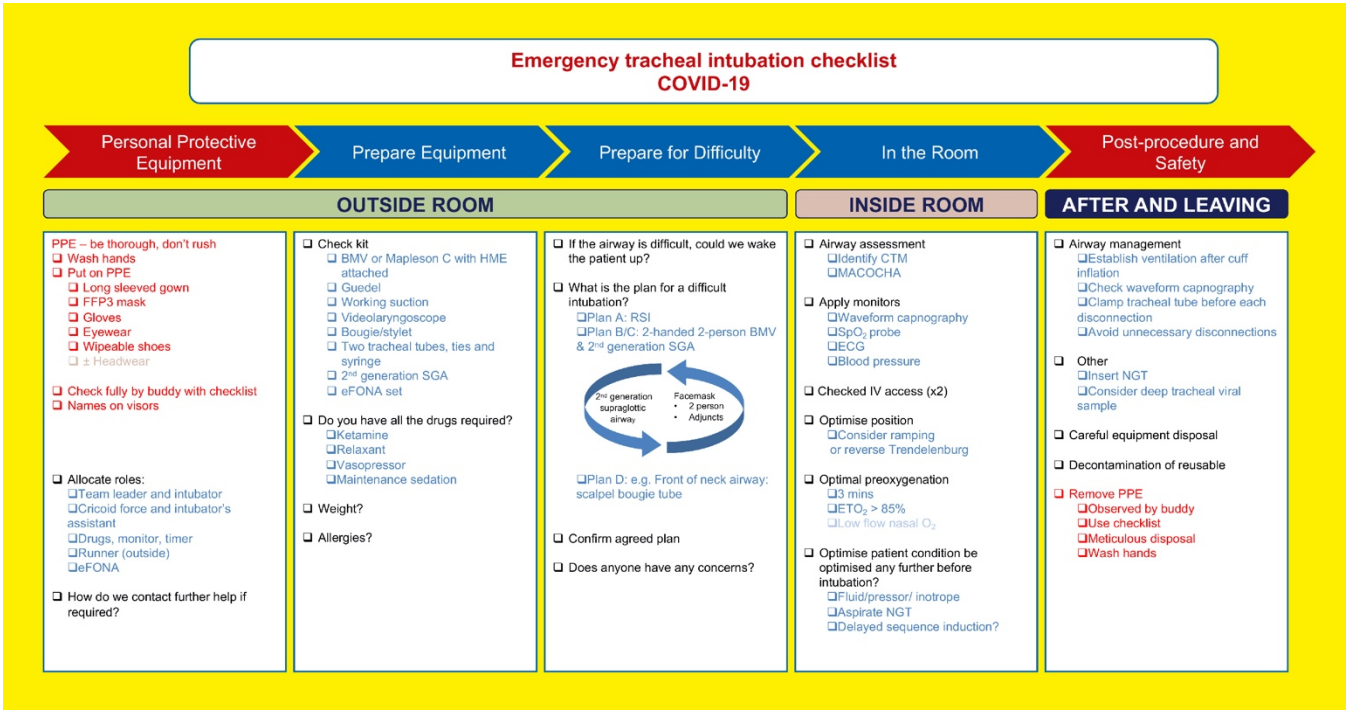
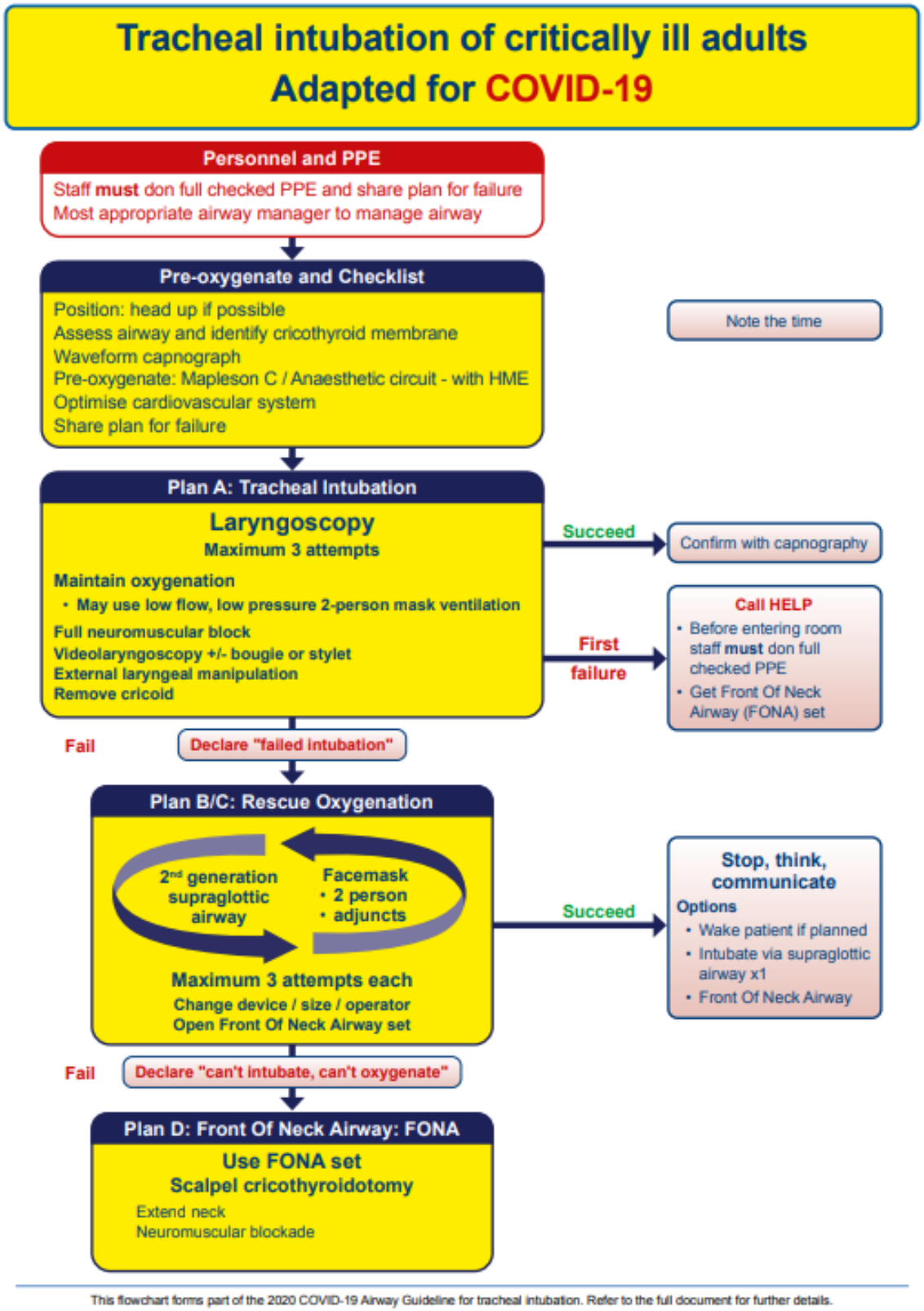
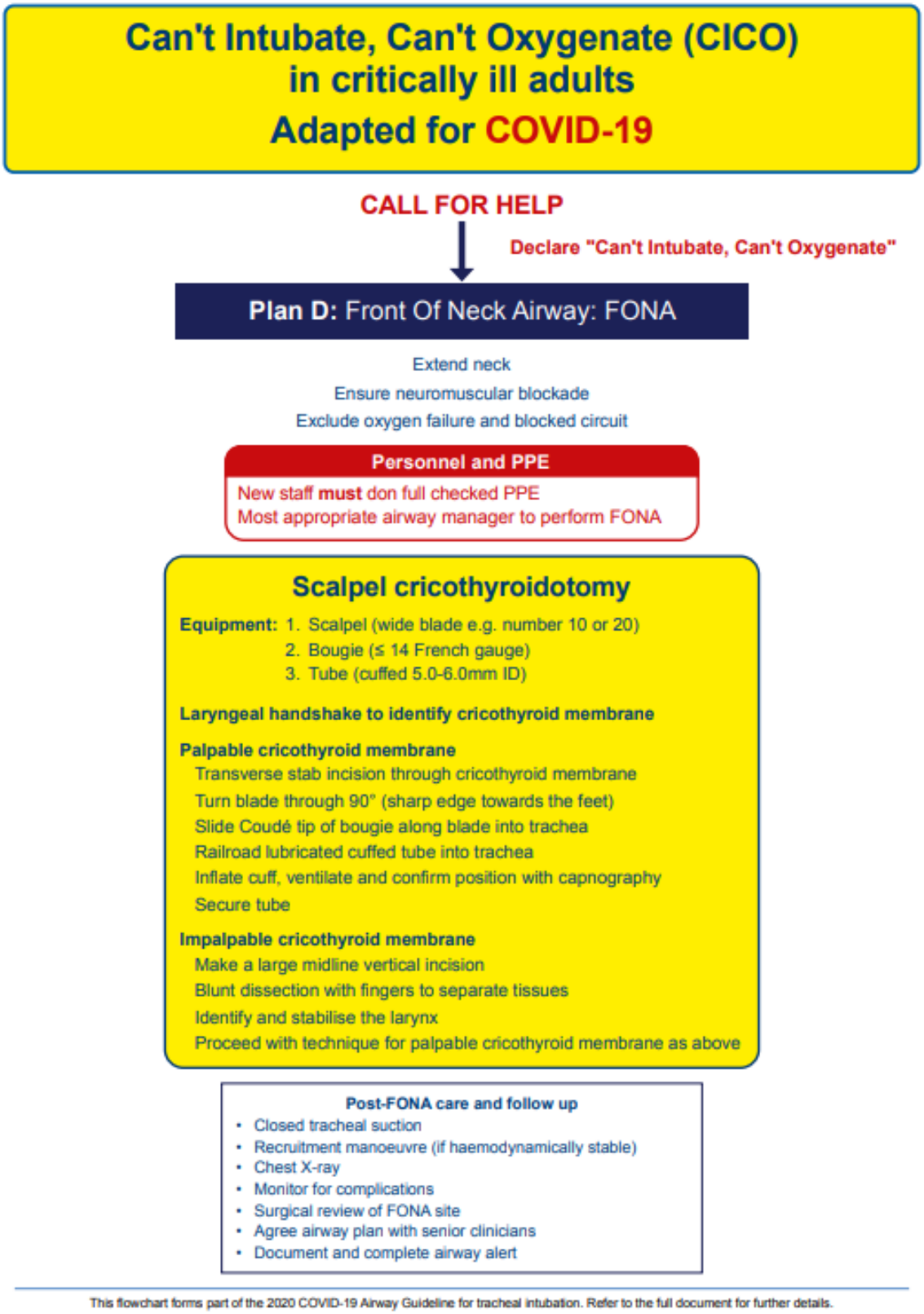


Figure 6. Cognitive aids for use when managing unexpected difficulty when intubating a patient with COVID-19. (a) and (b) Highly adapted from [20] with permission (c) from [27] with permission.

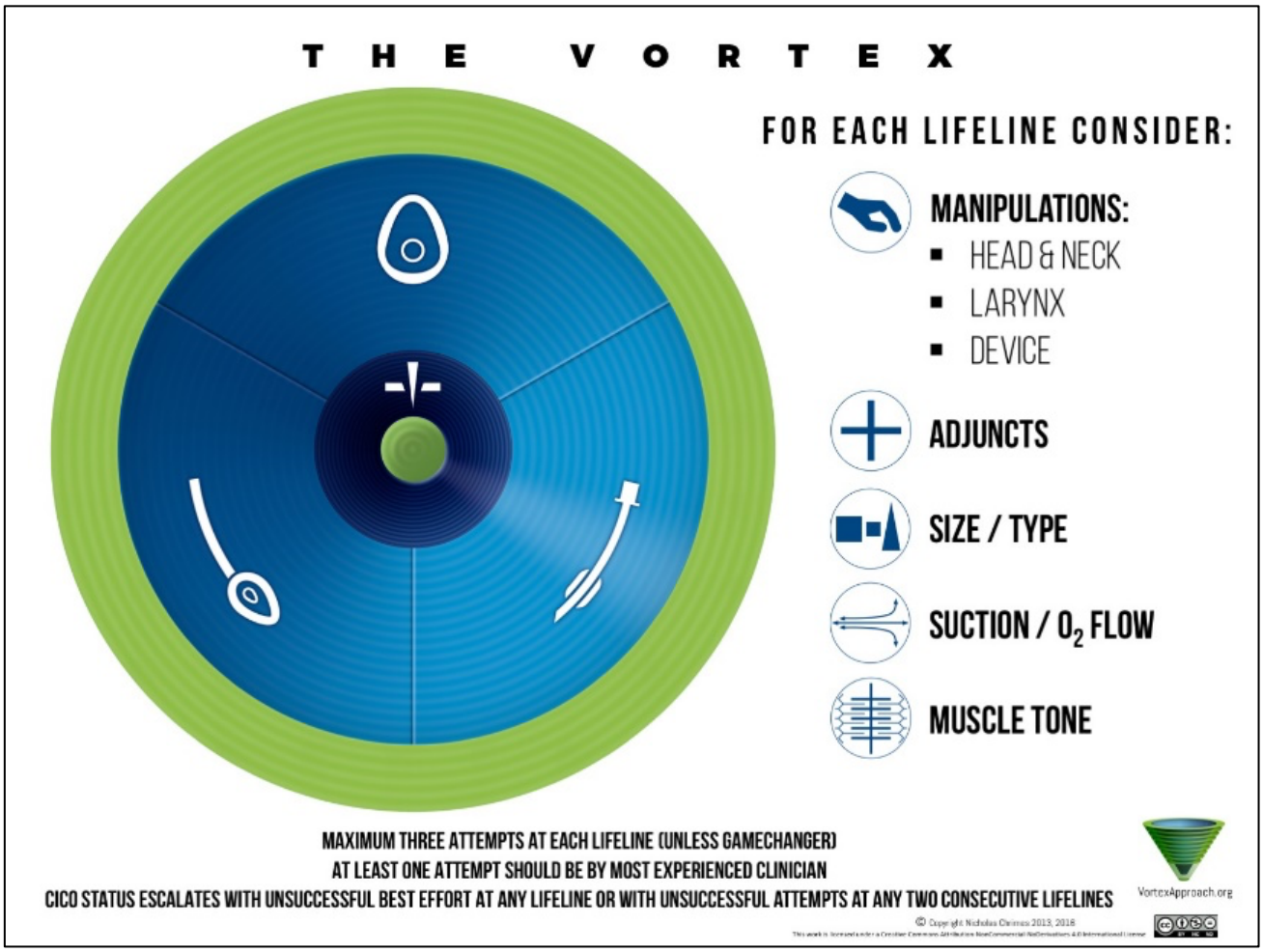
a



b


Can't Intubate, Can't Oxygenate (CICO) in critically ill adults
Adapted for COVID-19
CALL FOR HELP
Declare "Can't Intubate, Can't Oxygenate"
Plan D: Front Of Neck Airway: FONA
Extend neck
Ensure neuromuscular blockade
Exclude oxygen failure and blocked circuit
Personnel and PPE
New staff must don full checked PPE
Most appropriate airway manager to perform FONA
Scalpel cricothyroidotomy
Equipment: 1. Scalpel (wide blade e.g. number 10 or 20)
2. Bougie (≤ 14 French gauge)
3. Tube (cuffed 5.0-6.0mm ID)
Laryngeal handshake to identify cricothyroid membrane
Palpable cricothyroid membrane
Transverse stab incision through cricothyroid membrane
Turn blade through 90° (sharp edge towards the feet)
Slide Coudé tip of bougie along blade into trachea
Railroad lubricated cuffed tube into trachea
Inflate cuff, ventilate and confirm position with capnography
Secure tube
Impalpable cricothyroid membrane
Make a large midline vertical incision
Blunt dissection with fingers to separate tissues
Identify and stabilise the larynx
Proceed with technique for palpable cricothyroid membrane as above
Post-FONA care and follow up
Closed tracheal suction
Recruitment manoeuvre (if haemodynamically stable)
Chest X-ray
Monitor for complications
Surgical review of FONA site
Agree airway plan with senior clinicians
Document and complete airway alert
This flowchart forms part of the 2020 COVID-19 Airway Guideline for tracheal intubation. Refer to the full document for further details.

c


THE VORTEX
FOR EACH LIFELINE CONSIDER:
MANIPULATIONS:
HEAD & NECK
LARYNX
DEVICE
ADJUNCTS
SIZE / TYPE
SUCTION / O_2 FLOW
MUSCLE TONE
MAXIMUM THREE ATTEMPTS AT EACH LIFELINE (UNLESS GAMECHANGER)
AT LEAST ONE ATTEMPT SHOULD BE BY MOST EXPERIENCED CLINICIAN
CICO STATUS ESCALATES WITH UNSUCCESSFUL BEST EFFORT AT ANY LIFELINE OR WITH UNSUCCESSFUL ATTEMPTS AT ANY TWO CONSECUTIVE LIFELINES
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