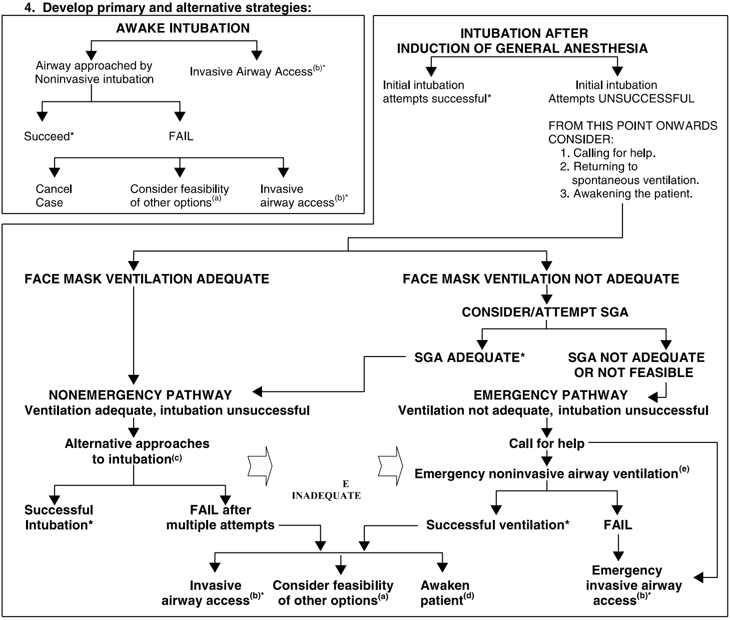
American Society of Anesthesiologists

DIFFICULT AIRWAY ALGORITHM

1. **Assess the likelihood and clinical impact of basic management problems:**
    - **Difficulty with patient cooperation or consent**
    - **Difficult mask ventilation**
    - **Difficult supraglottic airway placement**
    - **Difficult laryngoscopy**
    - **Difficult intubation**
    - **Difficult surgical airway access**
2. **Actively pursue opportunities to deliver supplemental oxygen throughout the process of difficult airway management.**
3. **Consider the relative merits and feasibility of basic management choices:**
    - **Awake intubation *vs.* intubation after induction of general anesthesia**
    - **Non-invasive technique *vs.* invasive techniques for the initial approach to intubation**
    - **Video-assisted laryngoscopy as an initial approach to intubation**
    - **Preservation *vs.* ablation of spontaneous ventilation**
4. **Develop primary and alternative strategies:**



***Confirm ventilation, tracheal intubation, or SGA placement with exhaled CO_2.**

a. Other options include (but are not limited to): surgery utilizing face mask or supraglottic airway (SGA) anesthesia (e.g., LMA, ILMA, laryngeal tube), local anesthesia infiltration or regional nerve blockade. Pursuit of these options usually implies that mask ventilation will not be problematic. Therefore, these options may be of limited value if this step in the algorithm has been reached via the Emergency Pathway.

b. Invasive airway access includes surgical or percutaneous airway, jet ventilation, and retrograde intubation.

c. Alternative difficult intubation approaches include (but are not limited to): video-assisted laryngoscopy, alternative laryngoscope blades, SGA (e.g., LMA or ILMA) as an intubation conduit (with or without fiberoptic guidance), fiberoptic intubation, intubating stylet or tube changer, light wand, and blind oral or nasal intubation.

d. Consider re-preparation of the patient for awake intubation or canceling surgery.

e. Emergency non-invasive airway ventilation consists of a SGA.

Rapid Sequence Intubation (RSI)

Patients without a pulse do not require medications to facilitate intubation.

<u>Maximize your chances for (first pass) success with:</u>

Preparation: room, airway equipment, suction, monitor, IV, RSI meds, vasopressors
Pre-Oxygenation: non-rebreather mask, non-invasive ventilation, BMV
Positioning: ear above sternum, sniffing position, ramp
Paralysis with induction: improve laryngoscopic view, minimize aspiration risk
Placement: women 21 cm, men 23 cm @ teeth; ETCO2, auscultation
Post-intubation: CXR, monitor for hypotension, additional sedation
<u>Avoid paralysis without sedation.</u>

<u>Avoid paralysis when difficult ventilation or intubation is anticipated.</u>

Difficult mask ventilation

- Anatomy (burn, trauma, epiglottitis)
- Morbid obesity
- Diaphoresis
- Beard
- Edentulous

Oral airway, Nasal airway, 2-handed Technique, Assistant

Difficult Intubation

- Long incisors (< 3 fingers)
- Thyromental distance (< 3 fingers)
- Overbite
- Shape of palate (narrow, high arch)
- Mallampati ≥ 3
- Short or thick neck
- Limited neck range of motion

Call for help, consider awake intubation

Proceed with RSI using sedative and +/- paralytic. Be prepared to manage hypotension.

Medication	**Dose**	**Utility**	**Contraindication/Caution**
Pre-Treatment			
Lidocaine	1-1.5 mg/kg	Head trauma/↑ ICP	
Fentanyl	0.5-3 mcg/kg	Prevention ↑ HR/BP	Chest wall rigidity
Glycopyrrolate	0.2-0.4mg	↓ Secretions	
Sedation/Induction			
Etomidate	0.1-0.3 mg/kg	Patients in shock	may cause adrenal insufficiency
Propofol	0.5-2.5 mg/kg		**↓ BP, ↓ HR**
Ketamine (IV)	1-4.5 mg/kg	Asthma	↑ Secretions
Ketamine (IM)	6-13 mg/kg	Lack of IV access	
Midazolam	0.15-0.3 mg/kg		
Paralytics			
Succinylcholine	1-1.5 mg/kg	Onset 30-60 seconds	See below. Duration 4-10 mins.
Rocuronium	1.2 mg/kg	Onset 60-90 seconds	Duration ~ 1 hour

<u>Contraindications to Succinylcholine</u>

- Hyperkalemia
- History of malignant hyperthermia
- Burns > 24-72 hours
- Rhabdomyolysis (crush injury)
- Spinal cord injury, stroke (> 72 hours)
- Neuromuscular disease or myopathy

<u>Vasopressor Boluses</u>

- Phenylephrine
  - 100-300 mcg IV q 3 min
- Ephedrine
  - 5-10 mg IV q 5 min
  - Tachyphylaxis w/ multiple doses
- Norepinephrine
  - 4 - 10 mcg IV q 3min