

Preparation

☐ Consider the indication for intubation

Is non-invasive ventilation (CPAP/BiPAP) an option?
Is the patient DNI status?
Has patient/family consented, if applicable?

☐ Nasal cannula

5 liters per minute to augment preoxygenation, then
≥15 liters per minute post-induction to facilitate apneic oxygenation

☐ Preoxygenate with high-flow oxygen

≥ 3 min or 8 deep breaths with face mask; O₂ regulator turned all the way up
If inadequate saturation with NC+facemask: use NIV or BVM with PEEP valve
If pt too agitated for preoxygenation: ketamine induction, preox, then paralyze

☐ Assess for:

Difficult laryngoscopy
Difficult BVM
Difficult extraglottic device
Difficult cricothyrotomy

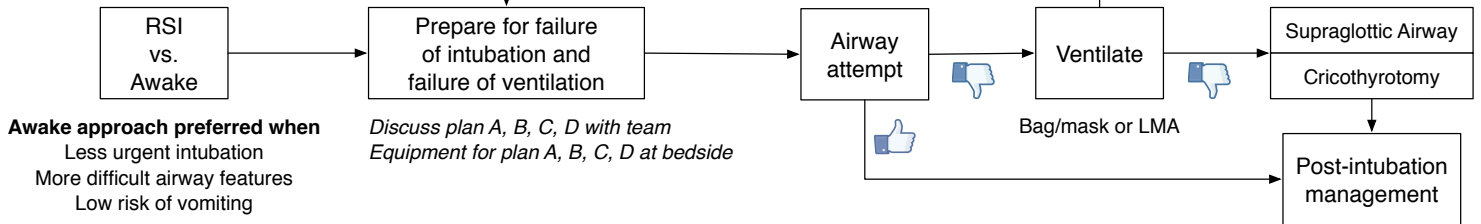
Look externally, Evaluate 3-3-2 rule, Mallampati score, Obstruction, Neck Mobility
Beard, Obese, No teeth, Elderly, Sleep Apnea / Snoring
Restricted mouth opening, Obstruction, Distorted airway, Stiff lungs or c-spine
Surgery, Hematoma, Obesity, Radiation distortion or other deformity, Tumor*

☐ Determine airway management strategy

see bottom of page 2
for awake technique

Plan B/C/D: Change
patient position, blade,
modality or operator

see bottom of page 2 for cricothyrotomy
technique; mark membrane prior to
airway attempt if anticipated


☐ Check for dentures

Dentures in for bag mask ventilation, out for laryngoscopy

☐ Position patient

Auditory meatus to suprasternal notch (sheets under neck / occiput / shoulders)
Patient's head to operator's lower sternum (bed height)**
Torso angle of 30° recommended, especially in obesity and upper GI bleed

☐ Monitoring equipment

ECG
Pulse oximetry
Blood pressure
Continuous end-tidal capnography - verify function with test breath

☐ IV access

Two lines preferable

Equipment

☐ Ambu bag connected to oxygen

Use Broselow tape for sizes in pediatrics

☐ Laryngoscopy handles - verify power

Size: approximate nasal bridge, malar eminences, alveolar ridge / Err larger

☐ Suction under patient's shoulder - verify function

At least two

☐ Laryngoscopy blades - verify bulbs

If suspected soiled airway (blood, vomitus, secretions), suction under each shoulder

☐ Oral airways

Curved and straight / One size larger, one size smaller

☐ Nasal airways

Size: Angle of mouth to tragus of ear (usually 80, 90, or 100 mm in adults)

☐ Colorimetric capnometer

Size: Tip of nose to tragus of ear (usually 26 Fr/6.5 mm, 28/7, or 30/7.5 in adults)

☐ Endotracheal tubes - verify cuff function

To be used if continuous not available or not functioning

☐ ETT stylet

Variety of sizes (≥ 8.0 mm preferred in adults to facilitate ICU care)

☐ ETT securing device

Straight to cuff, 35 degrees**

☐ Gum elastic bougie

Tape if no device available

☐ LMA with lubricant and syringe

☐ Difficult airway equipment

Cricothyrotomy tools / video laryngoscope / optical stylet
fiberoptic scope / Magill forceps if suspected foreign body

Drugs

☐ Pretreatment agents, if applicable

Pretreatment agents are always optional
Give as bolus 3 minutes prior to induction, except for fentanyl, which should be the final pretreatment agent, and should be given over 30-60 seconds.

Fentanyl

3 mcg/kg TBW if high BP a concern (aneurysms, dissections, high ICP, severe CAD)

Lidocaine

1.5 mg/kg TBW for reactive airways or increased ICP

Atropine

.02 mg/kg IV or IM (min 0.1 mg, max 1 mg)
For infants, especially if receiving succinylcholine

☐ Induction agent

Etomidate 0.3 mg/kg TBW
Propofol 1.5 - 3 mg/kg IBW+(.4)(TBW)
Ketamine 2 mg/kg IV or 4 mg/kg IM IBW
Midazolam 0.2 - 0.3 mg/kg TBW
Thiopental 3- 6 mg/kg TBW

Reduce dose if hypotensive

☐ Paralytic agent

Succinylcholine 2 mg/kg IV 4 mg/kg IM TBW
Rocuronium 1.2 mg/kg IBW
Vecuronium 0.3 mg/kg IBW if roc unavailable

☐ Normal saline flushes

Contraindications to succinylcholine
 History of malignant hyperthermia
 Burn or crush injury > 5 days old
 Stroke or spinal cord injury > 5 days old
 MS, ALS, or inherited myopathy
 Known hyperkalemia (absolute)
 Renal failure (relative)
 Suspected hyperkalemia (relative)

☐ Phenylephrine

For peri-intubation hypotension
 100 mcg IV push as needed

☐ Post-intubation settings discussed

A/C
FiO2 100% – titrate down over time to SpO2 95%
RR 18 [Asthma/COPD: 6-10]
TV 8 mL/kg – use ideal body weight [6 mL/kg if sepsis / prone to lung injury]
I/E 1:2 [Asthma/COPD 1:4 - 1:5]
Inspiratory Flow Rate 60-80 L/min [Asthma/COPD 80-100 L/min]
PEEP 5 cm H2O [CHF 6-12→watch blood pressure] [PEEP 0 in Asthma/COPD]

☐ Personnel

MD / RN / RT

RSI or Awake Technique☐ Verify tube placement

End-tidal CO2 if using colorimetric – bright yellow with **six breaths**
Esophageal detection device should aspirate without resistance if ETT in trachea
Bougie hold-up test - see below
Repeat visualization using direct laryngoscopy or alternate device
Auscultation

Post-Intubation Care☐ Secure ETT

Record position at lips
Adults: approx 21 cm (female) or 23 cm (male)
Pediatrics: approximately ETT size x 3

☐ Orogastric or nasogastric tube☐ Portable chest radiograph☐ Opioid then sedative boluses/drips

Fentanyl 2 mcg/kg bolus then 1 mcg/kg/hour
Morphine 0.1 mg/kg bolus then .1 mg/kg/hour
Propofol 0.5 mg/kg bolus then 15 mcg/kg/min
Midazolam 0.05 mg/kg bolus then .025 mg/kg/hour
Lorazepam 0.04 mg/kg bolus then .02 mg/kg/hour
Ketamine 1 mg/kg bolus then 1 mg/kg/hour

These are starting doses -
 reassess frequently and
 rebolus/titrate upward as
 needed.

☐ Head of bed to 30-45 degrees, higher if very obese☐ In-line suction☐ Adjust ETT cuff pressure

Adjust to minimum pressure required to
 abolish air leak - usually 15-25 mm Hg by
 endotracheal tube cuff manometer

☐ In-line heat-moisture exchanger

Adjust RR (not TV) to appropriate pH and pCO2
 Keep pH > 7.1 for permissive hypercapnia
 Use incremental FiO2/PEEP chart for oxygenation
 Keep plateau pressure < 30 cm H2O
 pCO2 is **at least** ETCO2 but may be much higher

In the *just intubated* phase,
 especially if transport and
 procedures are imminent,
 aggressively analgesic and
 sedate to a RASS[†] score of
 -4 to -5. In the *stable on the*
vent stage, titrate down
 sedation and use opioids to
 target a RASS score of -1
 to -2. Avoid re-paralysis.

☐ Blood gas within 30 minutes post-intubation☐ Foley catheter

Fentanyl and ketamine are
 least likely to cause or
 worsen hypotension.

†Richmond Agitation Sedation Scale

☐ Watch for post-intubation complications

Dislodgement – check **EtCO2 waveform**, repeat laryngoscopy
Obstruction – check for high PIP, **suction** secretions
Pneumothorax – **breath sounds** / lung sliding on **ultrasound**, repeat **CXR**
Equipment failure – **disconnect** from vent and bag
Stacking breaths / auto-PEEP - bag slowly, push on chest to assist prn

☐ Verify that airway equipment is ready for the next patient

Bougie hold-up test: gently advance intubating stylet through ETT
 No resistance @ 40 cm: likely esophageal
 Resistance @ 26-40 cm (usually <30 cm): likely tracheal and patent
 Resistance @ less than 25 cm: likely clogged tube

Awake Intubation Technique

- ☐ **Glycopyrolate** 0.2 mg or **Atropine** .01 mg/kg *glyco preferred, ideally given 15 min prior to next step*
- ☐ Suction then pad dry mouth with gauze
- ☐ **Nebulized Lidocaine** without epi @ 5 lpm *ideally 4 cc of 4% lidocaine but can also use 8 cc of 2% lidocaine*
- ☐ **Atomized Lidocaine** sprayed to oropharynx *especially if unable to give full dose of nebulized lidocaine*
- ☐ **Viscous Lidocaine** lollipop 2% *viscous lido on tongue depressor*
- ☐ Preoxygenate ☐ Position ☐ Restrain prn ☐ Switch to nasal cannula
- ☐ Lightly sedate with **Versed** 2-4 mg or **Ketamine** 20 mg aliquots q 2 min
- ☐ Intubate awake **or** place bougie, then paralyze, then pass tube

Cricothyrotomy Technique

1. Vertical incision, palpate membrane
2. Blind horizontal incision through membrane
3. Blind finger through membrane into trachea
4. Bougie along finger into trachea
5. Lubricated 6.0 mm ETT or tracheostomy tube via bougie