VOLUME 1 · CHAPTER 22 · PART 3

Advanced Airway Management and Ventilation

Extraglottic devices, endotracheal intubation, and special considerations

Everything here begins where Part 2 ended — and not one minute before.
60 minutes · Aligned to Region SOPs

SESSION PLAN

60 minutes — and the gate you pass through to get here

10 Extraglottic airway devices

Retroglottic and supraglottic families, and the i-gel your system actually carries.

35 Endotracheal intubation

Equipment, complications, preparation, the procedure, and confirming placement. The largest single block in the chapter.

15 Special considerations

Trauma, foreign bodies, cardiac arrest, pediatrics, cuff pressure, and field extubation.

The gate: everything today is downstream of a decision that Part 2 was not enough

Your protocol: “When less-invasive methods (TWO-PERSON BVM WITH ADJUNCTS) are ineffective or inappropriate, consider drug assisted endotracheal intubation to maintain oxygenation and/or ventilation.”

Notice INAPPROPRIATE, sitting alongside ineffective. Some patients could be bag-masked perfectly well and it is still the wrong plan — a long transport, a patient who has to come down three flights of stairs, an airway that is going to close from burns or anaphylaxis. Expected clinical course is a listed indication. You are allowed to act on a trajectory, not only on a present failure.

Indications, from your own protocol

Failure to protect

Failure to maintain the airway · imminent loss of airway

Failure to exchange

Failure to oxygenate or ventilate · respiratory failure · $SpO_2 \leq 92\%$ on 100% O_2

Failure of effort

RR < 10 or > 40 · shallow or laboured effort

Anticipated failure

Expected clinical course · airway edema · soot in the mouth or nares

Extraglottic Airway Devices

Placed blindly, in seconds, by feel — and in a great many patients the better answer rather than the lesser one.

Retroglottic · Supraglottic · The i-gel

Two families, one principle

Inserted BLINDLY to facilitate oxygenation and ventilation — without entering the glottis.

RETROGLOTTIC — behind the larynx

The tip passes BEHIND the glottis and down into the esophagus. Ventilation happens through openings sitting between two inflated cuffs, at the level of the glottic opening. Dual-lumen (Combitube, PtL) or single-lumen (King LT).

SUPRAGLOTTIC — above the larynx

The device sits ON TOP of the larynx and seals around the glottic opening from above. The LMA family, the CookGas air-Q, and the i-gel — which is the one in your bags.

1 Speed

Seconds, not a laryngoscopy attempt. In an arrest, that is compressions you did not interrupt.

2 No view required

Placed blind and by feel, so difficult anatomy matters far less than it does for a laryngoscope.

3 Lower failure rate

Particularly in less experienced hands — which is most hands, most of the time, on most services.

4 But less aspiration protection

Intubation gives OPTIMAL aspiration protection. An EGA gives less. That is the honest trade, and it should be named.

REGION SOP These are PRIMARY devices, not consolation prizes. Your cardiac arrest guidance says to consider an extraglottic device RATHER THAN intubation, and the pediatric protocol lists the i-gel and the endotracheal tube as parallel options at the same step.

The Combitube and the PtL

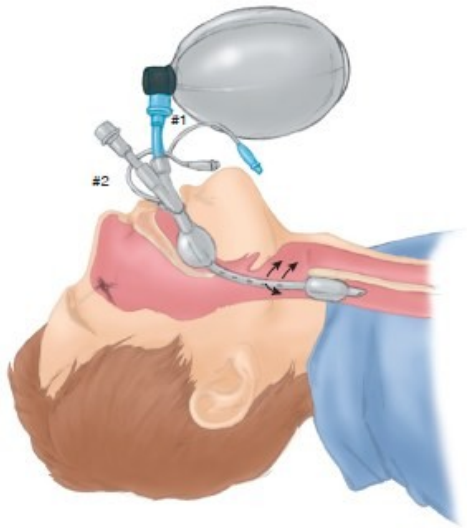

Figure 22-53 Dual-lumen airway seated in the esophagus.

Source: Paramedic Care: Principles & Practice, 6th ed. © Pearson Education.

1 Prepare, exactly as always

Optimal BVM ventilation with high-concentration oxygen first. Patient supine and neutral; stabilise the cervical spine if injury is possible. Every advanced procedure in this chapter begins here.

2 Preshape and insert

Perform the Lipp maneuver to preshape the tube. Lift the jaw — or use a laryngoscope if within scope — and insert gently in the midline until the black rings sit between the teeth.

3 Inflate: 100 mL proximal, 10–15 mL distal

The large proximal cuff seals the pharynx; the small distal cuff seals wherever the tip landed.

4 Then find out where it went

Ventilate through the LONGER, BLUE, #1 port. Bilateral sounds, quiet epigastrium → esophageal. Gastric sounds, no breath sounds → TRACHEAL: switch to the clear #2 port.

The PtL — same logic

Tongue-jaw lift to insert. Both distal cuffs inflate from ONE sustained breath. Breath into the GREEN tube: chest rise → esophageal, keep going on green. No rise → the clear tube is tracheal, remove the stylet and ventilate through clear.

What is genuinely different about this family

A dual-lumen retroglottic device works WHICHEVER place it lands — provided you assess and switch ports. That is a different failure mode from every other airway in this chapter, and it is the entire reason the design existed. Multiple confirmation techniques are essential either way.

The King LT and the LMA family

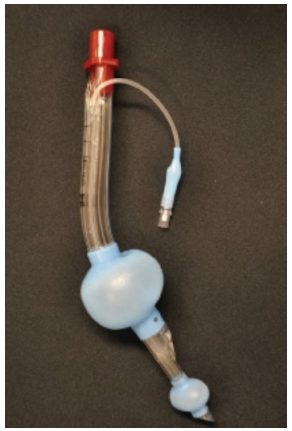

Figure 22-57 King LT airway.

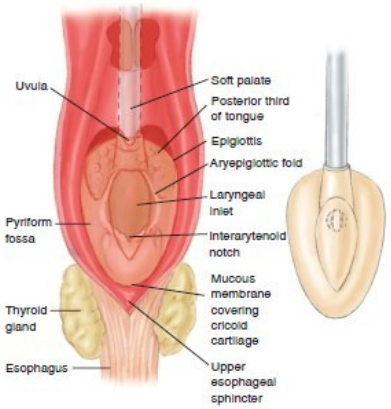

Figure 22-58 Where a supraglottic device seats.

Source: Paramedic Care: Principles & Practice, 6th ed. © Pearson Education.

King LT — single lumen

One lumen, one cuff system. A large silicone cuff DISPERSES PRESSURE over a wide mucosal area — pressure spread broadly does less mucosal damage than the same pressure concentrated.

LMA — the original

An inflatable elliptical cuff seating in the hypopharynx with the bowl over the laryngeal inlet.

LMA Supreme

Adds a GASTRIC ACCESS CHANNEL — the stomach can be decompressed through the airway you just placed.

LMA Fastrach and CookGas air-Q

INTUBATING devices — a tube can pass through them into the trachea.

The ceiling nobody mentions — and it decides which patients get a tube instead

The seal a supraglottic device achieves has a pressure limit. In a patient with HIGH airway pressures — severe bronchospasm, morbid obesity, pulmonary edema — the device will leak before it delivers an adequate volume. From Part 2: some extraglottic devices cannot generate enough pressure to lift a very heavy chest.

That is a predictable failure, not a surprise. It is also the clearest argument for choosing a tube in exactly those patients.

The device in your bags — procedure, sizing, and the gate

Figure 22-62 i-gel supraglottic airways.

Size	Patient	Weight
1.5	Infant	5–12 kg
2	Small pediatric	10–25 kg
2.5	Large pediatric	25–35 kg
3	Small adult	30–60 kg
4	Medium adult	50–90 kg
5	Large adult	90+ kg

1 Preoxygenate and suction

BVM on 100% oxygen with an appropriate adjunct — OPA or NPA. Suction the airway as needed.

2 Size by WEIGHT and lubricate

Water-soluble lubricant on the back, sides and front of the cuff — only a THIN layer on the end, to avoid blowing it into the lungs.

3 Position and insert

Sniffing position, or jaw thrust if cervical injury is suspected; chin pressed down. Cuff outlet toward the chin, soft tip toward the HARD PALATE, gliding down and back with continuous gentle pressure.

4 Stop at definitive resistance

The incisors rest on the integral bite block. Resistance is the endpoint, not an obstacle to push through.

5 Confirm, secure, decompress

Auscultate, check chest rise, confirm with $EtCO_2$. Decompress via the gastric channel.

REGION SOP Indicated for the unresponsive medical or trauma patient WITHOUT A GAG REFLEX when BVM ventilation is ineffective. Contraindicated with an intact gag, known esophageal disease, or caustic ingestion — an intact gag routes you into Drug Assisted Intubation instead.

Endotracheal Intubation

The largest single block in the chapter — and the only skill the textbook openly concedes the field performs badly.

Equipment · Complications · Preparation · Procedure · Confirmation

What it buys you, and what it costs

1 What it buys you

OPTIMAL aspiration protection and optimal ventilation — a cuffed tube below the cords, which nothing else in this chapter offers. Plus a route for lower airway suctioning, a stable airway for a long transport, and precise ventilator control.

2 What it costs physiologically

It bypasses the upper airway entirely: no warming, no filtering, no humidifying. From Part 1, those were done by the nasal mucosa and tracheal epithelium. Over hours it matters; over twenty minutes it does not.

3 Who gets it without medication

Non-medication-assisted intubation is restricted to cardiac or respiratory arrest, or extreme respiratory failure — patients whose condition will ALLOW such an invasive procedure.

4 Which leaves exactly two options

If a patient would resist a laryngoscope, you either sedate them or you do something else. Laryngoscopy on a patient with intact reflexes produces vomiting, laryngospasm and hypoxia. There is no third path.

Intubation is not one skill. It is four decisions with one psychomotor task in the middle.

Should this patient be intubated? Is this patient prepared? Is this attempt working? Is this tube in the right place?

Most failures in the field are decision failures, not hand failures — which is why preparation and confirmation get more time in this block than the procedure itself.

EQUIPMENT

The laryngoscope — and the two blades

Figure 22-69 Curved (Macintosh) blade.

Figure 22-70 Straight (Miller) blade.

Figure 22-66 A range of blades and handles.

Source: Paramedic Care: Principles & Practice, 6th ed. © Pearson Education.

What it is for

To lift the tongue and epiglottis OUT OF THE LINE OF SIGHT. You are moving tissue, not looking through it — which is why the lift is the skill.

Curved — Macintosh

A flange sweeps the tongue to the right; the tip sits in the VALLECULA and lifts the epiglottis INDIRECTLY by tensioning the hyoepiglottic ligament.

Straight — Miller, Phillips, Wisconsin

Passes UNDER the epiglottis and lifts it directly. Usually preferred in children, whose epiglottis is floppier and harder to control indirectly.

Check the light, every time

Align the indentation with the bar, press forward to lock, elevate the blade to a right angle. A dead bulb found mid-attempt costs the whole attempt — and it is on the scored sheet.

Straight wrist. Lift with the shoulder and arm, at 45 degrees to the ground. Do not lever.

Levering the blade back against the upper teeth is the commonest and most damaging error in the entire procedure. It breaks teeth, it lacerates lips, and it does not improve the view — the view comes from lifting along the axis of the handle, up and away.

EQUIPMENT

The tube, the stylet, and the bougie

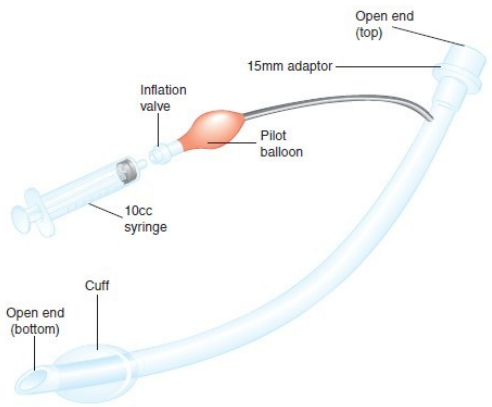

Figure 22-73 Parts of the endotracheal tube.

Figure 22-78 Endotracheal tube introducer (bougie).

Figure 22-80 Magill forceps.

Source: Paramedic Care: Principles & Practice, 6th ed. © Pearson Education.

The tube

Open at both ends, 12–32 cm, with centimetre markings that let you record and re-check depth. Typical size 7.0–7.5 for adult females, 7.5–8.0 for adult males. Four parts to name: cuff, pilot balloon, inflation valve, 15/22 mm adapter.

The syringe — and a critical criterion

A 10 mL syringe inflates the distal cuff to seal against the trachea. Inflate to proper pressure and IMMEDIATELY remove the syringe — leaving it attached risks deflation, and it is a listed critical failure on your scored sheet.

The stylet

A plastic-covered wire stiffening the tube into the optimal shape. It stops SHORT of the distal end — a stylet past the tip lacerates the trachea. Load a tube and check the tip before you use it.

The bougie — two jobs

For intubating when only the EPIGLOTTIS is visible: pass the angled tip under it, railroad the tube over, withdraw. And as confirmation — it meets resistance in the smaller airways if tracheal, and none if esophageal.

REGION SOP The bougie is listed optional equipment for SURGICAL CRICOTHYROTOMY too — aimed toward the feet, verified not to be in a false lumen, stopping at the carina less than four inches from the incision. Same device, same principle of feel, different door into the trachea.

Eleven ways this hurts the patient

Mechanical trauma

Tooth breakage · soft tissue laceration · equipment malfunction. Almost all of it comes from levering the blade rather than lifting.

Wrong place

ESOPHAGEAL intubation — survivable if recognised, fatal if not. ENDOBRONCHIAL intubation — the right mainstem is almost straight, so absent LEFT breath sounds means withdraw.

Physiologic insult

HYPOXEMIA during the apneic attempt · elevated intracranial pressure from a potent laryngeal stimulus · aspiration · tension pneumothorax.

Circulatory collapse

HYPOTENSION and CARDIAC ARREST. Sedatives drop pressure, positive pressure cuts venous return, and a critically ill patient can arrest during a technically flawless intubation.

And time

TRANSPORT DELAYS are named as a complication in the textbook. Time on the airway is time not moving toward definitive care.

Your scored sheet subordinates the attempt to oxygenation — twice

Critical criterion: failure to initiate ventilations within 30 seconds after taking PPE precautions. Critical criterion: interrupts ventilations when SpO_2 is less than 90% at any time.

Read together, those two lines say something specific — the attempt is subordinate to the oxygenation. A provider absorbed in getting the tube has stopped doing the more important job.

This slide comes BEFORE the procedure on purpose. Learn the procedure first and the complications look like trivia; learn the complications first and every step of the procedure turns out to be protecting against one of them.

REGION SOP Intubation carries serious complications and should be treated with the utmost respect. Every step of the procedure exists to protect against one of the eleven above.

PREPARATION

Position the patient, position yourself, fill the tank

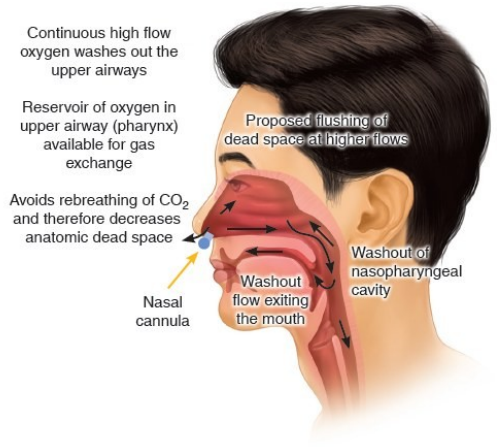

Figure 22-81 Apneic oxygenation — nasal washout.

Figure 22-83 Cannula under the mask.

Source: Paramedic Care: Principles & Practice, 6th ed. © Pearson Education.

1 Position the patient

Head elevation with ear-to-sternal notch — Part 2, now with a line of sight required too.

2 Position yourself

At the head, with the patient ELEVATED ON A COT wherever possible — the floor forces you prone.

3 Preoxygenate — denitrogenation

Washing nitrogen out of the FRC and replacing it with oxygen — filling Part 1's apneic reservoir.

4 Leave a cannula running

A cannula UNDER the mask, still running during the attempt.

REGION SOP Pre-oxygenate with 100% OXYGEN for THREE MINUTES, goal SpO_2 100%. In respiratory failure, use the BVM with the head ELEVATED 30 DEGREES for optimal pre-oxygenation. A goal of 100% is deliberate — from the oxyhemoglobin curve, anything less means you have already started down the curve before the apnea begins.

Delayed sequence intubation is a solution to a PREOXYGENATION problem, not an intubation problem

A sedative without a paralytic, for the agitated patient in whom you cannot achieve adequate preoxygenation because they will not tolerate the mask. Covered fully in Part 4 — but it belongs conceptually here, because what it fixes is the tank, not the tube.

PREPARATION

Resuscitate before you intubate

1 Three hits land at once

Induction agents vasodilate and drop preload. Positive pressure ventilation raises intrathoracic pressure and cuts venous return. And sedation switches off the sympathetic drive that was the only thing holding the pressure up.

2 So a perfect intubation can still kill

A patient compensating on maximum sympathetic tone can arrest within a minute of induction, with the procedure executed flawlessly. This is the most underestimated complication in the chapter.

3 Shock index — the bedside version

Formally, heart rate divided by systolic pressure; over 0.9 predicts hypotension. The version worth memorising needs no arithmetic: if the HEART RATE VALUE exceeds the SYSTOLIC VALUE, expect peri-intubation hypotension.

4 Fix it before, not after

Fluids and pressure support before induction. And lead with suctioning — turned on and in your hand before you start, not in the bag. A patient who vomits at laryngoscopy with the suction packed is an airway you lose.

HR 120 with a systolic of 110 is a warning. HR 88 with a systolic of 130 is not. That comparison takes no calculation and no calculator — and it tells you whether this patient will tolerate induction.

REGION SOP “Support blood pressure to achieve MAP > 65” sits inside the intubation sequence itself — not in a separate shock protocol. And: “Optimize patient for first-pass success with pre-procedure preoxygenation, sniffing positioning, and sedatives as indicated by patient presentation.”

Standard precautions through visualising the landmarks

1 Standard precautions

Gloves, mask, eye protection, possibly a gown — a critical criterion on the scored sheet.

2 Position the patient

Supine, with ear and sternal notch on the same horizontal level. In obese patients, padding under the upper back, shoulders and head.

3 Ventilate — but not aggressively

BVM with 100% oxygen, using the rule of threes. AVOID AGGRESSIVE HYPERVENTILATION: over-bagging distends the stomach and cuts venous return in a patient about to be sedated.

4 Prepare equipment and mouth

Suction on, appropriate tip attached, in your hand. Remove dentures or partial dental plates.

5 Blade in the left hand, right side of the mouth

Curved: sweep the tongue LEFT and work in the midline. Straight: STAY on the right side. Either way — the goal right now is the EPIGLOTTIS, not the cords.

6 Advance to your landmark

Curved: tip into the VALLECULA at the base of the tongue. Straight: tip UNDER the epiglottis — or advance into the esophagus and visualise while slowly withdrawing. Cannot see it? Withdraw, reposition, repeat.

7 Lift — straight wrist, 45 degrees

Shoulder and arm, not the wrist, and no pressure on the teeth. Consider a simultaneous jaw thrust from your partner. Suction emesis, blood or secretions now.

8 Poor view? Manipulate the larynx

Have your partner perform external laryngeal manipulation — directed by YOU, because you are the only person who can see what it does.

Hunt the EPIGLOTTIS, not the cords. Searching for cords leads to disorientation and abandoned attempts — find the epiglottis and the cords are almost always findable from there.

Passing the tube through to securing it

Figure 22-95 Passing the tube.

Figure 22-98 Inflating the cuff.

Figure 22-99 Securing with a commercial holder.

Figure 22-97 Continuous waveform.

Source: Paramedic Care: Principles & Practice, 6th ed. © Pearson Education.

9 Hold it like a dart

Right hand, fingertips, through the RIGHT CORNER of the mouth toward the midline — not down the barrel of the blade, which blocks your own view.

10 Watch the cuff pass the cords

Advance until the distal cuff DISAPPEARS beyond the cords, then 1–2 cm further. This is the only direct visual confirmation of depth you will ever get.

11 Then do not let go

Hold the tube with your hand until it is taped or tied. Not to grab the syringe, not to take the bag, not for a second — every dislodgement happens in this gap.

12 Stylet out, bag on, cuff up

Attach to the 15/22 mm connector. Inflate the cuff and IMMEDIATELY remove the syringe.

13 Confirm, then check depth

CAPNOGRAPHY answers “trachea or esophagus.” EQUAL BREATH SOUNDS answer “is it too deep.” Two different questions, two different tests.

14 Bite block and secure

An oropharyngeal airway as a bite block — Part 2 equipment doing a new job — then tape, umbilical tape, or a commercial holder.

15 Ventilator and continuous waveform

Place the patient on the transport ventilator and monitor the continuous capnography waveform from here on.

16 Reconfirm — and keep reconfirming

Periodically, and ESPECIALLY after any major movement or any deterioration. Bed to cot, cot to ambulance, ambulance to ED — every one is a chance to migrate.

REGION SOP Your protocol adds a step the textbook does not: secure the tube and PLACE A C-COLLAR to maintain tube position. Flexion and extension of the neck move a tube several centimetres — the collar removes that variable.

CONFIRMATION

The subjective methods — and why none of them is enough

Subjective method	What it tells you	How it lies
Direct visualisation of the cords	You watched the cuff pass between the cords — the strongest subjective evidence there is	It confirms a MOMENT, not a current state. The tube can be displaced during securing, movement or transport
Tube misting or condensation	Condensation in the tube on exhalation	It occurs even when the tube is in the ESOPHAGUS — the stomach holds warm humid gas too. Misting feels like proof and is not
Auscultation of breath sounds	Bilateral sounds with a quiet epigastrium	Can be misleading, ESPECIALLY IN CHILDREN — a small chest transmits sound across the whole thorax, so esophageal and right-mainstem tubes both mimic bilateral
Rising oxygen saturation	The patient is oxygenating	A LAGGING indicator, from Part 1 — it confirms a tube that has already been correct for a minute
Chest rise, absent gastric distension	Gas is going somewhere useful	Supportive only. Neither distinguishes a tracheal tube from a well-placed extraglottic device

Subjective methods are important — but not one of them may be your only method

None of this makes them worthless. Used together, the combined picture is strong and it is available instantly. Used alone, each one is a test with a known and specific failure mode — which is precisely the argument for the objective methods on the next slide.

CONFIRMATION

The objective methods — capnography is the gold standard

1 Capnography — the gold standard

With one conditional clause: IF the patient is producing enough carbon dioxide to detect. Quantitative gives a value and a waveform; qualitative (colorimetric) gives presence or absence only.

2 The false negative that matters

In CARDIAC ARREST. CO_2 reaches the lungs by pulmonary blood flow — no flow, no CO_2 delivered, regardless of where the tube is. A colorimetric device may not change colour at all.

3 Esophageal detector device

A bulb or syringe creating suction on the tube. The trachea is held open by cartilage rings so the bulb refills; the esophagus is collapsible, so suction pulls it shut and the bulb stays flat. Part 1 anatomy, doing work.

4 The bougie — confirmation by feel

Passed through the tube, it meets RESISTANCE in the smaller airways if tracheal, and none if esophageal. Tactile, and it works in a patient producing no CO_2 — exactly where capnography is weakest.

A waveform of ANY size with a NORMAL shape means the tube is in the trachea

A low number in a prolonged arrest reflects poor pulmonary blood flow — not a bad tube. Misreading it pulls correctly placed tubes out of arrested patients, and it is one of the most common serious errors in resuscitation. This is Part 1's four-question framework earning its keep.

REGION SOP Your system's stated hierarchy: "The Gold Standard in confirmation of placement is Capnography. Secondary methods include auscultation, bilateral chest rise and fall, fogging of tube, pulse oximetry." Note that fogging is explicitly demoted to secondary.

IMPROVING SUCCESS

The uncomfortable evidence — and the eight things that help

Figure 22-77 Video laryngoscope.

Figure 22-71 Indirect view on the screen.

Source: Paramedic Care: Principles & Practice, 6th ed. © Pearson Education.

The evidence, unsoftened

"Most studies of prehospital intubation show relatively poor success rates when using first-attempt and overall successful placement as the marker of success."

The only skill in the curriculum where the textbook concedes the field performs badly. Understanding WHY is how that changes.

Video improves the VIEW, not DELIVERY.

Seeing the cords on a screen and getting a tube to them are separate problems, and the geometry differs from direct laryngoscopy. A hyperangulated blade usually needs a preloaded rigid stylet or a bougie. Train on both.

Good initial training

And ongoing practice — the factor most often neglected.

The bougie

Used routinely, rather than only as a rescue.

Managing neck pressure

The BURP maneuver — Part 2 material, directed by the intubator.

Optimal positioning

Ear to sternal notch, elevated on a cot. Part 2, again.

Video laryngoscopy

A camera at the blade tip, viewed INDIRECTLY on a screen.

Other technology

Specialised blades, lighted stylets, intubating laryngeal airways, fiberoptic stylets.

Rapid sequence intubation

Part 4 — listed here as a success factor.

The single most modifiable factor on this list is the one that costs nothing to buy: practice, and positioning.

REGION SOP Retrograde intubation, briefly: a needle through the cricothyroid membrane directed SUPERIORLY, a guidewire passed up and retrieved through the mouth, and the tube railroaded over the wire into the airway. Rarely performed, but it demonstrates that the cricothyroid membrane is a door in both directions.

Special Intubation Considerations

The same procedure, changed by the patient in front of you — trauma, foreign bodies, arrest, children, and what happens afterward.

Trauma · Foreign bodies · Cardiac arrest · Pediatrics · After the tube

Trauma, and foreign bodies under direct laryngoscopy

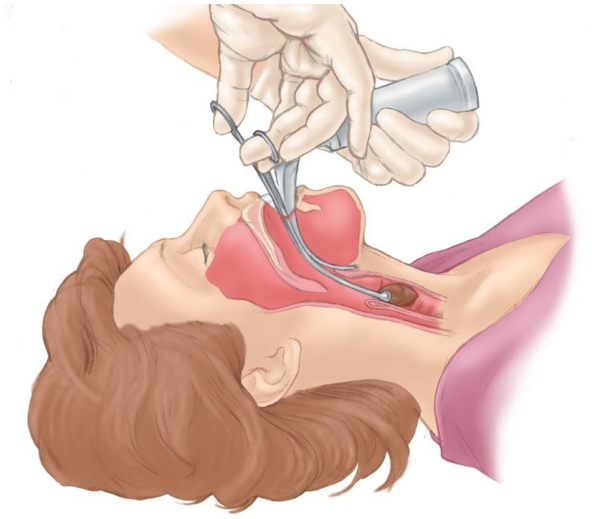

Figure 22-106 Foreign body removal under direct laryngoscopy.

Source: Paramedic Care: Principles & Practice, 6th ed. © Pearson Education.

1 Basic management first

BVM ventilation and standard precautions before anything invasive — in trauma and in obstruction alike.

2 Remove the FRONT of the collar

A rigid collar prevents mouth opening. An assistant maintains manual in-line stabilisation instead — at least as effective, and it does not obstruct the airway. The spine is never unprotected.

3 Jaw thrust immediately before laryngoscopy

Performed by the assistant, then external laryngeal manipulation as needed with the assistant holding the optimal laryngeal position.

4 Expect a worse view, and plan for it

Every alignment advantage from Part 2 is unavailable — you cannot flex the neck or extend the head. Reach for the bougie or the video laryngoscope EARLIER, not after two failures.

Foreign body removal is not a new skill — it is laryngoscopy with a different instrument in your right hand

Basic maneuvers are carried out before the Magill forceps come out, and the procedure for visualising the airway is IDENTICAL to intubation. If you can do one, you can do the other.

REGION SOP Obstruction ladder: let them clear it → back blows and thrusts → CPR regardless of pulses if unresponsive → video laryngoscopy and Magill forceps → if past the cords, intubate and deliberately ADVANCE the object into the right mainstem, then withdraw and ventilate the left lung → suction ≤ 10 sec → cricothyrotomy (needle < 10 years, surgical ≥ 10).

SPECIAL CONSIDERATIONS

Cardiac arrest, and the pediatric airway

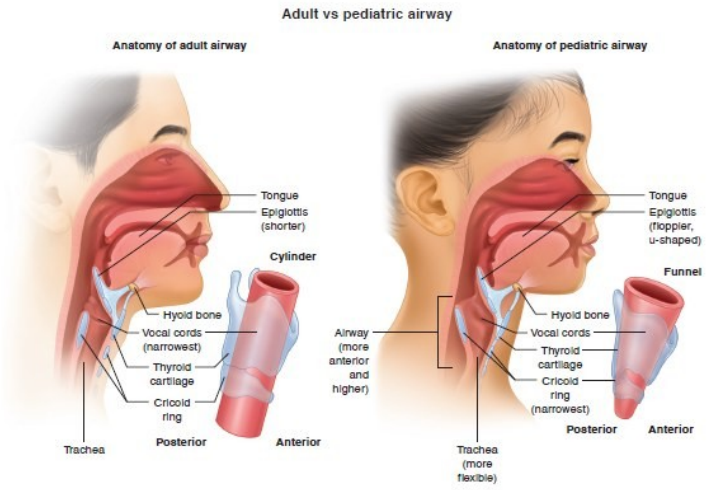

Figure 22-107 Adult versus pediatric airway.

Source: Paramedic Care: Principles & Practice, 6th ed. © Pearson Education.

Size and space

Everything smaller · small nares with large adenoids · inadequate nasal airway diameters · a tongue that is larger relative to the oropharynx.

Shape and position

A relatively large occiput · a floppy, round, omega-shaped epiglottis · a glottic opening that sits higher and more anterior.

The narrowest point moves

The CRICOID cartilage, not the glottis. So tube size is critical, a tube that passes the cords may still be too large, and cricoid pressure can WORSEN the situation.

Physiology and reserve

Greater vagal tone — laryngoscopy causes bradycardia. Higher basal metabolism with less FRC — very fast desaturation. Watch the monitor, not just the tube.

In arrest: consider an EGA rather than intubation

What kills the patient in arrest is absent circulation, not absent intubation — and every second of laryngoscopy competes with compressions. Use a BVM while establishing effective compressions and defibrillation. $ETCO_2$ still confirms placement, with the false-negative caveat.

And the reassuring part

The procedure is ESSENTIALLY THE SAME as in the adult, though a straight blade is usually preferred. Say that at the end so nobody leaves believing pediatric intubation is a separate discipline — it is the same skill under tighter constraints.

REGION SOP "Surgical airways are unavailable" is made concrete in your protocol: surgical cricothyrotomy is CONTRAINDICATED under 10 years of age, with needle cricothyrotomy specified instead. That threshold is worth memorising now.

AFTER THE TUBE

Cuff pressure, agitation, and field extubation

1 Cuff pressure — ideally a manometer

Over-inflation exceeds tracheal capillary pressure and causes mucosal ischemia, then necrosis, then later stenosis. Under-inflation leaks and permits aspiration. Providers routinely over-inflate by feel, and the pilot balloon tells you almost nothing.

2 Two situations make it acute

ALTITUDE, where an air-filled cuff expands — which matters in aeromedical transport. And nitrous oxide, which diffuses into the cuff and raises the pressure over time.

3 Post-intubation agitation

A patient who wakes up intubated is in a distressing situation and is at real risk of self-extubation. Your protocol's answer is sedation titrated to a RASS of −2 to −3 — which is Part 4.

4 Field extubation — rarely, and carefully

Only for a patient intubated for a reversible cause who is now awake, following commands, protecting their airway, and fighting the tube. Any doubt at all — leave the tube in and let the receiving facility decide with more information than you have.

The extubation sequence — and the two steps worth explaining rather than listing

Precautions → ensure oxygenation → prepare intubation equipment AND SUCTION → confirm responsiveness → position ON THEIR SIDE → suction the oropharynx → deflate the cuff → remove on a COUGH OR EXPIRATION → oxygen → reassess.

On their side, so anything that comes up drains out instead of being aspirated. On cough or expiration, so airflow is moving OUTWARD past the cords as the tube leaves — carrying secretions with it rather than drawing them in.

SUMMARY

What to carry out of Part 3

1 You arrive here through a gate

Drug-assisted intubation opens only when two-person BVM WITH ADJUNCTS has proven ineffective or inappropriate. Inappropriate includes trajectory — expected clinical course is a listed indication.

2 EGAs are a destination, not a fallback

Placed blind in seconds, no view required, far lower failure rate. Your arrest guidance prefers them. The trade is less aspiration protection — and a pressure ceiling that leaks in stiff chests.

3 Preparation determines success

Position the patient, position yourself, fill the tank, and fix the blood pressure BEFORE induction. If the heart rate exceeds the systolic, expect peri-intubation hypotension.

4 Hunt the epiglottis, lift with the shoulder

Not the cords, and not the wrist. Levering on the teeth is the commonest damaging error and it never improves the view.

5 A tube that is not confirmed is not an airway

Capnography is the gold standard — with a false negative in arrest, where a waveform of ANY size with a NORMAL shape still means trachea. Reconfirm after every move.

6 Most failures are decisions, not hands

Was the patient prepared, positioned, resuscitated? Was suction in your hand and a bougie ready? All decided before the blade goes in.

Practise it in bad positions, in bad light, on patients who cannot be moved — before you need to.

Part 4 is what happens when all of this fails: the difficult airway, medication-assisted intubation, cricothyrotomy, suctioning, gastric decompression, and transport ventilators.

REVIEW

Check your understanding

1. State the exact condition under which your protocol opens the door to drug-assisted intubation — including the word people miss.
2. Distinguish retroglottic from supraglottic devices anatomically, and say how each one fails.
3. You place a dual-lumen airway and hear gastric sounds with no breath sounds. What happened, and what do you do?
4. Give the i-gel indication and all three contraindications, and say how it is sized.
5. Which patients will a supraglottic device fail in, and what is the mechanism of that failure?
6. Contrast the curved and straight blades by landmark and by mechanism. Which is preferred in children, and why?
7. Describe the correct lifting motion, and name the error that breaks teeth without improving the view.
8. What is denitrogenation, what does it fill, and what are your protocol's three preoxygenation parameters?
9. Give the bedside version of the shock index and say what you do about a positive finding.
10. How far do you advance the tube, and when may you let go of it?
11. Name three subjective confirmation methods and the specific way each one lies.
12. Why does capnography produce false negatives in arrest — and what should you do with a very low reading?
13. Give the three modifications for trauma intubation and explain why the view is harder.
14. What is the recommended airway approach in cardiac arrest, and what is the reasoning behind it?
15. Where is the narrowest point of a child's airway, and give three consequences of that.
16. In field extubation, why on their side — and why on a cough or expiration?

Answer these before the session and again after — that gap is the measure of what you learned today.