

Acute Upper Airway Obstruction

A plain-English guide for you and your family

WHAT IS HAPPENING

The upper airway is the path air takes from your nose and mouth, through your throat (pharynx) and voice box (larynx), and into your windpipe (trachea). Normally, this tunnel stays wide open so air flows smoothly. Muscles hold it steady, and a small flap called the epiglottis closes over the windpipe when you swallow to keep food out. When something goes wrong—a piece of food gets stuck, the throat tissues swell shut from a severe allergic reaction (anaphylaxis), a bacterial infection fills the space with pus or swelling (like epiglottitis or a retropharyngeal abscess), a virus causes the voice box to swell in a young child (croup), a direct blow to the neck injures the airway, or a tumor grows and presses inward—the tunnel narrows. Air now has to squeeze through a much smaller opening. The body responds by pulling harder to suck air in, which makes a loud, high-pitched whistling noise called a high-pitched noise on breathing in (stridor). You might see your child sit bolt upright, lean forward with hands on knees (tripod position), drool because swallowing hurts or feels scary, speak in a muffled or raspy voice, and show the skin between the ribs or above the collarbone sucking inward with each breath (retractions). These signs mean the airway is dangerously tight. If the blockage is not opened quickly, the breathing muscles tire out, oxygen in the blood drops, and the airway can close completely. Every sign—the a high-pitched noise on breathing in, the posture, the drooling, the retractions—comes from one problem: not enough room for air to move through the upper airway.

What you might feel

- A high-pitched noise on breathing in (Stridor)
- Retractions (skin pulling in at the neck notch, between the ribs, below the ribs)
- Drooling and refusing to swallow
- Tripod positioning (sitting upright, leaning forward, hands on knees)
- Muffled, hoarse, or no voice at all
- Fast breathing and fast heart rate
- Nasal flaring (nostrils spreading wide with each breath)
- Agitation, anxiety, or confusion

- Blue lips, tongue, or fingernails (cyanosis)
- Slow heart rate (bradycardia) and barely responding

Call the doctor right away if...

- Blue lips, tongue, or fingernails (cyanosis)—shows severe oxygen starvation and the child is minutes from collapse
- Heart rate suddenly slowing or dropping (bradycardia)—the oxygen-starved heart is failing and arrest is imminent
- Decreased consciousness, extreme sleepiness, or no response—the brain is shutting down from lack of oxygen
- Silent chest with little or no air moving despite hard breathing effort—the airway is almost completely blocked
- Cannot speak, cry, make sound, or cough—the airway is totally or nearly totally closed off

What the care team will do

- Keep the child upright in the position of comfort, usually sitting in the caregiver's lap, and do not force the child to lie flat or leave the caregiver.
- Provide humidified oxygen by blow-by (tube or mask held near the face) at 4 to 6 liters per minute, never forcing the mask if the child resists.
- Maintain a calm, quiet environment—dim lights, speak softly, limit the number of people in the room, and delay all non-essential procedures like IV starts or blood draws until the airway is secured.
- Continuously monitor oxygen saturation with pulse oximetry and watch for the red-flag triad: bluish skin (cyanosis) (blue color), a slow heart rate (bradycardia) (heart rate dropping below normal for age), and decreased level of consciousness.
- Administer dexamethasone 0.6 mg/kg (maximum single dose 16 mg) by mouth, IV, or intramuscular injection as ordered, for croup or any inflammatory cause of obstruction.
- Never perform a blind finger sweep, never insert a tongue blade to look at the throat, and never lay the child supine for examination unless anesthesia and intubation equipment are immediately available.
- Prepare emergency airway equipment at the bedside—appropriate-size endotracheal tubes (breathing tubes), laryngoscope (lighted blade to see the vocal cords), bag-valve mask, and suction—and notify the anesthesiologist or ENT surgeon if red-flag signs are present.

- If anaphylaxis is suspected, administer intramuscular epinephrine 0.01 mg/kg (0.01 mL/kg of 1:1000 solution, maximum single dose 0.5 mg for adults, 0.3 mg for children) into the mid-outer thigh immediately, then give oxygen, position upright, and prepare for possible second dose in 5 to 15 minutes.

Medicines you may be given — and why

Oxygen

When the airway is narrowed, less oxygen reaches the lungs and blood. Giving extra oxygen through a mask raises the oxygen percentage in each breath. Even though less air can squeeze through the tight space, each bit of air that does get through carries more oxygen, keeping blood oxygen levels safer while the obstruction is being fixed.

Heliox (Helium-Oxygen mixture)

Heliox is a blend of helium and oxygen (typically 70% helium, 30% oxygen or 80/20). Helium is much lighter than nitrogen (the main gas in room air), so heliox flows through narrow spaces more smoothly—like water sliding through a straw versus honey. When the airway is tight, breathing heliox lowers the work of moving air in and out, reduces noisy turbulent flow (stridor), and gives more time for definitive treatment.

Epinephrine (adrenaline)

Epinephrine is the body's natural 'fight-or-flight' hormone. It locks onto receptors on blood-vessel walls and airway smooth muscle. In the airway mucosa (lining tissue), it tightens blood vessels (vasoconstriction), squeezing fluid out of swollen tissue and shrinking swelling (edema) (puffiness). It also relaxes the smooth muscle around small airways, which can help if there is any bronchospasm (muscle tightening). Epinephrine is the first-line drug for anaphylaxis (life-threatening allergic reaction) and is also used as a nebulized mist (racemic epinephrine) for croup.

Corticosteroids (e.g. dexamethasone, prednisolone)

Corticosteroids mimic cortisol, the body's natural anti-swelling hormone. They travel into cells and turn on genes that make anti-inflammatory proteins and turn off genes that make inflammatory chemicals (cytokines, prostaglandins). Over hours, the immune system calms down, white-blood-cell traffic into the airway lining drops, and fluid leaks out of tissue—swelling (edema) (swelling) shrinks. Steroids are key for croup (viral laryngotracheobronchitis), angioedema (deep tissue swelling), and post-intubation laryngeal swelling.

Antibiotics (e.g. ceftriaxone, cefotaxime)

In bacterial causes of upper airway obstruction—especially acute epiglottitis (infection of the epiglottis, the cartilage flap above the voice box)—bacteria such as *Haemophilus influenzae* type b, *Streptococcus*, or *Staphylococcus* invade and inflame the tissue. Ceftriaxone and cefotaxime are antibiotics that punch holes in bacterial cell walls. The bacteria burst open and die, the infection clears, and inflammation and swelling in the epiglottis resolve over 24–48 hours.

Foreign-Body Removal Maneuvers (back blows, abdominal thrusts, Magill forceps under laryngoscopy)

When a solid object (food, toy, coin) blocks the larynx or trachea, no medication can dissolve or shrink it—you must physically dislodge it. In a conscious, choking patient, back blows (sharp strikes between the shoulder blades) and abdominal thrusts (Heimlich maneuver: quick upward pushes below the ribcage) create bursts of pressure that shoot air up from the lungs, popping the object out like a cork from a bottle. In an unconscious patient, direct laryngoscopy (inserting a lighted blade to see the vocal cords) lets you grab the object with Magill forceps (long, angled tweezers).

Flexible or Rigid Endoscopy

Endoscopy means passing a tube with a camera and light into the airway to see exactly where and what is blocking it. A flexible bronchoscope (thin, bendable scope) can navigate around corners and retrieve foreign bodies with tiny grasping tools, or it can suction out thick secretions and mucus plugs. A rigid bronchoscope (straight metal tube) gives a wider view, allows better removal of larger objects, and can push aside swollen tissue. Endoscopy both diagnoses (tells you what is wrong) and treats (removes the problem).

Cricothyrotomy (Emergency Surgical Airway)

When the upper airway is completely blocked—by severe swelling, trauma, blood, or a foreign body that cannot be removed—and you cannot pass a breathing tube through the mouth or nose (failed intubation), cricothyrotomy creates a new airway hole below the blockage. You make a small cut through the skin and cricothyroid membrane (the soft spot between the thyroid cartilage—Adam's apple—and the cricoid ring just below it) and insert a tube directly into the trachea. Air bypasses the obstruction, and the patient can breathe again.

Positioning and Airway Maneuvers (head-tilt/chin-lift, jaw-thrust, tripod position)

Sometimes the airway is not blocked by an object but by the tongue, soft tissue, or neck position collapsing inward—especially in an unconscious or weak patient. Simple repositioning can lift the tongue and soft palate off the back of the throat, opening the airway instantly. In a

conscious patient with partial obstruction (croup, epiglottitis), sitting upright and leaning forward (tripod position) uses gravity to pull the tongue forward and reduces compression of swollen structures, making each breath easier.

Where this information comes from

- American Academy of Pediatrics (AAP) Pediatric Advanced Life Support (PALS) 2020
- American Heart Association (AHA) PEARs Provider Manual 2020
- Difficult Airway Society (DAS) Guidelines 2015
- Cochrane Database: Interventions for croup in children (2018)

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