

Croup and Bronchiolitis

Croup is upper airway — think a high-pitched noise on breathing in (stridor) and bark. Bronchiolitis is lower airway — think wheeze and retractions. Both are viral, both are common in little kids.

THE ONE-LINE TRUTH

Croup and bronchiolitis are both viral infections in young children — croup swells the upper airway just below the voice box and causes a barking cough and a high-pitched noise on breathing in (stridor), while bronchiolitis inflames the tiny lower airways and causes wheezing and fast breathing.

The chain — how it unfolds

1. A virus (parainfluenza in croup, RSV in bronchiolitis) infects the airway lining. — why: The virus enters cells in the throat or lungs, multiplies, and kills those cells — this triggers the immune system to send white blood cells and fluid to the area, causing swelling and mucus production.
2. The airway narrows — in croup, the subglottic space swells; in bronchiolitis, the bronchioles fill with mucus and debris. — why: Swelling and mucus take up space inside the tube, leaving less room for air to flow. In a child, even one millimeter of swelling can cut airflow dramatically because the tube is so small to begin with.
3. Airflow becomes turbulent (rough and noisy) instead of smooth. — why: When air is forced through a narrow, rough passage at high speed, it vibrates the tissue and makes sound — a high-pitched noise on breathing in (stridor) (high-pitched noise) in croup, wheezing (musical whistling) in bronchiolitis.
4. The child has to work much harder to breathe — faster rate, retractions, flaring nostrils. — why: The body senses low oxygen and high carbon dioxide in the blood, so the brain tells the breathing muscles to work harder and faster to pull in more air.
5. Oxygen levels in the blood start to drop, especially during sleep or when the child is tired. — why: The narrow airway and mucus plugs block enough airflow that the lungs cannot pull in enough oxygen to keep the blood fully loaded — this shows up as low oxygen saturation on a monitor.

6. In severe cases, the child becomes exhausted, stops fighting to breathe, and may stop breathing (apnea) or turn blue (cyanosis). — why: The muscles are too tired to keep working, and the brain does not have enough oxygen to stay alert — this is respiratory failure and requires emergency help (oxygen, breathing support, or a breathing tube).
7. Treatment (steroids for croup, supportive care for bronchiolitis) reduces swelling and buys time for the body to clear the virus. — why: Steroids shrink the swelling in croup, and epinephrine temporarily tightens blood vessels to reduce swelling even faster. In bronchiolitis, there is no medicine that kills the virus, so we give oxygen, suction mucus, and keep the child hydrated while the immune system clears the infection over several days.
8. Most children recover fully as the virus is cleared and the airway heals. — why: Once the immune system defeats the virus, the swelling goes down, mucus is coughed out or absorbed, and the airway returns to normal size — usually within three to seven days for croup, one to two weeks for bronchiolitis.

Spot it — what you see, and why

- Croup: Barking cough that sounds like a seal: The voice box (larynx) and the windpipe right below it swell up from the virus. When air pushes through that narrow, swollen space, it makes a loud, harsh bark instead of a normal cough.
- Croup: A high-pitched noise on breathing in (Stridor) (high-pitched squeaky sound when breathing in): The swollen windpipe is so narrow that air rushing in makes the tissues vibrate and create a high whistle or squeak. You hear it most when the child breathes in deeply or cries.
- Croup: Hoarse voice: The vocal cords inside the voice box are swollen and cannot vibrate smoothly, so the voice sounds raspy, scratchy, or weak instead of clear.
- Croup: Worse at night: Lying flat lets more fluid settle into the airway tissues, and cooler night air can make the muscles around the windpipe tighten a little, both making the narrowing worse.
- Bronchiolitis: Fast, shallow breathing: The tiny air tubes (bronchioles) deep in the lungs are clogged with mucus and swollen shut. The baby has to breathe faster and work harder to pull in enough oxygen through the narrow tubes.
- Bronchiolitis: Wheezing (high-pitched whistle when breathing out): Air is squeezed out through the narrowed, mucus-filled bronchioles. The tight space and sticky mucus make the air whistle as it leaves the lungs.

Red flags — act now

- A high-pitched noise on breathing in (Stridor) when the child is calm and resting (means the airway is very narrow)
- Severe chest retractions or the child is leaning forward and drooling (struggling to breathe)
- Blue or gray lips, tongue, or skin (not enough oxygen in the blood)
- Baby is too tired to cry, feed, or wake up (exhaustion from breathing effort)
- Breathing faster than 60 breaths per minute in an infant, or grunting with each breath

Treat it — in this order

1. Dexamethasone (steroid) by mouth or through an IV, single dose of 0.6 mg per kilogram (maximum 10 mg) → Calms the body's inflammatory response to the virus in croup. This shrinks the swelling in the subglottic space (the area just below the voice box), opens the airway, and makes breathing quieter and easier within a few hours. Works for mild, moderate, and severe croup.
2. Nebulized epinephrine (racemic epinephrine 0.5 mL in 3 mL saline, or L-epinephrine 0.5 mg/kg up to 5 mg) for moderate to severe croup → Tightens the blood vessels in the swollen tissue below the voice box, which squeezes fluid out of the tissue and opens the airway fast (within 10 to 30 minutes). Reduces a high-pitched noise on breathing in (stridor) and work of breathing quickly.
3. Supplemental oxygen (by nasal cannula or blow-by) and keep the child calm → Keeps blood oxygen levels safe while the airway is swollen. Keeping the child calm (on a parent's lap, not forcing anything scary) prevents crying and agitation, which make the airway narrow even more and worsen a high-pitched noise on breathing in (stridor).
4. Nasal suctioning (gentle bulb or suction catheter) and hydration (oral fluids or IV if the child cannot drink) → Removes thick mucus from the nose and upper airway that makes it even harder to breathe. Keeps the child hydrated so mucus stays thin and easier to clear. Especially important in bronchiolitis where mucus clogs the tiny lung tubes.
5. Hospital admission with continuous pulse oximetry for a high-pitched noise on breathing in (stridor) at rest, severe retractions, drooling, bluish skin (cyanosis) (blue color), or oxygen saturation below 90% → Allows close monitoring in case the airway swelling gets worse suddenly. Gives fast access to oxygen, epinephrine, and emergency airway equipment if the child's breathing fails.

Your top priorities at the bedside

1. Assess airway and breathing every 15 to 30 minutes—listen for a high-pitched noise on breathing in (stridor) at rest, count respiratory rate, watch for chest retractions, and check oxygen saturation with pulse oximetry. — why: The airway can swell quickly and close off in croup, and small babies with bronchiolitis tire out fast—frequent monitoring catches worsening respiratory distress (breathing failure) before the child stops breathing.
2. Keep the child calm and upright in the parent's lap—do not force the child to lie flat or upset them with unnecessary procedures. — why: Crying increases oxygen demand and worsens airway swelling in croup—keeping the child calm prevents a high-pitched noise on breathing in (stridor) from getting worse and conserves energy in bronchiolitis.
3. Administer dexamethasone (a steroid) 0.6 mg per kilogram by mouth or IV as a single dose, maximum 10 mg, as ordered by the provider. — why: Dexamethasone reduces inflammation (swelling) in the larynx (voice box area) and decreases airway obstruction (blockage) in croup—it works within 2 to 6 hours and prevents worsening symptoms.