

Croup and Bronchiolitis

A plain-English guide for you and your family

WHAT IS HAPPENING

Young children have airways that are already very narrow — about the width of a drinking straw in some spots. When a virus causes even a little swelling, it can quickly block the flow of air and make breathing hard. Croup happens when a virus (usually parainfluenza) infects the area just below the voice box, causing the throat to swell and make a tight, barking cough and a high-pitched noise when the child breathes in (called a high-pitched noise on breathing in (stridor)). Bronchiolitis happens when a different virus (usually RSV, or respiratory syncytial virus) infects the tiny branching tubes deep in the lungs (called bronchioles), filling them with mucus and causing wheezing and fast, shallow breathing. Both illnesses usually start like a cold — runny nose, mild fever — then get worse over a few days. Most children get better at home with rest, fluids, and steam or cool mist to soothe the airway. But some need the hospital for oxygen, breathing treatments, or close watching, especially babies under six months or children who are working very hard to breathe. The key is to watch how your child is breathing — if they are struggling, making loud noises with every breath, turning pale or blue, or acting very sleepy and hard to wake, get help right away.

What you might feel

- Croup: Barking cough that sounds like a seal
- Croup: A high-pitched noise on breathing in (Stridor) (high-pitched squeaky sound when breathing in)
- Croup: Hoarse voice
- Croup: Worse at night
- Bronchiolitis: Fast, shallow breathing
- Bronchiolitis: Wheezing (high-pitched whistle when breathing out)
- Bronchiolitis: Chest retractions (skin sucking in between ribs or above collarbone)
- Bronchiolitis: Nasal flaring (nostrils spread wide with each breath)
- Bronchiolitis: Poor feeding or refusal to eat

- Bronchiolitis: Pauses in breathing (Apnea) (pauses in breathing, especially in babies under 6 months)

Call the doctor right away if...

- 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

What the care team will do

- 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.
- 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.
- 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.
- Give nebulized epinephrine (racemic epinephrine 0.5 mL in 3 mL saline, or L-epinephrine 0.5 mg per kilogram up to 5 mg) for moderate to severe croup with a high-pitched noise on breathing in (stridor) at rest, and monitor for rebound swelling 2 to 4 hours after treatment.
- Suction the nose gently with a bulb syringe or suction catheter before feeds and when the baby cannot breathe through the nose—use saline drops first to loosen mucus.
- Provide supplemental oxygen by nasal cannula or blow-by if oxygen saturation is below 90 percent, and titrate (adjust) to keep saturation 90 percent or higher.
- Encourage small, frequent feedings by mouth or give IV fluids if the child is too tired to drink or breathing faster than 60 times per minute.
- Educate parents on red-flag signs to watch for at home—a high-pitched noise on breathing in (stridor) when calm, blue lips, extreme sleepiness, refusal to drink, or breathing that gets faster or harder—and give clear return instructions.

Medicines you may be given — and why

Dexamethasone

Dexamethasone shuts down the chemical alarm bells that tell the body to swell. In croup, the airway just below the voice box (the subglottic area) gets swollen and tight because the immune system is fighting the parainfluenza virus. This swelling makes the barking cough and the a high-pitched noise on breathing in (stridor) (the high-pitched squeaky sound when breathing in). Dexamethasone tells the cells lining that airway to stop releasing swelling chemicals like prostaglandins and leukotrienes, so the swelling shrinks and the airway opens back up.

Racemic epinephrine (nebulized)

Epinephrine is the body's emergency 'fight or flight' chemical. When you breathe it in as a mist, it acts in two ways. First, it squeezes the tiny blood vessels in the swollen airway lining, so less fluid leaks out and the tissue shrinks fast—like wringing water out of a sponge. Second, it tells the smooth muscle wrapped around the airway to relax, which opens the pipe a little more. Both effects together make it easier to breathe within minutes.

Supplemental oxygen

In moderate to severe bronchiolitis, the tiny air sacs (alveoli) in the lungs get clogged with mucus and debris from the virus (usually RSV—respiratory syncytialavirus). Oxygen cannot cross into the blood as easily, so the oxygen saturation (the percentage of red blood cells carrying oxygen) drops below 90%. Giving extra oxygen through a nasal cannula, mask, or high-flow nasal cannula raises the oxygen concentration in the air the child breathes, so even with clogged air sacs, enough oxygen gets through to keep the organs safe.

Intravenous (IV) fluids

Babies and toddlers with bronchiolitis breathe very fast (tachypnea) and work hard to breathe, so they lose extra water through their breath. They also may not drink well because they are tired or their nose is so stuffy they cannot suck or swallow easily. When the body loses more water than it takes in, it becomes dehydrated—the blood gets thicker, the organs get less flow, and the child may urinate less and have a dry mouth or sunken eyes. IV fluids (usually normal saline or a balanced salt solution) go straight into the bloodstream to replace the lost water and keep the blood volume and organ function normal.

Nasal suctioning

Babies under 6 months are 'obligate nose breathers'—they breathe almost entirely through their nose, not their mouth. In bronchiolitis, thick mucus plugs the nose and the airways, so the baby cannot move air in and out well. Suctioning uses a soft rubber bulb or a small suction

catheter to gently pull mucus out of the nostrils. This clears the airway opening so air can flow, feeding becomes easier, and the baby does not have to work as hard to breathe.

High-flow nasal cannula (HFNC) oxygen

Standard oxygen flows at low rates (1–2 liters per minute), but in moderate to severe bronchiolitis, the child works so hard to breathe that low-flow oxygen is not enough. High-flow nasal cannula delivers oxygen at much higher rates (up to 2 liters per kilogram per minute—so a 10 kg baby might get 20 liters per minute). The high flow does three things: it washes out the carbon dioxide that gets trapped in the upper airway, it delivers a steady stream of oxygen-rich air so every breath has more oxygen, and the slight pressure from the fast flow helps keep the small airways from collapsing. The oxygen is also warmed and humidified so it does not dry out the delicate airway lining.

Where this information comes from

- AAP Clinical Practice Guideline: Bronchiolitis 2014
- AAP Clinical Report: Croup 2022
- CDC Respiratory Syncytial Virus (RSV) Guidance
- Cochrane Review: Glucocorticoids for Croup

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