

Neonatal Respiratory Distress

A plain-English guide for you and your family

WHAT IS HAPPENING

When a baby is born, the very first breaths push fluid out of the lungs and fill millions of tiny air sacs (alveoli) with air so oxygen can cross into the blood. A slippery coating called surfactant keeps those sacs open between breaths—like soap keeping a bubble from popping. In preterm babies, surfactant is not ready yet, so the sacs collapse after every breath and the baby has to work extra hard to re-open them. In full-term babies, leftover fluid, meconium (the baby's first stool), infection, or a rare born-with lung problem can block the sacs or fill them with junk. Either way, oxygen cannot get through. The baby's body senses the low oxygen and goes into emergency mode: breathing faster to pull in more air, sucking the chest inward and flaring the nose to force air in harder, and grunting (closing the voice box to trap pressure and hold the sacs open a split second longer). None of this is random—it is the body buying time. If the root cause (missing surfactant, leftover fluid, meconium, infection) is not fixed, the baby gets tired, oxygen drops further, skin turns blue, and the heart and brain suffer. Treatment targets the broken step: surfactant for preemies with RDS, time and oxygen support for transient fast breathing (tachypnea) (leftover fluid), suctioning and oxygen for meconium, antibiotics for pneumonia, and careful monitoring to catch complications like a collapsed lung (pneumothorax) or dangerously high lung pressures (PPHN) before they tip the baby into a crash.

What you might feel

- Fast breathing (tachypnea) — more than 60 breaths in one minute
- Grunting sounds with each breath out
- Flaring nostrils (nasal flaring)
- Chest pulls in between the ribs or under the ribcage with each breath (retractions)
- Blue or gray color of the lips, tongue, or skin (cyanosis)
- Floppy body, weak muscle tone, or poor response
- Pauses in breathing (Apnea) — pauses in breathing that last more than 15 to 20 seconds
- Foamy white or pink fluid at the mouth or nose

Call the doctor right away if...

- Blue or gray color that does not improve with oxygen
- Breathing stops for more than 15 to 20 seconds, or the heart rate drops below 100 beats per minute
- Baby becomes floppy, unresponsive, or cannot cry
- Grunting and chest retractions get worse quickly
- Baby was born before 34 weeks or breathed in thick meconium-stained fluid

What the care team will do

- Attach pulse oximeter probe and monitor oxygen saturation continuously, keeping SpO₂ between 90 and 95 percent in preterm babies or 95 to 100 percent in term babies.
- Position the baby with the head in neutral or slightly extended position and suction the mouth and nose gently only if you see secretions blocking the airway.
- Keep the baby warm under a radiant warmer or in an incubator, maintaining skin temperature between 36.5 and 37.5 degrees Celsius.
- Monitor respiratory rate, retractions (chest pulling in between ribs or below the rib cage), grunting, and nasal flaring every 15 to 30 minutes and report worsening signs immediately.
- Delay feeding and keep the baby NPO (nothing by mouth) until respiratory rate is consistently below 60 breaths per minute and work of breathing improves.
- Place an intravenous line and start maintenance fluids at 60 to 80 milliliters per kilogram per day, adjusting based on urine output and weight change.
- Draw blood cultures and start ampicillin and gentamicin antibiotics within one hour if sepsis is suspected based on maternal fever, prolonged rupture of membranes, or clinical instability.
- Prepare for surfactant administration if the baby is intubated and chest X-ray shows ground-glass appearance (hazy white lung fields) with low lung volumes.

Medicines you may be given — and why

Exogenous surfactant (beractant, poractant alfa, calfactant)

Surfactant is a slippery coating that normally lines the inside of the air sacs in the lungs (the alveoli) and keeps them from collapsing when the baby breathes out. Preterm babies often don't make enough surfactant yet, so their air sacs stick shut and breathing becomes exhausting. Giving surfactant directly into the baby's windpipe coats the air sacs so they can stay open with each breath, letting oxygen in and carbon dioxide out much more easily.

Supplemental oxygen (nasal cannula, CPAP, or ventilator)

Oxygen is the gas in air that cells need to make energy. When a baby's lungs are sick or immature, not enough oxygen reaches the blood. Giving extra oxygen (more than the 21% found in room air) raises the amount available in each breath so the blood can carry enough to the brain, heart, and other organs even when the lungs aren't working perfectly.

Continuous positive airway pressure (CPAP)

CPAP gently pushes air into the baby's nose at a steady, low pressure throughout the whole breathing cycle. This constant push acts like a brace that holds the airways and air sacs open, preventing them from collapsing when the baby breathes out. It makes each breath easier and helps oxygen get into the blood without needing a breathing tube in most cases.

Mechanical ventilation (via endotracheal tube)

A breathing machine takes over the work of breathing when a baby is too sick, too weak, or too premature to breathe well enough on their own. A soft tube is placed through the mouth or nose into the windpipe, and the machine pushes measured breaths of air and oxygen into the lungs at a set rate and pressure. This keeps oxygen flowing into the blood and carbon dioxide flowing out when the baby cannot do it alone.

Antibiotics (ampicillin + gentamicin, or other combinations)

Antibiotics kill or stop bacteria from multiplying. When a newborn has respiratory distress and infection is suspected (especially early-onset sepsis or pneumonia from bacteria picked up during birth), antibiotics are started right away because newborn infections can spiral out of control in hours. Ampicillin covers common bacteria from the mother's birth canal (like Group B Streptococcus and Listeria), and gentamicin covers many gram-negative bacteria (like E. coli). Together they target the most likely germs while lab cultures are growing.

Caffeine citrate

Caffeine wakes up the breathing control center in the brainstem (the medulla) so that preterm babies remember to take regular breaths. Very premature infants often have pauses in breathing (apnea) of prematurity—they pause breathing for more than 20 seconds because their brain's breathing rhythm is still immature. Caffeine blocks adenosine receptors in the brain; adenosine normally makes neurons quieter, so blocking it keeps the breathing neurons more active and the baby breathing more steadily.

Where this information comes from

- AAP Guidelines for Perinatal Care, 8th Edition
- American Academy of Pediatrics (AAP) Textbook of Neonatal Resuscitation

- WHO recommendations on interventions to improve preterm birth outcomes
- Cochrane Neonatal Group reviews

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