PROCEDURE

Oxygen therapy in infants

Oxygen therapy gives an infant extra oxygen through a breathing device when blood oxygen levels are too low.

PURPOSE
Raise or maintain a safe blood oxygen level

PROCEDURE TYPE
Therapeutic, usually delivered at the bedside

WHERE IT IS DONE
Hospital, outpatient clinic, or at the bedside

ANAESTHESIA
None

HOW LONG IT TAKES
Minutes to months, based on oxygen need

PREPARATION
Monitoring and device fitting; follow the facility's instructions

RECOVERY
No sedation recovery; monitoring continues until oxygen is stable

MAIN RISKS
Nasal irritation, oxygen injury, eye injury, fire

RESULTS
Oxygen level response is usually visible within minutes

Overview

Oxygen therapy gives your baby air containing more oxygen than ordinary room air. It is used when a baby cannot keep enough oxygen in the blood without support.

The oxygen may be delivered through small tubes in the nostrils, a clear hood around the head, a mask, or a breathing-support machine. A pulse oximeter-a sensor usually wrapped around a hand or foot-estimates how much oxygen the blood is carrying.

Oxygen is treated like a medicine. The healthcare team selects a concentration or flow rate, checks your baby's response, and adjusts it toward an individual target. The aim is to provide enough oxygen while avoiding more than your baby needs.

Some babies need oxygen briefly after birth or during an illness. Premature infants and babies

with ongoing lung or heart conditions may need it for weeks or months, including at home.

Why the procedure is performed

Oxygen therapy is used to treat hypoxaemia, meaning that the blood oxygen level is too low. A low level can place strain on the brain, heart, and other organs.

A baby may need extra oxygen because of:

Oxygen supports your baby while the underlying problem improves or is treated. It does not, by itself, cure an infection, repair a heart condition, or make immature lungs develop faster.

- Premature or underdeveloped lungs
- Breathing difficulty around the time of birth
- Infection or inflammation affecting the lungs
- Chronic lung disease of prematurity
- A heart condition that affects blood flow or oxygen levels
- Pauses in breathing or another condition that reduces ventilation
- Recovery after surgery or another procedure

Who should and should not have it

Oxygen therapy is appropriate when measurements and clinical assessment show that your baby needs extra oxygen. The target level is not the same for every infant. Premature babies and babies with certain heart conditions often need carefully selected targets.

Extra oxygen is generally not given when a baby is maintaining the intended level in room air. Unnecessarily high oxygen exposure can be harmful, particularly to premature infants. For that reason, you should not change the flow rate or concentration unless your baby's healthcare team has told you how and when to do so.

Oxygen may require special planning rather than being used in a routine way when a baby has a heart condition in which oxygen could change blood flow through the heart or lungs. The cardiology and neonatal teams set an appropriate target in these cases.

Home oxygen may be delayed if your baby is medically unstable or if caregivers have not yet been trained. The home must also have working equipment, a backup supply, safe storage, and a plan for power cuts or equipment failure.

If oxygen is urgently needed, concerns about longer-term risks do not usually justify

withholding it. The team instead uses the lowest amount that reliably meets your baby's target.

How to prepare

Oxygen treatment in hospital often begins without special preparation. Staff may check your baby's breathing, skin colour, heart rate, and oxygen saturation. A blood sample may sometimes be needed to measure oxygen, carbon dioxide, and acidity more precisely.

The treating facility's own instructions take priority over general information. Follow its directions about feeding, monitoring, and any other planned procedures. Oxygen therapy itself does not usually require fasting.

If your baby is going home with oxygen, you should receive training on:

Ask for written contact information and an emergency plan before leaving the hospital.

- Using the oxygen source, tubing, and monitor
- Checking that oxygen is flowing
- Caring for the skin around the nose and face
- Securing tubing safely
- Replacing or refilling the supply
- Using backup equipment
- Responding to monitor alarms
- Keeping oxygen away from flames, smoking, heat, oils, and grease

What happens during the procedure

The team places a pulse oximeter sensor on your baby. This does not pierce the skin. Movement, poor circulation, sensor position, and other factors can affect the reading, so staff also assess how your baby looks and breathes.

Oxygen can be delivered in several ways. Low-flow nasal cannulae are two soft prongs that sit just inside the nostrils. An oxygen hood surrounds the baby's head with warmed, controlled gas. Babies who need more breathing support may receive oxygen through high-flow nasal cannulae, continuous positive airway pressure, or a ventilator.

Positive-pressure devices do more than supply oxygen: they also help keep the lungs open or move air in and out. They require closer monitoring than simple low-flow oxygen.

Staff select the oxygen concentration or flow and adjust it gradually. Higher-flow gas is often warmed and humidified to reduce cooling and dryness. The baby's nose, face, breathing effort, heart rate, and oxygen level are checked regularly.

Parents can often touch, comfort, feed, and hold a baby receiving oxygen, although the safest method depends on the equipment and the baby's condition.

Recovery and what to expect afterward

Oxygen delivery should not be painful. Nasal prongs and adhesive can cause mild irritation, pressure, or dryness. Tell the team if you notice rubbing, swelling, bleeding, or broken skin.

Many babies can eat normally while receiving low-flow oxygen. Babies who are breathing very quickly or using more intensive support may need adjusted feeding, tube feeding, or temporary intravenous fluids because coordinating sucking, swallowing, and breathing can be difficult.

Activity is based on your baby's condition rather than the oxygen itself. Holding, skin-to-skin care, and supervised play may be possible if the tubing and equipment remain secure.

Oxygen therapy does not involve sedation, so it does not create an anaesthetic-related driving restriction. If your baby goes home on oxygen, an adult may drive when the discharge team approves. Secure the baby in an appropriate car seat and secure oxygen equipment exactly as the supplier instructs.

Your return to work depends on your baby's care needs and follow-up schedule. Home oxygen may require regular monitoring, equipment checks, and appointments.

Oxygen is reduced or stopped only after your baby maintains the intended level. Some babies are tested during sleep, feeding, or activity before oxygen is discontinued.

Risks and possible complications

The team balances the risks of low oxygen against those of unnecessary oxygen exposure. Possible problems include:

Oxygen supports combustion, meaning that materials burn more easily around it. Nobody should smoke or vape near oxygen. Keep the equipment away from candles, gas flames, fireplaces, and petroleum-based products unless the supplier specifically confirms that a product is safe.

Pulse oximeters also have limitations. A reading can be inaccurate and should not be used as the only measure of whether a baby is well.

- Dryness, bleeding, or skin damage around the nose and face
- Dislodged or blocked tubing, causing interrupted oxygen delivery
- Lung irritation or injury from high oxygen exposure
- Retinopathy of prematurity, abnormal blood-vessel growth in a premature baby's retina
- Carbon dioxide buildup in babies who do not move air effectively
- Abdominal swelling, pressure injury, or air leak with some positive-pressure devices
- Burns or fire if oxygen is used near flames, smoking, sparks, or heat

Results and follow up

The immediate result is shown by your baby's oxygen saturation, breathing effort, heart rate, and overall condition. A response is often visible within minutes. Blood-gas results, when needed, may provide more detail.

Routine follow-up may include oxygen measurements while your baby is awake, asleep, and feeding. The team may also monitor growth, lung health, heart function, and eye development, depending on why oxygen was needed.

For home oxygen, appointments help determine whether the flow can be reduced. Do not test your baby without oxygen or change the prescribed setting unless you have a specific plan from the healthcare team.

Some babies stop oxygen before leaving hospital. Others are weaned gradually at home after repeated assessments.

Alternatives

There is no equivalent substitute when an infant has a clinically important low oxygen level. The alternatives depend on the reason oxygen was proposed.

Observation in room air avoids equipment and excess oxygen exposure, but it is suitable only when your baby can maintain the intended level without support.

Treatment of the underlying condition-such as antibiotics like amoxicillin or doxycycline for a bacterial infection, medicine for a heart problem, or time for lung recovery-may reduce the need for oxygen. These treatments usually do not correct low oxygen immediately.

Continuous positive airway pressure or other non-invasive support can keep the lungs open and may avoid a breathing tube. It can still require added oxygen and may cause skin pressure,

air leaks, or abdominal swelling.

Mechanical ventilation provides stronger breathing support when a baby cannot breathe effectively. It can be lifesaving but requires a breathing tube, intensive monitoring, and carries additional lung and infection risks.

For a stable baby who still needs oxygen, remaining in hospital provides continuous support but delays going home. Home oxygen allows family care at home but transfers equipment management and some monitoring responsibilities to caregivers.

When to call your healthcare team

For routine advice, contact your baby's healthcare team if the nasal prongs repeatedly come out, the skin becomes irritated, oxygen needs seem to be changing, monitor alarms are frequent, or you are unsure how to use the equipment.

Seek urgent medical advice if your baby is feeding much less, breathing harder or faster than usual, unusually sleepy, repeatedly vomiting, or cannot stay within the prescribed oxygen range despite following the written plan.

Call emergency services if your baby:

Begin infant resuscitation if needed and if you have been trained to do so.

- Stops breathing or has prolonged pauses in breathing
- Has blue or grey lips, tongue, or face
- Is very difficult to wake or becomes limp
- Has severe breathing difficulty
- Remains below the emergency oxygen threshold in your care plan
- Has no working oxygen supply when oxygen is continuously required
- Is involved in a fire or significant oxygen-equipment incident

Common questions

Will my baby be asleep?

No. Oxygen therapy itself does not require sedation or anaesthesia. A baby may sleep naturally while receiving it.

How painful is it?

Oxygen is not painful. Nasal prongs, tape, or a mask can feel uncomfortable and may irritate the skin. Staff can adjust the fit and provide suitable skin care.

Can I drive my baby home?

Yes, once the hospital confirms that discharge and travel are safe. Use an approved car seat and secure the oxygen supply according to the equipment provider's instructions. Never leave oxygen loose in the vehicle.

When will I know if it is working?

The pulse oximeter usually shows a response within minutes. The team also looks at breathing effort, colour, alertness, feeding, and sometimes blood-gas results.

Can I turn the oxygen up if the reading is low?

Only follow the adjustment plan given to you. First check your baby, the sensor, tubing, connections, and oxygen supply. Use the urgent or emergency plan if the level does not recover.

When can my baby stop oxygen?

The team will assess oxygen levels during situations such as sleep and feeding. Stopping is usually planned and monitored rather than based on one normal reading.

Sources

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