PROCEDURE

CPR - infant

Infant CPR uses chest compressions and rescue breaths to circulate oxygen when an infant is unresponsive and not breathing normally.

PURPOSE
Restore blood flow and oxygen during cardiac arrest

PROCEDURE TYPE
Therapeutic bedside chest compressions with rescue breaths

WHERE IT IS DONE
At the bedside or wherever the infant collapses

ANAESTHESIA
None

HOW LONG IT TAKES
Two-minute cycles until breathing returns or responders take over

PREPARATION
Call emergency services; use a firm, flat surface

RECOVERY
Emergency hospital care after circulation or breathing returns

MAIN RISKS
Rib injury, internal injury, vomiting, aspiration

RESULTS
Response is immediate; the underlying problem needs hospital assessment

Overview

Cardiopulmonary resuscitation, or CPR, is an emergency procedure for an infant who is unresponsive and not breathing normally. It combines chest compressions with rescue breaths. Compressions move blood to the brain and other organs, while breaths provide oxygen.

For CPR purposes, an infant is younger than 1 year. Resuscitation immediately after birth follows a separate newborn protocol.

CPR cannot guarantee recovery. However, starting promptly gives the infant the best available chance while emergency help and an automated external defibrillator, or AED, are being arranged.

This article describes basic CPR for members of the public. A certified infant CPR course provides hands-on practice and feedback that written instructions cannot replace.

Why the procedure is performed

CPR is performed when an infant:

Occasional gasps are not normal breathing. Do not wait for the infant to wake up before calling emergency services.

In infants, cardiac arrest often follows a breathing emergency, such as choking, drowning, or severe illness. This is why rescue breaths are particularly important during infant CPR.

A lay rescuer should not spend time trying to find a pulse. Healthcare professionals may check a pulse, but the check should not delay compressions.

- Does not respond when you tap the foot and call out
- Is not breathing
- Is only gasping or breathing abnormally

Who should and should not have it

CPR is appropriate for an infant who is unresponsive and not breathing normally. If you are unsure, call the local emergency number. The dispatcher can guide you.

Do not start chest compressions if the infant is responsive and breathing normally. If the infant is choking but still responsive, use infant choking first aid rather than CPR. This usually involves cycles of back slaps and chest thrusts. Begin CPR if the infant becomes unresponsive.

CPR may also be inappropriate when:

Do not put yourself in danger. Move the infant only if needed to escape an immediate hazard or to reach a firm surface.

- The scene is unsafe to enter
- There are unmistakable signs that resuscitation cannot help
- A valid medical order says not to attempt resuscitation

How to prepare

CPR is an emergency procedure, so there is no fasting, medication adjustment, or planned preparation.

Check quickly that the area is safe. Tap the bottom of the infant's foot and call their name. Look for normal breathing for no more than 10 seconds.

Call your local emergency number. If you have a phone, use speaker mode so you can begin CPR while following the dispatcher's directions. Ask someone else to bring an AED if one is available.

Place the infant face-up on a firm, flat surface. A floor is better than a soft bed because a mattress absorbs the force of compressions.

If you are alone without a phone and the collapse was not witnessed, give about two minutes of CPR before leaving briefly to call and get an AED. After a witnessed sudden collapse, activate emergency help and obtain an AED first if you must leave the infant to do so.

Emergency dispatcher instructions and the treating facility's own instructions take priority over general information in this article.

What happens during the procedure

Use the following basic sequence:

If two trained rescuers are present, one can use the two-thumb encircling technique: both thumbs press the breastbone while the hands wrap around the chest. Trained rescuers usually give 15 compressions followed by two breaths.

If the chest does not rise during a breath, reposition the head and try again. If choking may have occurred, look in the mouth before giving breaths and remove an object only if you can clearly see it. Do not perform a blind finger sweep.

Use an AED as soon as it arrives. Choose infant or child pads and a paediatric setting when available. If only adult pads are available, use them without allowing the pads to touch. One pad may need to go on the chest and the other on the back. Follow the AED's spoken directions.

Continue until the infant breathes normally, trained responders take over, the area becomes unsafe, or you are physically unable to continue.

- Place two fingertips on the breastbone, just below the nipple line. Avoid pressing on the tip at the bottom of the breastbone.
- Press straight down about one-third of the chest's depth, approximately 4 centimetres or 1½ inches.

- Give 30 compressions at a rate of 100 to 120 each minute. Let the chest return fully after each compression.
- Open the airway by placing the head in a neutral position and gently lifting the chin.
- Cover the infant's mouth and nose with your mouth. Give two gentle breaths, about one second each. Use only enough air to make the chest rise.
- Continue cycles of 30 compressions and two breaths.

Recovery and what to expect afterward

An infant who responds to CPR still needs immediate medical assessment. Keep monitoring breathing until emergency responders arrive.

Chest soreness or bruising can occur after compressions. The hospital team will check for CPR-related injuries while also treating the reason the infant stopped breathing.

Do not give food, milk, or water unless the medical team says it is safe. The infant may need tests, sedation, or breathing support, and vomiting could allow stomach contents to enter the lungs.

Activity after hospital care depends on the underlying problem and any injuries. Follow the discharge plan for holding, feeding, bathing, sleep, and return to childcare.

Driving restrictions do not apply to the infant. Do not drive an infant who has needed CPR to hospital yourself unless emergency services tell you to do so. An ambulance can provide treatment during transport.

A caregiver's return to work will depend on the infant's recovery, follow-up appointments, and care needs.

Risks and possible complications

Chest compressions and rescue breaths can cause injury, but the risk of withholding CPR is much greater when an infant is in cardiac arrest.

Possible complications include:

Breaths that are too forceful can push air into the stomach. Give only enough air to produce a visible chest rise.

CPR may not restart circulation, even when it is started quickly and performed correctly. This does not mean the rescuer caused the outcome.

- Bruising or injury to the ribs or breastbone
- Injury to an internal organ
- Air entering the stomach
- Vomiting and breathing vomit into the lungs
- Infection exposure during mouth-to-mouth breathing

Results and follow up

Signs that CPR may be working include normal breathing, movement, crying, coughing, or improved colour. Stop compressions if the infant begins breathing normally, but continue to watch closely.

If the infant remains unresponsive but breathes normally, place them on their side if you can do so without causing harm. Keep the airway open and be ready to restart CPR if breathing stops or becomes abnormal.

Emergency and hospital teams may check the heart rhythm, oxygen level, blood tests, brain function, and possible causes of the collapse. Some information is available immediately, while other results take longer.

After discharge, keep routine appointments with the infant's healthcare team. Follow-up may address feeding, development, heart or breathing concerns, and the emotional effect of the emergency on the family.

Alternatives

There is no equally effective home alternative to CPR for an unresponsive infant who is not breathing normally. Waiting for an ambulance without beginning CPR leaves the brain and organs without enough blood flow.

If you cannot or will not give rescue breaths, provide continuous chest compressions and follow the emergency dispatcher's instructions. Compression-only CPR is better than doing nothing, but it does not provide the added oxygen that is especially important in infants.

An AED is not a replacement for CPR. It checks the heart rhythm and may deliver a shock, but compressions should continue except when the AED tells everyone to stand clear.

For a responsive choking infant, back slaps and chest thrusts are used instead of CPR. A planned comfort-care approach may be an alternative only when a valid medical order

specifically says resuscitation should not be attempted.

When to call your healthcare team

An unresponsive infant who is not breathing normally needs emergency help, not a routine appointment. Call the local emergency number immediately and begin CPR.

After hospital discharge, seek emergency help for:

For non-emergency concerns, contact the infant's healthcare team as directed. Examples include ongoing chest tenderness, feeding difficulty, sleep changes, or questions about returning to normal activities.

Caregivers may also feel distressed, guilty, or unable to sleep after performing CPR. These reactions can follow a frightening event. Contact your healthcare team for support if they continue or interfere with daily life.

- Unresponsiveness, collapse, or a seizure
- Stopped, gasping, or severely difficult breathing
- Blue, grey, or unusually pale lips or skin
- A sudden major change in alertness

Common questions

Will the infant be asleep during CPR?

An infant needing CPR is unresponsive. Anaesthesia is not used because treatment must begin immediately.

How painful is infant CPR?

An unresponsive infant does not react normally during CPR. Soreness, bruising, or other injury may be present afterward and will be assessed in hospital.

Can I drive the infant to hospital after CPR?

Usually, no. Call emergency services. An ambulance team can monitor breathing and provide treatment during transport.

What if I am afraid of hurting the infant?

Correctly performed compressions can cause injury, but not starting CPR is more dangerous when the infant is unresponsive and not breathing normally. Follow the dispatcher's

instructions.

What if I do not know how to give rescue breaths?

Begin chest compressions and put the emergency dispatcher on speaker. They can coach you. If you cannot give breaths, continue compressions rather than doing nothing.

When will I know whether CPR worked?

You may see normal breathing, movement, coughing, or crying. Even if the infant responds, only emergency and hospital assessment can show how well the infant has recovered.

Sources

- American Heart Association. "Part 4: Pediatric Basic and Advanced Life Support." 2020 American Heart Association Guidelines for CPR and Emergency Cardiovascular Care . Circulation . 2020;142(Suppl 2):S469-S523.
- American Heart Association. Child and Infant CPR: Skills Testing Checklist . Heartsaver CPR AED training materials.
- American Red Cross. Child and Baby First Aid/CPR/AED Participant's Manual . American Red Cross.
- MedlinePlus Medical Encyclopedia. "CPR - infant." U.S. National Library of Medicine.
- Resuscitation Council UK. Paediatric Basic Life Support Guidelines . 2021.