PROCEDURE

CPR - adult and child after onset of puberty

CPR uses repeated chest compressions, with or without rescue breaths, to support circulation during cardiac arrest.

PURPOSE
Maintain blood and oxygen flow during cardiac arrest

PROCEDURE TYPE
Therapeutic, bedside chest compressions and rescue breaths

WHERE IT IS DONE
At the scene of cardiac arrest

ANAESTHESIA
None

HOW LONG IT TAKES
Minutes or longer, until recovery or help takes over

PREPARATION
None; call emergency services and bring an AED immediately

RECOVERY
Hospital care; no driving until the treating team approves

MAIN RISKS
Rib injury, chest injury, vomiting and aspiration

RESULTS
Response assessed immediately; longer-term outcome takes days or more

Overview

Cardiopulmonary resuscitation, or CPR, is an emergency procedure for cardiac arrest. Cardiac arrest means the heart has stopped pumping blood effectively. The person becomes unresponsive and is not breathing normally. Occasional gasps are not normal breathing.

CPR repeatedly presses on the chest to move some blood to the brain, heart, and other organs. Rescue breaths can also provide oxygen. CPR may not restart the heart by itself, but it can buy time until an automated external defibrillator, or AED, and emergency medical care are available.

An AED checks the heart rhythm and gives a shock when appropriate. It provides spoken or visual directions and will not advise a shock unless it detects a shockable rhythm.

For a young person who has begun puberty, adult CPR methods are generally used. Puberty is physical development rather than a fixed age. If you are unsure which method to use, follow the emergency call handler's and AED's instructions.

Why the procedure is performed

CPR is performed when someone appears to be in cardiac arrest. The main signs are:

A heart attack is not the same as cardiac arrest. During a heart attack, blood flow to part of the heart is blocked, but the person may remain awake and breathe normally. A heart attack can sometimes lead to cardiac arrest.

Possible reasons for cardiac arrest include an abnormal heart rhythm, severe breathing failure, drowning, major injury, electric shock, or drug poisoning. CPR starts in the same way even when the cause is not yet known.

- Unresponsiveness, including no response to speaking or tapping
- No normal breathing, or only irregular gasping
- Sudden collapse with no signs of normal movement or awareness

Who should and should not have it

CPR is appropriate for an adult or person past puberty who is unresponsive and not breathing normally. A bystander does not need to diagnose the cause or check for a pulse before starting. Pulse checks can be difficult and may delay compressions.

Do not perform CPR on someone who is awake, responding, or breathing normally. If the person is unconscious but breathing normally, place them on their side if it is safe to do so, call emergency services, and continue watching their breathing.

Do not enter an unsafe area to provide CPR. Hazards such as traffic, fire, electricity, violence, or toxic fumes must be addressed first.

CPR may not be started when there is a valid order not to attempt resuscitation or another legally recognized plan for comfort-focused care. How these documents are followed differs by location and situation. If you are uncertain during an emergency, tell the emergency call handler what you know and follow their directions.

Obvious signs that death occurred some time earlier may also make CPR inappropriate. This assessment is usually left to emergency professionals.

How to prepare

Cardiac arrest does not allow time for routine medical preparation, fasting, or medication changes. Call your local emergency number immediately. Put the phone on speaker so compressions can begin while you answer questions. Send someone to bring an AED if one is nearby.

Move the person only if needed to escape danger or place them on a firm, flat surface. Expose enough of the chest to position your hands and attach AED pads.

CPR training can help you respond with more confidence, but you can still help without formal training. The emergency call handler can coach you.

In an emergency, the treating facility's own instructions, emergency dispatcher directions, and AED prompts take priority over general information in this article.

What happens during the procedure

Kneel beside the person's chest. Place the heel of one hand in the centre of the chest, on the lower half of the breastbone. Put your other hand on top and interlock your fingers. Keep your shoulders above your hands and your arms straight.

Press hard and fast:

If you are trained and willing to give rescue breaths, perform 30 compressions followed by two breaths. Open the airway by tilting the head and lifting the chin, pinch the nose closed, and give each breath over about one second. Look for the chest to rise. Avoid blowing too forcefully.

If you cannot or do not want to give breaths, provide continuous hands-only CPR. Rescue breaths are particularly valuable when cardiac arrest follows drowning, breathing failure, or drug poisoning, but compressions should not be delayed.

Attach an AED as soon as one arrives. Follow its prompts. Do not touch the person while the AED checks the rhythm or delivers a shock. Resume CPR immediately when instructed.

Continue until the person shows clear signs of life, trained help takes over, the scene becomes unsafe, or you are physically unable to continue. If another rescuer is present, switch compression duties about every two minutes with as little interruption as possible.

- Compress at 100 to 120 times each minute
- Press about 5 to 6 centimetres, or 2 to 2.4 inches, deep
- Let the chest rise fully after every compression

- Keep pauses as short as possible

Recovery and what to expect afterward

If circulation returns, the person may remain unconscious, confused, restless, or very unwell. They still need emergency medical assessment. If they are breathing normally but remain unconscious, place them on their side when safe and monitor them until help arrives.

Chest soreness is common after CPR. Rib or breastbone injuries may cause additional pain. Hospital staff can assess pain and choose treatment that does not interfere with breathing or other care.

Eating and drinking may be delayed until the person is fully awake and swallowing safely. Further restrictions may be needed if tests or procedures are planned.

Activity usually resumes gradually after the cause of the cardiac arrest and any injuries have been assessed. Rehabilitation may include support for strength, heart health, memory, concentration, or emotional recovery.

Do not drive after a cardiac arrest until the treating team confirms that it is safe and any local legal requirements have been met. Return to work also requires individual advice based on recovery, the underlying cause, and the type of work.

Risks and possible complications

CPR can cause bruising, broken ribs, or injury to the breastbone. Less commonly, the lungs or internal organs may be injured. These risks increase with prolonged compressions but are generally outweighed by the need to restore circulation.

Rescue breaths can push air into the stomach. This may lead to vomiting and inhalation of stomach contents into the lungs, called aspiration. Interruptions should be minimized if vomiting occurs.

There is also a small risk of infection exposure through blood, vomit, or saliva. A face shield may reduce contact during rescue breathing, but looking for protective equipment should not delay chest compressions.

A person who was not actually in cardiac arrest could be injured by compressions. However, serious harm from starting CPR on an unresponsive person is less likely than harm caused by delaying CPR during true cardiac arrest.

Results and follow up

The immediate result is assessed by looking for purposeful movement, normal breathing, or other signs that circulation has returned. An AED and emergency professionals can provide more reliable rhythm and circulation checks.

Even when the heart restarts, recovery is not certain. The brain and other organs may have been affected by reduced blood flow. Some information is available immediately, but neurological recovery may take days or longer to assess.

Hospital follow-up focuses on identifying the cause and reducing the chance of another arrest. Tests may include an electrocardiogram, blood tests, heart imaging, or examination of the heart's blood vessels. Some people need medicines, a heart procedure, or an implanted device.

People who performed or witnessed CPR may feel distressed afterward. A routine conversation with the emergency service, healthcare team, or a mental health professional can help if memories, guilt, anxiety, or sleep problems continue.

Alternatives

There is no equally effective substitute for immediate CPR when someone is in cardiac arrest. Waiting for an ambulance means the brain and other organs receive little or no blood flow.

Hands-only CPR is an alternative when a rescuer cannot provide breaths. It is simpler and avoids mouth-to-mouth contact, but it does not directly add oxygen. CPR with breaths may be more useful when lack of oxygen caused the arrest.

An AED is essential when a shockable rhythm is present, but it does not replace CPR. Compressions should continue while the AED is being obtained and between rhythm checks.

Naloxone can reverse opioid effects, but it does not replace CPR or an AED when the person is unresponsive and not breathing normally. Give naloxone if available and permitted, without delaying emergency care.

Choosing not to attempt CPR may be appropriate for someone with a valid resuscitation decision and a plan focused on comfort. This choice should normally be discussed in advance with the healthcare team and documented according to local rules.

When to call your healthcare team

Call emergency services now if someone is unresponsive and not breathing normally or is only

gasping. Start CPR and use an AED as soon as possible. Do not wait for routine medical advice.

After discharge following cardiac arrest, seek emergency help for another collapse, severe trouble breathing, fainting, or new chest pressure. Follow the discharge plan for any other symptoms that the treating team identified as urgent.

For routine follow-up, contact the healthcare team about persistent chest pain from CPR, medication questions, activity limits, driving, return to work, or emotional difficulties. Attend planned heart, rehabilitation, and device appointments.

Common questions

Will I be asleep during CPR?

A person needing CPR is unresponsive. Anaesthesia or sedation is not given because treatment must start immediately.

Can I drive home afterward?

No. Anyone who has received CPR needs emergency assessment and usually hospital care. Driving can resume only after the treating team approves it and relevant legal restrictions are addressed.

How painful is CPR?

An unresponsive person is not expected to experience CPR in the usual way during cardiac arrest. If they recover, chest soreness, bruising, or pain from rib injuries can occur and should be treated.

When will I know whether it worked?

Signs that circulation has returned may appear immediately. The cause of the arrest and the extent of recovery often require hospital testing and observation over days or longer.

Can I make things worse by starting CPR?

Chest injuries are possible, but delaying CPR during cardiac arrest is much more dangerous. If the person is unresponsive and not breathing normally, call emergency services and follow the dispatcher's instructions.

Do I have to give mouth-to-mouth breaths?

No. Hands-only CPR is appropriate if you are unable or unwilling to give breaths. Continuous chest compressions are better than doing nothing.

Sources

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