UpBeat
By the Heart Rhythm Society

Cardio-**P**ulmonary **R**esuscitation **(CPR)**

CPR: Simple Actions That Save Lives

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- Cardiopulmonary Resuscitation (CPR) is a lifesaving procedure that helps keep blood and oxygen flowing until emergency help arrives.
- When someone suddenly collapses, **every second matters**.
- For the general public (non-trained bystanders) who see someone collapse, **Hands-Only CPR** is recommended, which means pushing hard and fast in the center of the chest — no mouth-to-mouth breaths needed.

Quick action from bystanders can *double or triple* survival rates from cardiac arrest.

Out-of-Hospital Cardiac Arrest (OHCA)

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- Out-of-Hospital Cardiac Arrest (OHCA) occurs in public spaces (e.g., homes, schools, centers of community, etc.)
- In the U.S., about **83 out of every 100,000 people experience an OHCA** each year, according to the 2023 CARES Registry.
- Most cardiac arrests in adults happen:
  - At home or in a residence: 71%
  - In public places (like parks, gyms, or workplaces): 18%
  - In nursing homes: 11%
- In the U.S., only about **4 in 10 adults** who experience cardiac arrest outside of the hospital receive CPR from a bystander.

These numbers remind us that cardiac arrest can happen anywhere — often where we least expect it.

Cardiac Arrest Registry to Enhance Survival. CARES website. https://mycares.net

Why CPR Is Important

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- Cardiac arrest, or when the heart stops beating, results in **cessation of both circulation and oxygen** delivery to all vital organs, most importantly to the brain.
- The brain receives 15–20% of total cardiac output to maintain its function; therefore, its viability depends strongly on consistent blood flow. Brain and nerve cells also lack energy-storing capabilities[4].
- Cessation of blood flow to the brain leads to **brain/nerve cell injury**[6].
- The brain may sustain damage after blood flow has stopped for a few minutes, and irreversible damage can occur if CPR is not initiated promptly.
- **CPR is essential for increasing the chances of survival and preserving brain function** - the sooner the better[7]. CPR generates approximately 25% of normal brain blow flow (cerebral blood flow)[5].

Why CPR Is Important

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- Approximately **10.4%** of patients with OHCA survive their initial hospitalization, and **8.2%** survive with good functional status in 2023[8].
- Immediate CPR can **double or triple chances of survival** after cardiac arrest[9].

High-Quality CPR: Important Aspects

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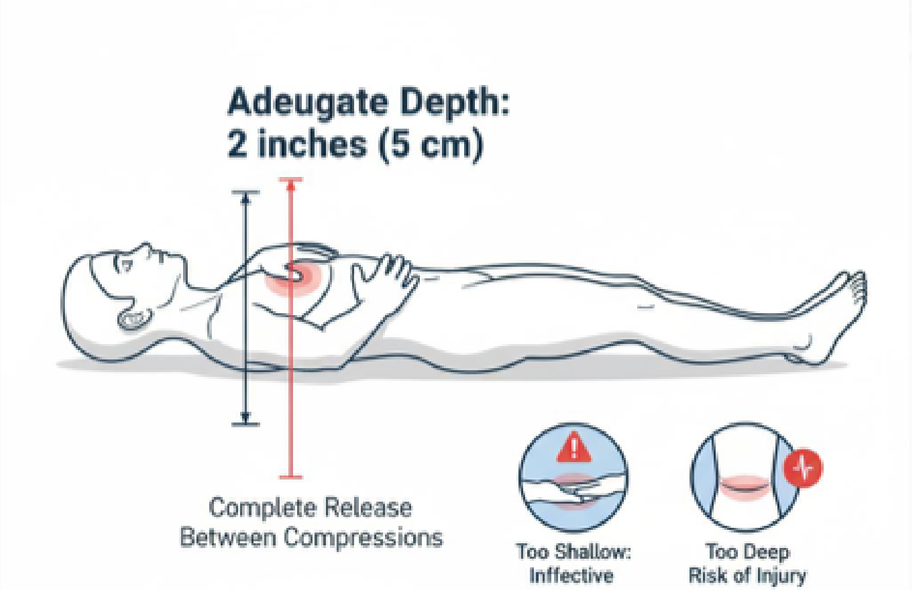
- Ensure proper hand placement by placing the hands on the lower half of the breastbone (sternum).
- Provide compressions at sufficient speed or rate of compressions (100 – 120 compressions per minute).
- Adequate depth (at least 2 inches = 5 cm) and completely relaxing pressure between compressions (compressing too shallow or too deep can reduce the effectiveness of CPR or cause injury).
- Allow full recoil of the chest wall between compressions.
- There should be few interruptions in chest compressions.



CPR in Special Groups

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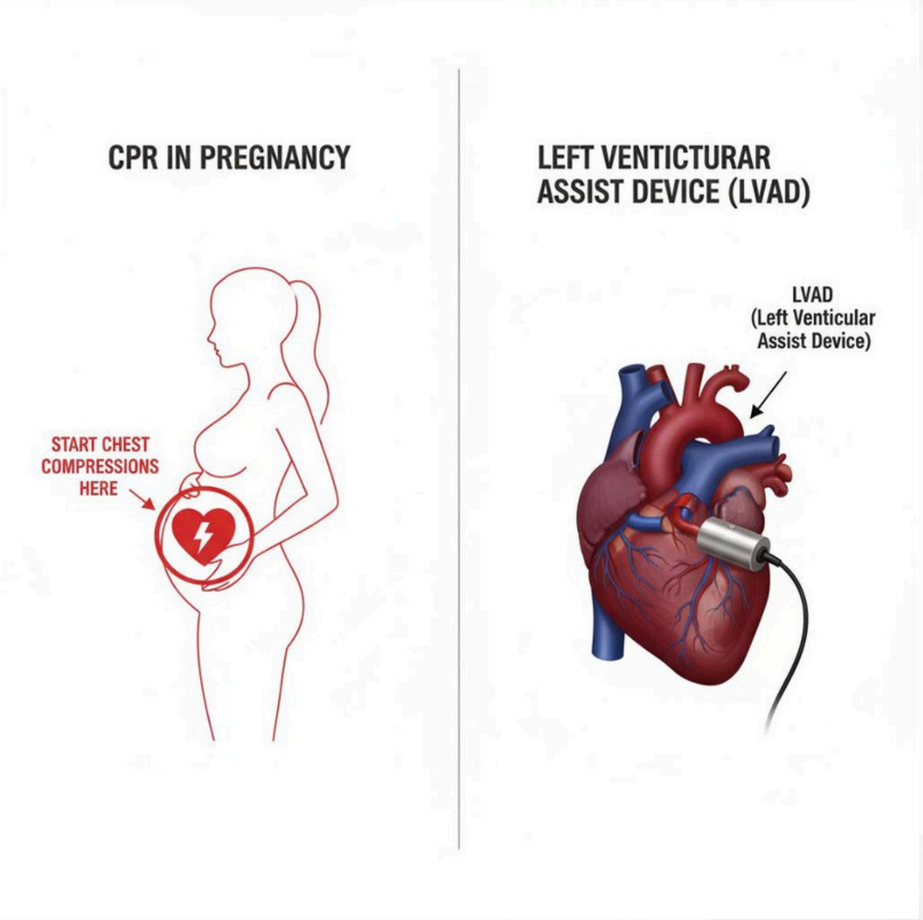
CPR can be performed safely in:

- Pregnant individuals.
- Patients with artificial heart pumps known as LVADs (left ventricular assist devices)



The Need for More CPR Awareness

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- Prevalence of reported current training in CPR by the public was **18%** and prevalence of having CPR training at some point was **65%** in a survey of 9,022 people in the U.S. in 2015[11] compared to the UK (~61.1%), Australia (~56-68%), Norway (~90%), but lower in China and India[12].
- Laypeople in the U.S. initiated CPR in **40%** of OHCAs in CARES 2022 data, with racial disparities (lower rates among Black and Hispanic neighborhoods), while **32.2%** of cardiac arrests occurred in Black individuals or Hispanic individuals (2013 to 2019 CARES data)[13].

Summary

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- Approximately 71% of out-of-hospital cardiac arrest cases occur at home, followed by public settings (18.2%), and 50% of these incidents are unwitnessed. Overall survival remains low despite improvements in emergency response services, hence the **need for public awareness and CPR training**.
- CPR is indicated when someone becomes unconscious, unresponsive, and not breathing. Prompt recognition of these signs is critical, as early initiation of CPR greatly increases the chances of survival and favorable neurological outcomes. **CPR can double or triple the chances of survival** after cardiac arrest.

Summary

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- For the public or laypeople bystanders who witness an adult collapse, **call 911 and start chest compression-only CPR immediately**. Bystanders who are trained, able, and willing to give rescue breaths can do so, but priority is for chest compressions.
- **Chest compressions are the cornerstone of CPR**. Current guidelines emphasize early and high-quality chest compressions. CRP saves lives – time is critical.
- Studies have shown that children can perform CPR, making them a viable group to train and help save lives.
- Heart organizations, including the Heart Rhythm Society, are dedicated to increasing awareness, educating the public on CPR, including school students, and improving outcomes of out-of-hospital cardiac arrest.

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