AHA Updates Guidelines for CPR and Emergency Cardiovascular Care

Key Points for Practice

- In adult CPR, 100 to 120 chest compressions per minute at a depth of at least 2 inches, but no greater than 2.4 inches, should be provided.
- Health care professionals can perform chest compressions and ventilation in all patients presenting with cardiac arrest.
- In patients with an advanced airway, one breath every six seconds should be given with continuous chest compressions instead of 30 compressions and two breaths.
- Compression depth in children should be one-third or more of anterior-posterior diameter, or about 1.5 inches in infants and 2 inches in children.

From the AFP *Editors*

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Providing cardiopulmonary resuscitation (CPR) effectively is dependent on a variety of factors, including immediate action taken by the rescuer and performance of high-quality maneuvers. The American Heart Association (AHA) has updated its 2010 guidelines on CPR and emergency cardiovascular care to highlight important changes. The 2010 guidelines changed the sequence of CPR from airway, breathing, compressions (ABC) to compressions, airway, breathing (CAB) to avoid delays in starting chest compressions; this remains unchanged in the update. Also, for untrained lay rescuers, chest compressions–only CPR is recommended. This summary practice guideline focuses on adult and child basic life support and CPR quality, as well as alternative CPR techniques. Additional changes from the AHA regarding cardiac life support, post–cardiac arrest care, acute coronary syndromes, special circumstances, and more can be found in the full guidelines.

New and Updated Recommendations

BASIC LIFE SUPPORT AND CPR QUALITY

Evidence has indicated that the most common mistakes that occur while providing CPR include not performing compressions deep or fast enough. Additionally, evidence shows improved survival rates with delivery of high-quality CPR, consisting of compressions of a sufficient rate and depth with minimal interruptions, allowing full chest recoil between compressions, and avoiding too much ventilation.

Adults. When providing CPR, 100 to 120 chest compressions per minute at a depth of at least 2 inches, but no greater than 2.4 inches, should be provided. Pauses in compressions should be as short as possible. A goal of a 60% or greater chest compression fraction may be reasonable in persons with an unprotected airway.

If the rescuer suspects that a patient with respiratory arrest has an opioid addiction, standard basic life support combined with intramuscular or intranasal naloxone should be provided, assuming the rescuer is appropriately trained. If the patient is at risk of overdose, opioid overdose response education can be provided at any point and may be combined with instructions on administering naloxone for prevention. If a patient has a spinal injury, manual spinal restriction such as placing hands on either side of the head is preferred over immobilization devices.

When cardiac arrest with a shockable rhythm occurs outside of a hospital, emergency medical services personnel can delay use of positive pressure ventilation by performing cycles of 200 continuous compressions (up to three cycles) combined with passive oxygen insufflation and airway adjuncts. Although routinely using passive ventilation is not recommended when providing conventional CPR because of questionable effectiveness, this is a reasonable method for emergency medical services personnel who typically provide this combined approach.

Emergency dispatchers should first find out where the event is occurring, and then ▶

ask if the patient is unconscious with abnormal or absent breathing, and, if so, it should be assumed that the patient is experiencing cardiac arrest. Training should be provided about how to recognize unconsciousness using signs such as abnormal or agonal gasps and various presentations. Dispatchers should provide callers with guidance on CPR using only chest compressions.

Health care professionals can perform chest compressions and ventilation in all patients presenting with cardiac arrest. A series of 30 compressions and two breaths is no longer necessary if there is an advanced airway, and, instead, one breath every six seconds should be given while chest compressions are provided continuously.

Evaluation of electrocardiography rhythm with artifact-filtering algorithms while performing CPR cannot be recommended; however, it could be useful for research or for emergency medical services personnel who use these algorithms already. Audiovisual feedback may be used to improve CPR performance.

Children. Although there are no major basic life support and CPR changes for children since the 2010 guidelines, new ideas about how to perform CPR were evaluated. For simplicity and consistency in training, it may be reasonable to keep the order of starting CPR as compressions, airway, and breathing vs. changing the order to airway, breathing, and compressions. Compression depth was affirmed as one-third or more of anterior-posterior diameter (i.e., about 1.5 inches in infants and 2 inches in children); however, evidence is lacking regarding the rate and, therefore, it was not assessed. Instead, the adult rate of 100 to 120 chest compressions per minute is recommended. Ventilation should be included when performing CPR, because 30-day outcomes were found to be worse when only compressions were performed. If the rescuer performing CPR is not willing or able to provide ventilation, then delivering compressions only is appropriate.

ALTERNATIVE TECHNIQUES AND ANCILLARY DEVICES

Since the 2010 guidelines, additional evidence about the effectiveness of alternatives and adjuncts to standard CPR has emerged; however, it should be noted that specialized equipment and training may be needed when alternative techniques are used.

There is no advantage to routinely using an impedance threshold device (a valve used to decrease intrathoracic pressure and increase venous return) as an adjunct to standard CPR (i.e., compressions and rescue breaths); however, combining its use with active CPR (i.e., compression-decompression) has been shown to improve neurologically intact survival and, therefore, may be a reasonable option, assuming equipment availability and proper training. Although no studies have indicated that mechanical chest compression devices are better than standard CPR, they may be a reasonable option, again assuming proper training, and can be considered when performing high-quality manual compressions may be difficult or dangerous. It should be noted that interruptions in CPR should be limited when using and removing the device. There is no assessment of how extracorporeal CPR, also called venoarterial extracorporeal membrane oxygenation, affects survival.

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