2005 American Heart Association Guidelines
for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care
Comparison chart of key changes

2005 Recommendation	2000 Recommendation	Explanation
Basic Life Support		
Increased emphasis on delivery of effective chest compressions	Emphasized the first three links in the Chain of Survival: early access, early CPR, and early defibrillation. Stated early CPR significantly improved survival. Named early defibrillation as the single greatest determinant of survival for adult victims of cardiac arrest.	When chest compressions are interrupted, blood flow stops. Limiting interruptions to chest compressions will result in greater survival. In any given series (cycle) of chest compressions, earlier compressions are less effective than later ones. Therefore, fewer interruptions increase the percentage of effective chest compressions. Allowing the chest wall to fully "recoil" or return to its normal position between compressions results in better re-filling of blood in the heart, which allows more blood to be pumped to the rest of the body during the next compression.
Single CPR compression-to-ventilation ratio: 30:2 for all rescuers responding alone to victims of any age, except newborns. CPR for newborns is the same as 2000 guidelines recommendation..	A compression to ventilation ratio of 15 to 2 was recommended for adult CPR; a ratio of 5 to 1 for child and infant CPR. Three compressions for every one breath should be given to newborns, totaling 90 compressions and 30 breaths per minute.	A single ratio will make learning the correct procedure for responding to victims of all ages easier and increase the likelihood that a rescuer will remember the steps of CPR during an emergency. The new ratio also helps reduce interruptions in chest compressions (see explanation above).
AED programs should be implemented in public locations where there's a relatively high likelihood of witnessed cardiac arrest (eg, airports, casinos, sports facilities and businesses).	Key elements of successful AED programs were recommended, including healthcare provider oversight, training of likely rescuers, link to local EMS system and process of continuous quality improvement.	Some AEDs do not require a medical prescription, so healthcare provider oversight of AED programs is not mandatory. The Public Access Defibrillation trial reinforced the importance of planned and practiced response. Lay rescuer programs in airports and casinos and by police officers have reported survival rates as high as 49 percent to 74 percent when responding to sudden cardiac arrest caused by ventricular fibrillation.

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A single shock from a defibrillator, followed by immediate CPR for two minutes, beginning with chest compressions, should be used to treat cardiac arrest caused by ventricular fibrillation (VF-the abnormal heart rhythm responsible for most cardiac arrests).	Up to three shocks in a series were recommended to treat cardiac arrest with a "shockable" rhythm before returning to chest compressions; the heart rhythm was evaluated before and after each shock.	Repeated cycles of rhythm analysis and shock result in delays of up to 37 or more seconds before the first post-shock chest compressions are delivered. Most defibrillators eliminate VF more than 85 percent of the time. If the first shock fails, immediate CPR (before trying another shock) is likely to contribute to the success of a subsequent shock. Even when a shock eliminates VF, it may take several minutes for the heart to pump blood effectively, even if a normal heart rhythm returns. A brief period of chest compressions can deliver oxygen to the heart during this post-shock period, increasing the likelihood that the heart will begin to effectively pump blood on its own.
After giving two rescue breaths, lay rescuers no longer check for signs of circulation before beginning chest compressions.	After giving two rescuer breaths, lay rescuers were instructed to check for signs of circulation (normal breathing, coughing or movement). Lay rescuers gave rescue breathing without chest compressions to victims with signs of circulation who were not breathing normally.	Lay providers cannot reliably detect the presence of circulation in a victim. Great harm can be done when rescuers *don't* do chest compressions when they're needed. Relatively minimal harm can be done by providing chest compressions when they *aren't* needed. Therefore, the new guidelines do *not* recommend that lay rescuers look for "signs of circulation" before delivering chest compressions. This eliminates the chance that lay rescuers might not recognize true cardiac arrest, and reduces delays to chest compressions. Eliminating instructions to look for signs of circulation and for delivering "rescue breathing without chest compressions" reduces the number of skills required for lay rescuers. This makes it more likely that the lay provider will learn and remember the steps of CPR.

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Dispatchers should be trained to recognize the symptoms of Acute Coronary Syndromes (ACS), and advise patients with symptoms of ACS without history of aspirin allergy or gastrointestinal bleeding to chew 160 mg – 325 mg of aspirin while awaiting the arrival of EMS providers.	Dispatchers were not instructed to recognize ACS or recommend aspirin.	Early administration of aspirin has been associated with decreased mortality rates in several clinical trials. Many studies have demonstrated the safety of aspirin administration.
Advanced Cardiac Life Support		
Basic Life Support (BLS) skills are the priority in treating cardiac arrest. Providers must minimize interruptions to chest compressions.	Heart rhythm analysis, delivery of shocks and selection of drug therapies resulted in frequent interruptions to CPR.	Studies show that providing continuous CPR outweighs the potential effects of drug therapies, so interruptions should be minimized.
New neurological tests and evaluations given 24 hours and 72 hours after resuscitation can predict survival to hospital discharge.	No specific neurologic signs indicated the potential for successful resuscitation.	New research suggests there are specific clinical signs, such as certain brain responses to stimuli, that correlate strongly with death or poor brain function following resuscitative efforts. More research is needed to predict potential for survival during resuscitation.
Unconscious adult patients with return of spontaneous circulation after out-of-hospital cardiac arrest should be cooled for 12 to 24 hours to 32 degrees C - 34 degrees C when the initial rhythm was ventricular fibrillation. Similar therapy may be beneficial for patients with non-VF arrest out of hospital or for in-hospital arrest.	Mild hypothermia may be beneficial….but hypothermia should not be induced actively after resuscitation from cardiac arrest. (Position was updated in a 2003 science statement from the International Liaison Committee on Resuscitation, which supported induced hypothermia following resuscitation.)	In two randomized clinical trials, induced hypothermia (cooling within minutes to hours after the return of spontaneous circulation) resulted in improved survival and brain function in adults who remained comatose after initial resuscitation from out of hospital VF cardiac arrest.
Tissue plasminogen activator (tPA) is recommended for carefully selected patients with acute ischemic stroke, but cautions that tPA must be administered in the setting of a clearly defined protocol and institutional commitment.	Administration of tPA was recommended for carefully selected patients with acute ischemic stroke if they had no contraindications to fibrinolytic therapy and if the drug can be administered within 3 hours of the onset of stroke symptoms	National Institute of Neurological Disorders and Stroke (NINDS) results have been supported by subsequent one year follow up, reanalysis of the NINDS data and a meta analysis. Additional trials supported the NINDS results. *Note: Higher complications of hemorrhage following tPA was reported in one study when participating hospitals did not require strict adherence to NINDS protocols.*

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