



HeartSine's General Statement 2010 Guidelines

The new guidelines have consolidated clinical practices and suggested modifications to enhance outcomes. The following capsulates those modifications:

- The one shock protocol for VF has not changed although some manufacturers previously used two or three shock sequence.
- Evidence has now accumulated that even short interruptions in CPR could be harmful.
 - Rescuers should minimize the interval between stopping compressions and delivering shocks and should resume CPR immediately after shock delivery. **[1]**
- Over the last decade biphasic waveforms have been shown to be more effective than monophasic in both cardioversion and defibrillation. A number of studies have now demonstrated this however only limited publications exist comparing the efficacy of one biphasic waveform to another. **[2]**
 - Recommended energy range in the new guidelines is in the 120 Joule-200 Joule range for biphasic output.
- Emphasis on the key principles of resuscitation strengthening the links in the chain of survival the following links are identified:
 - Immediate recognition of cardiac arrest and activation of the emergency response system
 - Early CPR with an emphasis on chest compression
 - Rapid defibrillation
 - Effective advanced life support
 - Integrated post cardiac arrest care

Emergency systems that can effectively implement these links can achieve witnessed VF cardiac arrest survival rates of almost 50%. **[2]** The application of the key principals however still requires an optimum response from the lay or healthcare provider as the first link in the chain. Studies have shown that both lay users and healthcare providers have difficulty detecting a pulse. **[3]**



- The lay rescuer should not check for a pulse and should assume that cardiac arrest is present if an adult suddenly collapses or an unresponsive victim is not breathing normally.
- The healthcare provider should take no more than ten seconds to check for a pulse and if the rescuer does not definitely feel a pulse within that time period chest compressions should be initiated.
- Only about 20-30% of adults receive bystander CPR. **[3]** Hands only (compression only) bystander CPR substantially improves survival following adult out of hospital cardiac arrest compared with no bystander CPR. **[4]** Observational studies of adults with cardiac arrest treated by lay rescuers showed similar survival rates among victims receiving hands only CPR versus conventional CPR with rescue breathes. **[4]** Additionally many lay people are reluctant to do mouth-to-mouth resuscitation and this may cause delays.
 - The new recommendations therefore, recommend hands only CPR as this will help overcome initial concerns and a hesitation to act.

Continuing End User Support

HeartSine is committed to providing our customers with the benefit of on-going research and product development activities. While current devices meet the basic recommendations; enhancements are being implemented in support of the 2010 Guidelines. The enhancements provided by this software release are in specific support of G2005/2010 Guidelines and are as follows:

- **Therapy Sequence:**
 - 1 shock, 2 minutes CPR (G2000 was 3 shocks, 1 minute CPR).
- **Emphasis on minimal interruptions to CPR:**
 - Removed speech prompt for: Check Breathing/Airway/Circulation
Changed “If Needed, Begin CPR” to “Begin CPR”. (Lay user not qualified to determine “if needed”)
 - For 2005 guidelines, CPR messages began with “It is safe to touch the patient” followed by “Begin CPR”. For 2010, changed the order: “Begin CPR” followed by “It is safe to touch the patient” to encourage more rapid resumption of CPR following analysis or shock.

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- **Reduced time to charge capacitors:**
 - Capacitor Pre-Charge as soon as a Pad-On detected.

 - Capacitor Pre-Charge during CPR.

When first introduced, capacitors were pre-charged to a fixed voltage, equivalent to the minimum voltage that could be used for any given patient impedance/energy level.

Later versions selected a pre-charge target voltage based on the patient's actual measured impedance and the currently selected energy level. This further minimises the time taken to fully charge the capacitors.

Prior to the introduction of pre-charging, the time to charge, ready for shock following CPR was typically 20 seconds. It is now typically 8-12 seconds.

A major benefit of our systems architecture, allows each system to be fully upgradeable by simply checking the HeartSine website (www.Heartsine.com) for the latest software revision that may be downloaded and installed on PAD devices. We urge you to take advantage of these enhancements. Please visit the HeartSine website download page for details.

References

1. Field John M., Hazinski Mary F., Sayre Michael R. et al. Part 1: Executive Summary: 2010 American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care. *Circulation* 2010;122;S640-S656

2. Travers Andrew H., Rea Thomas D., Bentley J., Bobrow et al. Part 4: Overview: 2010 American Heart Association Guidelines for cardiopulmonary Resuscitation and Emergency Cardiovascular Care. *Circulation* 2010;122;S676-S684

3. Berg Robert A, Hemphill Robin, Abella Benjamin S. et al. Part 5: Adult Basic Life Support: 2010 American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care. *Circulation* 2010;122;S685-S705



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4. Bobrow BJ, Spaite DW, Berg RA, Stolz U, Sanders AB, Kern KB, Vadeboncoeur TF, Clark LL, Gallagher JV, Stapczynski JS, LoVecchio F, Mullins TJ, Humble WO, Ewy GA. Chest Compression only CPR by lay rescuers and survival from out-of-hospital cardiac arrest. JAMA. 2010;304(13):1447-54

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