LAERDAL STATEMENT ON INCREASED DIFFICULTY WITH 2010 CPR GUIDELINES

Since the release of the new American Heart Association HeartCode BLS and HeartCode ACLS Guidelines 2010 programs last summer, there have been some complaints related to difficulty in completing the skills practice and testing sessions, using both instructor-led skills assessments and the voice-assisted manikin (VAM) system.

While the overall percentage of complaints remains extremely low, we wanted to respond to this issue publicly to address concerns, and provide recommendations where possible on creating a favorable environment for completing skills assessments with a positive outcome.

In October 2010 the International Liaison Committee on Resuscitation consensus released updated recommendations on cardiopulmonary resuscitation and emergency cardiovascular care. Research from that process led to the determination that compressions during CPR were most effective at a minimum of 5 cm, or approximately 2 inches.

The American Heart Association subsequently released the 2010 Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care (2010 AHA Guidelines), and educational materials used to instruct both professional and lay rescuers were updated to reflect the new science.

The information below is intended to be helpful in supporting a better understanding of the factors surrounding performance of Quality CPR under the 2010 AHA Guidelines. All Laerdal BLS manikins are 2010 Guidelines compliant.

Laerdal adult BLS manikins are designed to reach the correct compression depth of 50 mm (~2 in.) at an average dynamic force of 48 kg (107 lbs.), which is supported by data found in A.E. Tomlinson’s research study called “Compression force—depth relationship during out-of-hospital cardiopulmonary resuscitation.” Resuscitation. 2007 Mar; 72 (3):364-70. Realistic compression force is a key factor in Quality CPR training and has been simulated in Laerdal BLS manikins.
The 2010 AHA Guidelines recommendation of a minimum compression depth of 2 inches require a rescuer to apply 25%\(^1\) more force during CPR than that required to compress to 1.5 inches, as recommended in the 2005 AHA Guidelines. The need for additional force means that proper CPR positioning and technique become even more important in order to achieve a positive outcome and avoid potential injury.

For HeartCode manikins, changes were made to the Guidelines 2010 HeartCode skills software to recognize a good compression as one that is at least 2 inches in depth. No physical changes were performed to the manikins used with the program.

Although Laerdal does not provide CPR technique instructions, the following key points of chest compressions on an adult victim were taken from the American Heart Association BLS for Healthcare Providers Student Manual (p. 10):

- Position yourself at the victim’s side
- Make sure the victim is lying face up on a firm, flat surface…
- Put the heel of one hand on the center of the victim’s chest on the lower half of the breastbone
- Put the heel of your other hand on top of the first hand
- Straighten your arms and position your shoulders directly over your hands
- Push hard and fast
- Press down at least 2 inches (~50 mm) with each compression (this requires hard work). For each chest compression, make sure you push straight down on the victim’s breastbone.
- Deliver compressions in a smooth fashion at a rate of at least 100/min.
- At the end of each compression, make sure you allow the chest to recoil (re-expand) completely. Chest recoil allows blood to flow into the heart and is necessary for chest compressions to create blood flow…
- Minimize interruptions

\(^1\) Based on the Tomlinson study, a minimum of 80 pounds of force is required to compress the chest to 1.5 inches and a minimum of 100 pounds of force to compress the chest to 2.0 inches. With the 2010 CPR Guidelines, the adult compression depth range was changed to the aforementioned minimum of 2.0 inches with no maximum specified depth increased the minimum force a rescuer must apply during CPR by 25% (from ~80 to ~100 pounds).
In this recommended position, with straight arms and shoulders positioned directly over the hands, the compression force comes mainly from the rescuer’s body weight and not from their hands or arms. The compression force should go through the heel of the rescuer’s hand, with minimal flexion of the wrist, to the patient’s sternum.

The victim should not be elevated much above the rescuer’s knees or the rescuer may start to lose the leverage of their body weight. This could prevent them from keeping their arms locked and vertically straight above the patient and thereby reduce the capacity to deliver adequate chest compressions.

In addition, the American Heart Association Basic Life Support for Healthcare Providers Student Manual provides an alternate adult chest compression technique for healthcare providers who may have difficulty pushing deeply (p. 11):

- Put one hand on the breastbone to push on the chest. Grasp the wrist of that hand with your other hand to support the first hand as it pushes the chest. This technique is helpful for rescuers with arthritis.

There are other environmental factors that can contribute to the success of your HeartCode skills assessment, including:

- Ensuring the room is well ventilated. Placing a simple fan can improve your students’ testing experience.

- Positioning your HeartCode Voice Assisted Manikin (adult) on a low sturdy table which is about knee height or slightly above the knee to help students leverage their body weight while allowing full chest recoil.

- Limiting students’ skills sessions to 30 minutes to help keep them from becoming excessively fatigued and from losing focus. A posted sheet of instructions and a timer placed at the station can help students limit their time at the station and know when to ask for guidance. After attempting compressions for 30 minutes, a student would likely benefit from some coaching from your institution’s HeartCode Administrator or educator. It is recommended that students limit their time performing active compressions by taking intermittent breaks.

Enlisting the support of some resources within your organization may be beneficial to address staff members who are unable to successfully complete a skills test.

- Physical Therapy – Your Physical Therapy department may be useful in assisting those who have insufficient ability to perform quality CPR.
• Human Resources – Engage your Human Resources department to help support your organization’s commitment to quality CPR.

There are more than 1,000 institutions across the nation using the American Heart Association HeartCode program with the VAM system successfully. A recent survey of more than 800 institutions found that approximately 80% of HeartCode BLS users were satisfied or very satisfied with their VAM system, and for HeartCode ACLS the number was even higher, 92%.

While the above is testament to the many advantages of VAM skills testing – including objective measurement, real-time audio feedback, summative feedback at the end of a session to provide reinforcement or remediation - Laerdal understands the frustration that some HeartCode customers are experiencing. It’s important to remember that CPR is a difficult psychomotor skill, and there exists the possibility that not all staff members are capable of performing it.

Thank you for your interest in HeartCode. We applaud your commitment to maintaining Quality CPR in your hospital. For more information about the American Heart Association and the 2010 Guidelines, visit http://guidelines.ecc.org/.