Update!
The New 2010 CPR Guidelines and the MPDS

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Practically as soon as the new Guidelines for CPR and Emergency Cardiovascular Care (ECC) were released by the American Heart Association (AHA) on October 18, 2010, the telephone and e-mail inquiries to the International Academies of Emergency Dispatch (IAED) began. It is truly exciting to see so much enthusiasm about the evolving clinical standards in our profession! This update is designed to keep you informed regarding the process of the Medical Priority Dispatch System™ (MPDS) protocol evolution with regard to current international standards of patient resuscitation.

First, it is very important to remind MPDS users of the Academy’s ongoing commitment to maintaining the Dispatch Life Support (DLS) standard of care. The Academy utilizes both a Standards Council made up of international DLS experts and a resuscitation sub-council consisting of renowned cardiopulmonary research physicians—who are dispatch oriented—to assist in the protocol’s evolution. These experts follow, and in many cases participate in, the research and evaluation that is the backbone of the International Liaison Committee on Resuscitation (ILCOR) Recommendations, published every five years by the AHA and the European Resuscitation Council (ERC). As such, the evolution of the MPDS is an ongoing process that does not depend on the formal issuance of new guidelines for change. In fact, you may have already noticed that most of the changes recommended by the new guidelines have already been implemented in the current version of the MPDS. Most importantly, you can be assured that your current version of the MPDS reflects the current DLS standard of care.

The DLS Difference
The CPR and ECC guidelines published by the AHA are the result of an exhaustive evaluation of current research in related fields. These recommendations are provided specifically for laypersons, field responders (ALS and BLS), hospital providers, and—to a much more limited extent—emergency medical dispatchers. Because field and hospital medicine have relatively long histories, there is obviously more research available to ILCOR regarding these disciplines than there is in the field of DLS.
Accordingly, dispatch-specific recommendations are a relatively small portion of the published guidelines, although this fraction is increasing with each release. Fortunately, dispatch is formally being recognized as playing an integral and critical role in the patient care chain of survival, and the Academy is filling the gaps with regard to both dispatch research and the formulation of standards based on expert consensus and actual user input.

DLS is a unique, non-visual practice utilizing trained EMDs following protocol. EMDs are not trained in the same methods as field responders; however, as they are specifically trained as medical professionals in the non-visual realm of emergency dispatch, they are certainly not laypersons. As such, DLS requires considerations not always included in layperson or professional recommendations, and may contain elements of both. This is why, on the surface, there seems to be pointed differences in what you may see in the guidelines for laypersons as compared to what you see in the MPDS. This may be best illustrated in the DLS recommendation to provide the head-tilt maneuver as a method of airway control versus the trained-rescuer recommendation to use the head-tilt/chin-lift maneuver, or even the recovery position. The unique, non-visual environment of DLS, the combination of trained EMD and untrained layperson, and the necessity of diligent, on-the-phone monitoring of critical patients demand these differences.

Compressions 1st and Hands-Only CPR
The most prominent change in the new CPR guidelines is, undoubtedly, the move to a compressions first approach to the cardiac arrest victim (and where have we heard that term before?) Rather than providing an initial 2 breaths followed by 30 compressions, the new guidelines—for both trained laypersons and rescuers—puts even greater emphasis on the critical nature of compressions in the first minutes of cardiac arrest by simply switching the order of operations. Instead of the familiar ABC (Airway, Breathing, Circulation) procedure, the recommendations now call for CAB (Circulation, Airway, Breathing). For the untrained rescuer, a Hands-Only approach is now recommended.

As you may have noticed, this emphasis on compressions has been made in the MPDS since the release of the CPR Pathway Director in 2004, prior to even the 2005 guidelines that highlighted the importance of compressions for the victims of cardiac arrest. While a 600 Compressions 1st pathway is provided for victims of probable cardiac arrest, a 30:2 Ventilations 1st pathway is available for infants, children, and other patients with probable respiratory etiology. From the 2010 Adult BLS Guidelines:

*Because rescue breathing is an important component for successful resuscitation from pediatric arrests (other than sudden, witnessed collapse of adolescents), from asphyxial cardiac arrests in both adults and children (e.g., drowning, drug overdose) and from prolonged cardiac arrests, conventional CPR with rescue breathing is recommended for all trained rescuers (both in-hospital and out-of-hospital) for those specific situations (S691).*

What remains unclear, as pointed out by the new guidelines, is when, during the
progression of cardiac arrest, the patient absolutely needs ventilations. Also from the new BLS guidelines: “However, at some time during prolonged CPR, supplementary oxygen with assisted ventilation is necessary. The precise interval for which the performance of Hands-Only CPR is acceptable is not known at this time” (S691). Because some EMS response times are unavoidably extended, and based on the best available research, the Academy’s Resuscitation Council set the Compressions 1st Pathway at 600 initial compressions, making the time before initial ventilations approximately 9 to 10 minutes into the patient’s arrest from its onset. Essentially, this provides a Hands-Only sequence for most patients, but allows for eventual ventilations in cases with extended response times.

In summary, the new guidelines suggest a Hands-Only approach to CPR for untrained rescuers during the first minutes of suspected cardiac arrest. These guidelines, however, remain unclear about when assisted ventilation is absolutely necessary and emphasize the importance of dispatch instructions: “If a bystander is not trained in CPR, then the bystander should provide Hands-Only (chest compression only) CPR, with an emphasis on “push hard and fast,” or follow the directions of the emergency medical dispatcher” (S688). These recommendations are currently incorporated into the MPDS (and have been since 2004), with a caveat allowing for eventual ventilations in cases of extended response times.

**Pediatrics and Asphyxial Arrest**

If the arrest involves a child or infant, or is suspected to be asphyxial in nature, conventional CPR—with a 30:2 ratio of compressions followed by ventilations—is now advised for all trained rescuers, and Hands-Only CPR is advised if the rescuer is untrained or unwilling to provide ventilations. This new recommendation (the reversed order of the conventional CPR procedure) is currently being considered for pediatrics and asphyxial arrest by the Academy’s Standards Council for implementation in the MPDS. However, it is important to note that the rationale for the order change in pediatrics and asphyxial arrest was not based on patient outcomes, but rather speed to compressions and ease of training. From the guidelines:

> It is, however, unknown whether it makes a difference if the sequence begins with ventilations (ABC) or with chest compressions (CAB). . . The CAB sequence for infants and children is recommended in order to simplify training with the hope that more victims of sudden cardiac arrest will receive bystander CPR. It offers the advantage of consistency in teaching rescuers, whether their patients are infants, children, or adults (S863).

Currently, in arrests of probable respiratory origin, the order of operations instructions in the MPDS is the only variance from the new guidelines. However, the intention of the order outlined in the AHA guidelines is to simplify CPR training and enable the procedure to be easily remembered; this is not a problem in the DLS environment where a trained EMD is using a scripted protocol, providing exact instructions for the procedure.
An Emphasis on Compressions

One clear message resounds from the new guidelines: start compressions early and avoid interruptions. The 2010 guidelines address this issue in several ways. First, as mentioned above, a compressions first approach is now recommended for suspected cardiac arrest: “Beginning CPR with 30 compressions rather than 2 ventilations leads to a shorter delay to first compression” (S688).

Additionally, research has shown that the initial evaluation of a collapsed victim has led to compressions delays when gasping or agonal breathing has been mistaken for effective breathing. As a result, the new guidelines deemphasize checking for breathing and suggest that “CPR training, both formal classroom training and ‘just in time’ training such as that given through a dispatch center, should emphasize how to recognize occasional gasps and should instruct rescuers to provide CPR even when the unresponsive victim demonstrates occasional gasps” (S689). This false-positive breathing phenomenon has been addressed in the MPDS through education involving agonal breathing and through the use of the Agonal Breathing Diagnostic Tool. Further efforts to reduce cardiac arrest detection time and eliminate compressions delays in the MPDS are ongoing and include modifications to the Check Airway and Check Breathing panels of the CPR sequence.

Compression rate and quality is also in the spotlight of the new guidelines:

Rescuer fatigue may lead to inadequate compression rates or depth. Significant fatigue and shallow compressions are common after 1 minute of CPR, although rescuers may not recognize that fatigue is present for ≥ 5 minutes. When 2 or more rescuers are available it is reasonable to switch chest compressors approximately every 2 minutes... (S690).

The MPDS currently addresses this issue with an option to switch rescuers, when available and fatigued, after 200 compressions. However, this option may become mandatory when a second rescuer is available, as the research shows fatigue and poor performance are not always recognized, and improper compression rate and quality clearly has an adverse effect on patient outcomes.

Summary

The 2010 Guidelines for CPR emphasize rapid recognition of cardiac arrest by deemphasizing the breathing check and removing the old “Look, Listen, and Feel” method from the BLS algorithm. The current version of the MPDS adheres to these guidelines, as will future versions: the MPDS certification course teaches EMDs to recognize agonal breathing (gasp), the Agonal Breathing Diagnostic Tool provides real-time EMD support, and changes to the airway and breathing panels in MPDS v.12.2 will further enhance compliance to this recommendation.

The new guidelines recommend a Hands-Only approach for untrained rescuers when presented with an adult victim of suspected cardiac arrest, but recognize the need for ventilations at some point in the rescue effort. The MPDS provides a Compressions 1st
pathway for these patients that delivers a *Hands-Only* CPR process for approximately 10 minutes or more into the event, depending on patient downtime and call-processing time, or until responder arrival, but allows for eventual ventilations in cases involving extended response times.

For the trained rescuer, the new guidelines recommend providing a 30:2 ratio of compressions before ventilations in all arrest cases, including infants, children, and victims of asphyxial arrest. The current MPDS Pathway Director provides a 30:2 Ventilations 1st pathway in pediatrics, cases of suspected respiratory origin, or asphyxiation. The order of the sequence given by the AHA guidelines is currently being considered by the Academy’s Standards Council; however, it is important to note that there is no evidence of improved outcomes (pediatrics and asphyxial arrest) using this new order, and that a primary reason for the new recommendation was simplification of training and retention, an issue not faced by trained EMDs using a scripted protocol.

The new guidelines warn against the effects of unnoticed rescuer fatigue when providing chest compressions and advise that it is reasonable to switch compressors, when available, every two minutes. The MPDS currently provides this option, and the Academy is considering making the option mandatory when a second rescuer is available.

Additional guidelines have been published regarding the care of chest pain and stroke patients, as well as basic first aid. As an MPDS user, you can be assured that all of the new guidelines will be evaluated and, where appropriate, incorporated into the DLS standard of care. You can download the new AHA guidelines in their entirety from the Circulations publication at the following link:

[http://circ.ahajournals.org/content/vol122/18_suppl_3/](http://circ.ahajournals.org/content/vol122/18_suppl_3/)

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