



**RECOMMENDATION FOR CONSIDERATION**

Board Meeting Date: March 21, 2012

Subject: Change to BLS Level Provider Scope of Practice: Addition of Mechanical CPR Devices

VTR#: 0312-06

Committee/Task Force: Medical Advisory Committee

Recommended Goal

Recommended Policy Change

Other:

**Recommendation:**

The Department of Health should amend the Prehospital Practitioner Scope of Practice to permit the use of mechanical CPR devices by all Department of Health certified providers.

**Rationale [Background]:**

Mechanical CPR devices have been a part of Pennsylvania's EMS system for more than 30 years; however currently their use has been limited to advanced life support personnel. With the AHA's emphasis on high quality, uninterrupted chest compressions, new mechanical CPR devices that use piston, load distributing band, alternating compression/decompression or some combination of these technologies have emerged in the marketplace.

The scientific review of mechanical vs. manual CPR is mixed; high quality manual CPR appears to be as effective as compressions delivered by a mechanical device, however some studies have failed to show improved patient outcomes using mechanical CPR devices.<sup>1</sup> A prospective and retrospective trial was conducted in Richmond, Virginia comparing load distributing band device (LDB-CPR) with manual CPR after Richmond Emergency Medical Services switched from manual to mechanical chest compressions. Rates for ROSC were increased with LDB-CPR (34.5% vs. 20.2%) and survival to hospital discharge was also increased with LDB-CPR (9.7% vs. 2.9%).

In the American Heart Association's 2010 ECC guidelines<sup>2</sup>, various mechanical CPR technologies were reviewed, including those referenced above. The AHA has consistently taken the position that there are insufficient data to support or refute the routine use of [a mechanical CPR device] instead of manual CPR for adult victims of cardiac arrest.

The literature does however suggest that mechanical CPR may have advantages over manual CPR in the prehospital setting:

<sup>1</sup> Signa Vitae 2010; 5 (Suppl 1): 69-73 [www.signavitae.com/articles/review-articles/135-mechanical-cpr-devices](http://www.signavitae.com/articles/review-articles/135-mechanical-cpr-devices)

<sup>2</sup> Circulation 2010; Part 7 CPR Techniques and Devices: 2010 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiac Care Science

- A reduction in provider injuries due to being unrestrained in the patient compartment while performing chest compressions<sup>3</sup>. Providers could remain restrained while the device supplies continuous high quality chest compressions during transport.
- To maintain sustained high quality chest compressions. Studies have revealed that provider fatigue adversely affected the depth and rate of compressions after only 1-2 minutes<sup>4, 5</sup>.
- A reduction in the number of provider resources necessary to maintain high quality chest compressions due, particularly in areas with extended transport times to the nearest receiving facility.

#### **Medical Review [Concerns]:**

The medical advisory committee, as part of its discussion, recognizes a mechanical CPR device may not be efficacious for every EMS agency; there are areas of the Commonwealth where mechanical CPR may be beneficial, while in other areas that benefit might be less apparent or even non-existent. To this end, the committee believes the purchase of a particular device should be a consumer driven decision and recommends the EMS agency and their medical director to perform a cost-benefit analysis before purchasing any device.

#### **Fiscal Concerns:**

EMS agencies must consider the \$10,000-\$15,000 cost of each device, any maintenance costs and the potential return on investment when performing a cost-benefit analysis. The Department of Health should consider adding mechanical CPR devices to the list of eligible equipment under the EMSOF program.

#### **Educational Concerns:**

According to the AHA, "The success of any cardiopulmonary resuscitation (CPR) technique or device depends on the education and training of the rescuers. In the hands of some groups, novel techniques and adjuncts may produce better short or long term results outcomes than standard CPR."

It is essential for the agency medical director to ensure that all providers who will use a mechanical CPR device be thoroughly briefed, and demonstrate competency in its operation so as to minimize chest compression interruption. Integral to this education should be indications for use of the device, contraindications and potential associated complications with its use.

#### **Plan of Implementation:**

Upon acceptance of this recommendation, the Department of Health should:

1. Issue an EMS Information Bulletin announcing the addition of mechanical CPR devices to the scope of practice for BLS-level providers. Within this bulletin the need for provider education, competency evaluation on the operation of the device and involvement of the agency medical director should be stressed.
2. Serve notice in the Pennsylvania Bulletin, as part of the 2012 update of the prehospital practitioner scope of practice, by amending the list to include the use of mechanical CPR devices BLS-level providers.

The PEHSC Committee/Task Force offers consultation to the Department in regard to the content of this Vote to Recommend (VTR) and its attached documents. The PEHSC Committee/Task Force specifically offers staff or member support to participate in Department deliberations regarding this recommendation in an effort to convey committee/task force discussions.

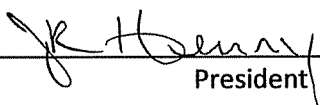
<sup>3</sup> Signa Vitae 2010; 5 (Suppl 1): 69-73 [www.signavitae.com/articles/review-articles/135-mechanical-cpr-devices](http://www.signavitae.com/articles/review-articles/135-mechanical-cpr-devices)

<sup>4</sup> Journal of Emerg Primary Health Care; Rescuer Fatigue in Cardiopulmonary Resuscitation: A Review of the Literature: Vol 7, Issue 4, 2009 – Article 990375

<sup>5</sup> Ashton, A et al: Effect of Rescue Fatigue on Performance of Continuous External Chest Compressions Over 3 Minutes. Resuscitation 2002;55:151-155

**Board Meeting Comments/Concerns:**

The Board discussed the fact that the current scientific literature has not shown improved outcomes for cardiac arrest patients who receive mechanical CPR vs. manual CPR. Dr. Reihart commented that even though the overall outcomes may not have changed, there have been anecdotal reports of improved ROSC with mechanical CPR. Additionally, the literature does suggest that sustained, high-quality chest compressions can be better achieved using a mechanical device along with positive crew safety aspects, especially during the extrication and transport phases of the call. It is important to note that the VTR's plan of implementation points out that the decision to purchase a mechanical CPR device should include the involvement of the agency medical director to address any concerns or questions regarding clinical outcomes.

Signed:  J.R. Henry  
President

Date 4/2/12

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For PEHSC Use Only – PA Department of Health Response

Accept: \_\_\_\_\_

Table: \_\_\_\_\_

Modify: \_\_\_\_\_

Reject: \_\_\_\_\_

Comments:

Date of Response: