Improve the delivery of CPR and a patient's chance of survival

Q-CPR™ Measurement and Feedback Tool Product information

Performing quality CPR in the treatment of cardiac arrest can improve the patient's chance of survival and increase the opportunity for a complete neurological recovery.[1] Recent science has shed new light on the importance of continuous chest compressions and optimal ventilations for victims of cardiac arrest.[2] In addition, reestablishing coronary blood flow and perfusing the heart create a condition favorable for electrical defibrillation, when the patient has been unconscious for more than 5 minutes.

To assist care providers in performing quality CPR, we've added CPR measurement and feedback to our Philips HeartStart MRx monitor/defibrillator. This one-of-a-kind tool, powered by Laerdal's Q-CPR™ technology, offers objective measurement and corrective feedback on compression depth and rate, as well as ventilation volume and rate. Q-CPR reinforces CPR training with each and every use.

Q-CPR is easy to set up, easy to use, and easy to experience. There is virtually no added time or weight: just a Compression Sensor weighing only 8 ounces. Apply the sensor and pads to the patient, connect them to HeartStart MRx, and CPR measurement and feedback begins.

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Compressions

The Q-CPR Compression Sensor on the patient's chest gathers data and transmits it to HeartStart MRx where it's interpreted and displayed. Compression rate and depth are presented as a wave graph: wave height depicts compression depth, while the interval between waves indicates rate. A calculated compressions-per-minute (cpm) value is shown as a numeric above the wave.

Compressions are also analyzed in real-time, contrasting actual performance with established American Heart Association (AHA) and European Resuscitation Council (ERC) guidelines. If either depth or rate drifts outside its target range, MRx displays on-screen signals and provides audible feedback.

Ventilations

Ventilation data is collected with the same pads used for defibrillation. Attached to the patient's chest, the pads detect changes in chest impedance which are interpreted by MRx then displayed as lung volume and ventilation rate on-screen. Just above the compression wave, the ventilation indicator shows lung volume. The calculated ventilations-per-minute (vpm) value appears next to the lungs indicator.

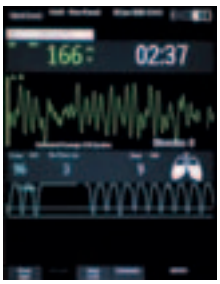
The lungs indicator has four states: empty, 1/3-full, 2/3-full, and full (left to right).

Ventilations, too, are analyzed and compared with established AHA and ERC guidelines. If either measurement, volume or rate, falls outside its target range, MRx provides on-screen signals and audible feedback.

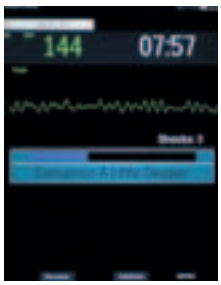
Corrective Feedback

On-screen visual prompts and audible voice prompts alert the caregiver to needed adjustments in CPR performance. They are prioritized and delivered in the order of their clinical significance. In addition to depth, rate and volume, MRx with Q-CPR monitors lapses in compression and ventilation activity. For example, after a 15-second pause in compressions, voice and text prompts say, "15 seconds without compressions." Once a correction is made, the related prompts cease.

The volume of the voice prompts can be adjusted up or down and even turned off by the clinician. Visual prompts remain active regardless of the audio's on/off state.



Code View



AED View

Data Reporting

CPR measurements can be recorded, using the strip chart printer on HeartStart MRx. Printing all active monitoring parameters in real-time, or with a 10-second delay, MRx documents ventilation rate, compression rate, and "no-CPR" time every 25 seconds.

To learn more about Q-CPR, HeartStart MRx and Philips Healthcare, call 800.934.7372 or visit www.philips.com/heartstart.

Q-CPR is a trademark of Laerdal Medical Corporation.

[1] Wik L, Kramer-Johansen J, Myklebust H, Sørebø H, Svensson L, Fellows B, Steen PA. Quality of cardiopulmonary resuscitation during out-of-hospital cardiac arrest. JAMA. 2005;293:299-304. Abella BS, Alvarado JP, Myklebust H, Edelson DP, Barry A, O'Hearn N, Vanden Hoek TL, Becker LB. Quality of cardiopulmonary resuscitation during in-hospital cardiac arrest. JAMA. 2005;293:305-310.

[2] Kern KN, Hilwig RW, Berg RA, et al. Importance of continuous chest compression during cardiopulmonary resuscitation: improved outcome during a simulated single lay responder scenario. Circulation. 2002;105(5): 645-649. Yu T, Weil MH, Tang W, et al. Adverse outcomes of interrupted precordial compression during automated defibrillation. Circulation. 2002;106:368-372. Wik L, Hansen TB, Fylling F, et al. Delaying defibrillation to give basic cardiopulmonary resuscitation to patients with out-of-hospital ventricular fibrillation. JAMA. 2003;289(11):1389-1395. Aufderheide TP, Sigurdsson G, Pirrallo RG, et al. Hyperventilation-induced hypotension during cardiopulmonary resuscitation. Circulation. 2004;109(16): 1960-1965. Roppolo LP, Wigginton JG, Pepe PE. Emergency ventilatory management as a detrimental factor in resuscitation practices and clinical research efforts. Intensive Care and Emergency Medicine. 2004;139-151.

Philips Healthcare is part of Royal Philips Electronics

www.healthcare.philips.com
healthcare@philips.com
fax: +31 40 27 64 887

Printed in The Netherlands
4522 962 40431/861 * OCT 2008

Philips Healthcare
Global Information Center
P.O. Box 1286
5602 BG Eindhoven
The Netherlands