



# Raising the bar for CPR quality

South Korean researchers turn to Q-CPR for real-time feedback and data analysis

## Discovering the importance of feedback

At South Korea's Wonju Severance Christian Hospital, Yonsei University Wonju College of Medicine, Emergency Department physicians have found a CPR feedback tool that has enhanced the quality and consistency of the CPR they provide – and helped researchers conduct a breakthrough study that may change the way CPR is provided around the world.

They implemented Philips Q-CPR<sup>1</sup>, a CPR improvement solution that gives real-time feedback to CPR providers. Its visual display and auditory cues tell medics if their compression depth, recoil, and rate are correct.

The feedback from Q-CPR helps providers give consistent, high-quality CPR in line with the latest American Heart Association guidelines.<sup>2</sup>

In addition to real-time feedback, after the cardiac arrest is over, HeartStart Event Review Pro analyzes the data and produces a CPR report card so providers can learn from and improve on their performance.

“I strongly recommend Q-CPR to our colleagues,” said Dr. Sung-Oh Hwang, past president of the Asian Society for Emergency Medicine, General Secretary of

“A rescuer who performs CPR without a feedback device is just like the blind walking without a cane.”

*Dr. Sung-Oh Hwang, past president of the Asian Society for Emergency Medicine, General Secretary of the Korean Association of Cardiopulmonary Resuscitation, and Professor in the Department of Emergency Medicine at Wonju College of Medicine.*



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Department of  
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# PHILIPS

## Controlling for quality CPR

Yonsei University, based in Seoul, is one of South Korea's oldest universities. Wonju Severance Christian Hospital is located in Wonju, a city of over 300,000 located 140 km east of Seoul.

In an effort to improve the quality of CPR, Dr. Hwang wanted to conduct a study of the effectiveness of higher compression rates. The study, with collaborators at 12 university hospitals across South Korea, would examine whether simply raising the compression rate could increase blood flow during cardiac arrest.

But in designing the study, Dr. Hwang ran into a problem: how could he establish the controlled variables that are essential for a randomized trial? Without making the depth of the compressions uniform, the researchers couldn't draw any conclusions about the importance of their rate.

Dr. Hwang turned to Q-CPR, which gives real-time feedback to CPR providers on their compression depth and rate, as well as chest recoil, hands-off time, and ventilation rate. Using Q-CPR, physicians could be certain they were giving compressions at the correct depth and rate for the purposes of the trial.

So Dr. Hwang introduced Q-CPR to the Emergency Department at Wonju Severance Christian Hospital in January, 2012, and CPR providers have used it ever since.

The results of the trial were presented at the American Heart Association's Resuscitation Science Symposium in November 2013. At the end of the study, Dr. Hwang and the physicians in the Emergency Department were so impressed by Q-CPR that they now rely on it.

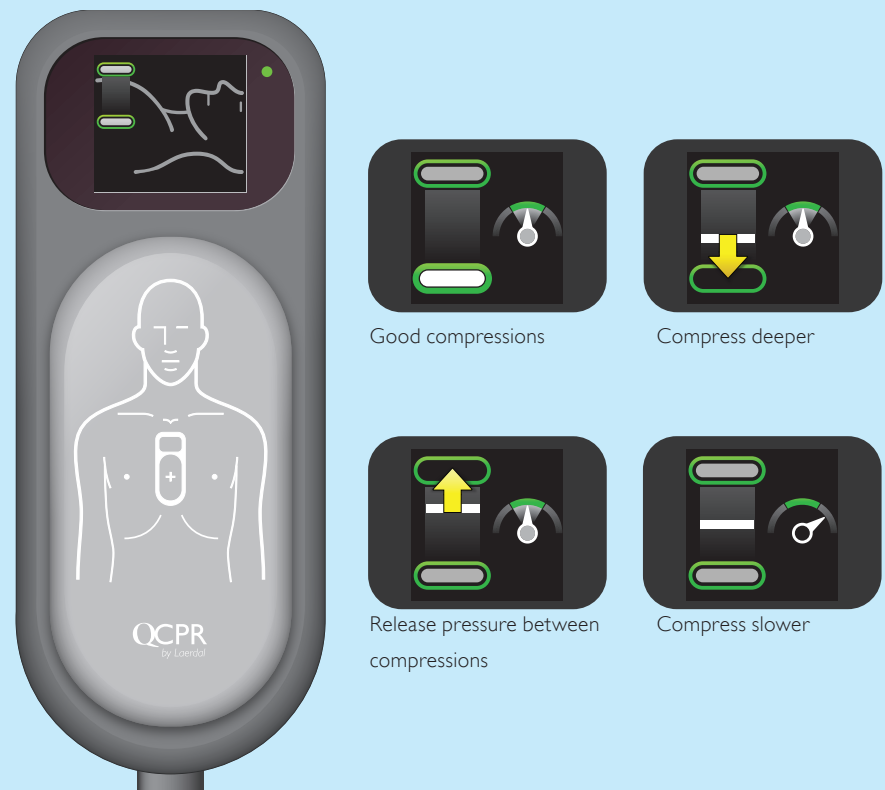
## What is Q-CPR?

Q-CPR is a CPR measurement and feedback tool that has been designed to improve CPR delivery. Available as a fully integrated option with the HeartStart MRx monitor/defibrillator and HeartStart FR3 AED, it offers several vital advances, based on the latest research and input from current Q-CPR users.

With real-time feedback and optional voice prompts, Q-CPR complements your ALS skills by providing objective performance data you can use to achieve high-quality CPR. When used in combination with Philips HeartStart Event Review Pro clinical software, Q-CPR is a comprehensive and flexible retrospective data review tool for debriefing, training, and continuous improvement. Event Review Pro captures and stores an entire code – including Q-CPR data for post-event review.

- Helps responders perform high-quality CPR by providing real-time measurement and feedback on compression depth, release, and rate right on the patient's chest.
- With HeartStart FR3 AED, Q-CPR can help first response teams deliver high performance, high quality CPR right from the start, independently of pads placement.
- Optimized for AHA/ERC 2010 CPR Guidelines.
- Delivers instant audiovisual feedback of compression depth and rate, complete chest recoil, hands-off time, and ventilation rate.
- The HeartStart MRx display can be configured to display either standard for depth and rate.
- With Event Review Pro, Q-CPR stores data captured during actual cardiac events to help you fine-tune your technique.

The Q-CPR meter provides corrective guidance – that every compression meets depth, rate, and complete release targets – to help improve the patient's chance of survival and increase the opportunity for a complete neurological recovery.<sup>3</sup>



“I believe that Q-CPR helps to improve CPR quality, which can be translated into improved survival rate of victims with cardiac arrest.”

*Dr. Hwang*

### Enhancing performance through data review

Working with the Philips HeartStart MRx monitor, the Q-CPR device sits on a patient’s chest and monitors the CPR that providers deliver, with visual and audio feedback cues to keep compression rate and depth in line with AHA guidelines.

“In clinical settings, the quality of CPR isn’t always steady,” said Dr. Kyoung-Chul Cha, an assistant professor in the Department of Emergency Medicine at Wonju College of Medicine. “There are human factors – some people push harder or faster than others.”

Fatigue is another major problem affecting the consistency of CPR. But with Q-CPR, providers can keep their CPR consistent throughout the arrest.

“To provide steady CPR quality, we use the real-time feedback on Q-CPR – and it can help,” Dr. Cha said.

In addition to real-time feedback, Q-CPR also offers a unique data-driven debriefing solution called HeartStart Event Review Pro. This analytic tool allows the entire cardiac arrest team to analyze and enhance their performance.

“I read the record from Event Review Pro, and after I reviewed the data I discussed with our team the depth of CPR, end-tidal CO<sub>2</sub>, and ventilation interval,” Dr. Cha said. The combination of real-time feedback with the analytic depth of HeartStart Event Review Pro means providers may learn from and enhance their CPR procedures.

## How Q-CPR can help you meet AHA/ERC guidelines

In June 2013, the American Heart Association released a consensus statement titled “CPR Quality: Improving Cardiac Resuscitation Outcomes Both Inside and Outside the Hospital.”

The consensus statement identifies five critical components of high-quality CPR:

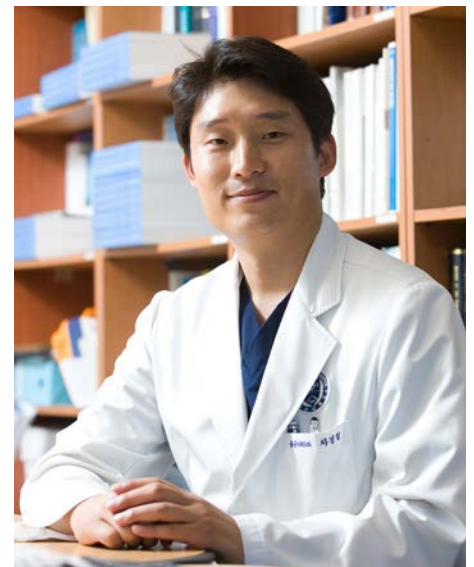
- Minimize interruptions in chest compressions
- Provide compressions of adequate rate
- Provide compressions of adequate depth
- Avoid leaning between compressions
- Avoid excessive ventilation

Philips HeartStart MRx monitor/defibrillators and HeartStart FR3 AEDs with Q-CPR incorporate the AHA/ERC 2010 Guidelines and we’re committed to supporting the expert recommendations from these international thought leaders in resuscitation and emergency cardiac care.<sup>2</sup>

The guidelines also call for “continuous quality improvement on provider, team, and systems levels.”<sup>4</sup> Philips analytic tool HeartStart Event Review Pro gives you metrics to determine your department’s performance, so you know where to focus your improvement efforts.

Before implementing Q-CPR, Severance Christian Hospital reviewed their CPR performance using video of the arrest. “At that time, we could know only general performance of our team activities during CPR such as role assignment, adherence to guidelines, etc.,” said Dr. Hwang. “However, we could not know about individual performance of CPR such as compression depth.”

Event Review Pro provides the Wonju caregivers quality feedback that was previously unavailable before Q-CPR. “Debriefing with Event Review Pro helps to enhance performance of our team, as well as individual performance of CPR,” Dr. Hwang said.



Dr. Kyoung-Chul Cha, Department of Emergency Medicine at Wonju College of Medicine

## Raising the bar for CPR

For healthcare providers at Wonju Severance Christian Hospital, Q-CPR was the first means of quantifying and studying the quality of the CPR they provided.

“The physicians and nursing staff were curious about whether they were performing adequate quality of CPR, because their CPR skills had never been tested,” Dr. Hwang said.

“Even though they had trained in educational courses for CPR and gotten certified, they had no way of evaluating the quality of CPR they were providing,” he added. “Since the introduction of Q-CPR to our Emergency Department, we’ve started to talk about quality of our CPR performance.”

Since the implementation of Q-CPR, it has become an indispensable part of their cardiac arrest toolkit.

“I, of course, would choose to use Q-CPR for rescuing a patient with cardiac arrest,” said Dr. Hwang. “I believe that Q-CPR helps to improve CPR quality, which can be translated into improved survival rate of victims with cardiac arrest.”

- 1 Q-CPR is a trademark of Laerdal Medical Corporation.
- 2 “Improving care requires assessment of performance. Only when performance is evaluated can participants in a system effectively intervene to improve care.” AHA 2010 Guidelines, CPR Overview, page S679.
- 3 Ko PC, Chen WJ, Lin CH, et al. Evaluating the quality of pre-hospital cardiopulmonary resuscitation by reviewing automated external defibrillator records and survival for out-of-hospital witnessed arrests. *Resuscitation*. 2005;64:163-169.
- 4 Meaney PA, Bobrow BJ, Mancini ME, et al. Cardiopulmonary resuscitation quality: improving cardiac resuscitation outcomes both inside and outside the hospital: a consensus statement from the American Heart Association. *Circulation*. 2013 Jul 23;128(4):417-35.



Please visit [www.philips.com/improvingcpr](http://www.philips.com/improvingcpr)



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