

## **Anyone can save a life: Penn researchers lead national efforts to improve CPR quality**

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“Anyone can save a life.” That’s the message from physicians at the University of Pennsylvania School of Medicine.

Benjamin S. Abella, MD, MPhil, Clinical Research Director of Penn’s Center for Resuscitation Science and Assistant Professor of Emergency Medicine, says bystanders can play a critical role in saving lives by performing cardiopulmonary resuscitation during the 150,000 cardiac arrests that occur each year outside of hospitals in the United States. Abella served as lead author of a statement released today by the American Heart Association in the journal *Circulation* that outlines the ways in which communities can encourage better bystander CPR.

Too often, even people who’ve been trained in cardiopulmonary resuscitation are afraid to perform it because they worry they’ll harm the patient by not following the right steps. Others say they’re concerned about legal liability, despite “Good Samaritan” laws that protect bystanders who step in to help.

Studies show that only 15 to 30 percent of sudden cardiac arrest victims receive bystander CPR before emergency personnel arrive, Abella says. But chances for survival plummet as minutes tick by without any blood circulating through the body. Early bystander CPR, however, doubles to triples survival rates.

“You have to get on that chest immediately – there’s no time to lose,” Abella says. “In cardiac arrest, waiting is always more harmful than not

waiting.”

Penn doctors are using a multi-pronged approach, combining new technology with best clinical practices, to boost CPR quality in the community and across the nation. Among their efforts: development of innovative CPR coaching technologies for both health care professionals and lay people in the community, and creation of community-wide initiatives to train more people in CPR.

The Hospital of the University of Pennsylvania, for instance, is among only a few hospitals in the United States using a defibrillator called the MRX Q-CPR (made by Philips Medical Systems, Andover, MA), which uses a device about the size of a computer mouse to monitor CPR performance. Abella helped designed this “sensor pack,” which is placed on a patient’s chest during CPR and attached to a small defibrillator box, allowing health care workers to perform CPR over the sensor and receive instruction from the machine about how effective their chest compressions are at circulating blood through the body. The machine coaches physicians through the process, urging them to use harder or softer compressions, or compress faster or slower. In a hectic hospital environment, doctors say this automated coaching can be invaluable.

The MRX Q-CPR technology also provides a detailed transcript of CPR performance that can be used to “debrief” health care workers after the crisis, to better prepare them for future emergencies in the hospital.

Penn researchers have also partnered with Cardiac Science Corporation (Bothell, WA) to develop AEDs that not only administer shocks to hearts caught in dangerous rhythms, but also speak to untrained bystanders to coach them through CPR. That help is crucial to boosting cardiac arrest survival, since only half of victims can be helped by an AED, while CPR can be lifesaving for anyone. Recent Penn research shows that among untrained volunteers ages 18 to 64, the verbal coaching helped them

perform compressions nearly as well and quickly as AHA guidelines recommend. Most study participants rated the prompts as “very easy” to understand.

This new technology is expected to hit the market within the next two years. Abella envisions that AEDs will eventually be sold as a comprehensive bundle for saving lives during cardiac emergencies, packed with the new CPR coaching technology and a kit containing gloves and a pocket mask for administering rescue breaths. Those supplies could be essential to helping bystanders fearful of infection jump into action.

“If we can get ten percent of people to do CPR just because they can put on some gloves and a mask, that’s ten percent more lives saved,” Abella says. “Defibrillators aren’t the only answer. They’re not the silver bullet.”

Doctors at Penn are also working with the American Heart Association to develop community-wide initiatives like Heart Safe Philadelphia, which pulls in partners from the Children’s Hospital of Philadelphia, city EMS, police and fire departments, school systems and other groups to beef up training for community members. One idea: To require that all high school seniors receive CPR training before graduation, or one day, to link training to the process of applying for a driver’s license, in the model of so-called “motor-voter” laws that register people to vote at the Department of Motor Vehicles.

CPR training is also reaching into the home of at-risk patients once they check out of the hospital. Penn physicians have pioneered in-hospital use of the AHA’s Family and Friends CPR Anytime kit, which includes a short video and an inflatable manikin for practice, to train family members when patients at risk of a cardiac event.

Source: University of Pennsylvania School of Medicine

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