A million chances to save a life: Penn Medicine crowdsourcing contest maps lifesaving AEDs in Philadelphia

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Would you be able to find an automated external defibrillator if someone's life depended on it? Despite an estimated one million AEDs scattered around the United States, the answer, all too often when people suffer sudden cardiac arrests, is no.

In a Perspective piece published online this week in the journal *Circulation: Cardiovascular Quality Outcomes*, two researchers from the Perelman School of Medicine at the University of Pennsylvania outline the tremendous potential associated with greater utilization of AEDs in public places and a method to find the devices and help more people use them during emergencies.

In cases of ventricular fibrillation – a wild, disorganized cardiac rhythm that leaves the heart unable to properly pump blood through the body, which is the leading cause of sudden cardiac death – quick use of an AED and CPR improve a patient's chance of surviving by more than 50 percent. But since AEDs are sold through wholesalers, manufacturers have no way to track who buys them and where they're ultimately placed. That leaves two problems: No reliable way to connect bystanders with AEDs during emergencies, and no way to locate the devices during recalls or for regular servicing and inspection, like the process used to keep fire extinguishers in working order. Without a map of the devices, the more than 300,000 people who suffer cardiac arrest remain in great peril. Nationwide, just over 6 percent of these patients survive.

Raina Merchant, MD, MS, an assistant professor of Emergency Medicine and a senior fellow in the Leonard Davis Institute of Health Economics, and co-author, David Asch, MD, MBA, executive director of Penn's Leonard Davis Institute of Health Economics, envision a much brighter scenario. The Penn doctors envision a massive search for the location of these one million lifesaving AEDs and the creation of an Internet and mobile app-based map to pair the devices with people willing to use them during cardiac arrests. In addition to making the map available via smart phone for bystanders, they also call for providing this information to local 911 dispatchers. Rather than waiting for paramedics to arrive on the scene, a person calling for help after witnessing a cardiac arrest might then hear the following:

"Emergency Medical personnel are on their way. Continue chest compressions. There is an AED in the nearby bookstore, just at the checkout register. If available, send someone who is not performing chest compressions to retrieve the AED."

Penn Medicine's MyHeartMap Challenge, now in its third week, is taking a big step toward fulfilling that vision, by calling on Philadelphians to locate and help map all of the city's AEDs. The 298 teams participating in the contest so far – who stand to win $10,000 if they're the person or group to locate the largest number of the devices – are searching for AEDs in public places and snapping pictures of them on a special app for iPhones and Androids. Their submitted photos, tagged with location information will be used to create the type of interactive map Merchant suggests in her paper. Building on recent successes in utilizing crowdsourcing to solve science quandaries, and with a nod toward the public's increasing reliance on smart phones to provide them with everything from reviews of nearby restaurants to the location of gas stations when their car is running on fumes, the Penn team hopes to tap into the ingenuity and power of today's ultra-networked society to provide the data needed to put some real power

behind the nation's AEDs.

The fruits of the six-week contest – especially if it can be replicated in other cities across the country – could lead not only to more immediate chances to save lives by putting defibrillators in the right hands at the right time, but also to new avenues for the study of best practices in resuscitation. Among questions a national AED database could help researchers answer: Was the device brought out for a real cardiac arrest? Did the device function properly? What prompted bystanders to play a role in caring for the patient? In the big picture, the Penn researchers hope that increased access to information on AED locations will buoy the nation's perennially dismal cardiac arrest survival rates.

More information: For more information about the MyHeartMap Challenge, visit www.myheartmap.org , or on Twitter at @myheartmap.

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