

Chances of surviving cardiac arrest depends on your neighborhood

EurekAlert

The odds of surviving cardiac arrest may depend on which part of town you call home and whether anyone in the neighborhood comes to your rescue by attempting to perform cardiopulmonary resuscitation (CPR), according to a first-of-its-kind study in the June issue of the *Annals of Internal Medicine*.

The study found that certain neighborhoods in Fulton County, Ga.—which includes Atlanta—have an incidence of cardiac arrest two to three times higher than other parts of the county and fewer bystanders who attempt to perform CPR. Surprisingly, these findings remained across time, meaning that, year after year, residents of these neighborhoods were at the highest risk for a cardiac arrest event, and had the lowest rates of bystander CPR in Fulton County. These neighborhoods tend to have lower median household incomes, more Black residents, and lower education levels.

"These findings have national public health indications. They show that it is time to change our thinking on how and where we conduct CPR training if we are ever going to change the dismal rate of survival from cardiac arrest," said Comilla Sasson, M.D., M.S., lead author of, "Small Area Variations in Out-of-Hospital Cardiac Arrest: Does the Neighborhood Matter?" who conducted the study as a Robert Wood Johnson Foundation Clinical Scholar at the University of Michigan. "Nine out of 10 people die from a cardiac arrest event. This number can and must change."

In Fulton County, if rates of CPR performed by bystanders were improved to the level achieved by the highest performing parts of the county, an additional 355 people could receive CPR. This could save an additional 15 lives each year in Fulton County alone.

CPR training often targets young, healthy volunteers who are least likely to encounter an individual in cardiac arrest. However, using Sasson's method, a public health surveillance registry based on that of the CDC can be used to design targeted interventions in the neighborhoods that need CPR training the most. Boosting bystander CPR rates in the United States from the current average of 27 percent to 56 percent could save an additional 1,500 lives per year.

Each year, in the United States, nearly 300,000 patients experience cardiac arrest—the sudden, abrupt loss of heart function—while outside of the hospital. Heart disease is the most common cause of cardiac arrest, but other factors such as drowning, choking, electrocution and trauma can cause cardiac arrest.

An earlier study by Sasson in the 2009 journal *Circulation* found that the nation's survival rate for out-of-hospital cardiac arrest has been at a standstill at 7.6 percent for nearly 30 years. Because most incidences of cardiac arrest occur outside a

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hospital and are often witnessed by bystanders, efforts to improve survival should focus on the prompt delivery of medical interventions such as the delivery of CPR.

"To improve cardiac survival rates that have been stagnant for 30 years, CPR training should be more basic and available to the people who are most likely to witness someone experiencing cardiac arrest," Sasson said. "Health care resources are extremely limited. To make improvements, we need to understand where and how best to make change."

For this study in the *Annals of Internal Medicine*, researchers analyzed emergency medical services (EMS) and 911 call data from the Cardiac Arrest Registry to Enhance Survival Rates (CARES), which was used to identify areas with higher incidences of cardiac arrest and low rates of bystander CPR. CARES is an EMS Web-based registry for out-of-hospital cardiac arrests. Census information was used to approximate neighborhoods. The study is believed to be the first to show relative stability in the incidence of cardiac arrest within census tracts from year to year.

Sasson is preparing to take action to improve cardiac survival with education and outreach efforts in the 30 U.S. cities that constitute the CARES Study Group. They are spread across the United States and include cities such as: Anchorage, Alaska; Austin, Texas; Boston, Mass.; Columbus, Ohio; Denver, Colo.; Honolulu, Hawaii; Houston, Texas; San Diego, Calif.; Sioux Falls, Idaho; and Wake County, N.C.

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