Chances of receiving CPR at home decreases with age

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The likelihood of a family member or friend stepping in to perform cardiopulmonary resuscitation (CPR) on a person suffering from a sudden cardiac arrest (SCA) at home decreases with the victim's age, suggests a new study from Penn Medicine that also found low CPR training rates among older Americans.

The results were published this week in the *Journal of the American Heart Association*.

Preliminary findings from the study were presented at the American Heart Association Scientific Sessions in November 2016. At the time, the research team reported that older Americans - those who are most likely to be stricken by SCA - are the least likely to have received CPR training. The full study shows that a victim's chances of receiving bystander CPR decreases significantly by age: for example, a 50 year old who suffers a SCA at home is 62 percent more likely to receive the life-saving technique than an 80-year old, the researchers found.

"The new data affirms the need for targeted training in the older population," said the study's senior author Benjamin Abella, MD, MPhil, director of Penn's Center for Resuscitation Science and an associate professor of Emergency Medicine in the Perelman School of Medicine at the University of Pennsylvania. "There is a striking relationship between age and CPR training and delivery that is really important to better understand."

"Most SCAs occur in the home and older victims are less likely to get CPR from a bystander, like a spouse or other family member, making it very likely that the age/training relationship has a big impact on actual CPR delivery, and therefore lives saved or lost," he added.

Over 350,000 Americans suffer from SCAs outside of the hospital every year - and only 32 percent of them receive CPR. Past studies have shown bystander CPR rates are lower in the private residential environment compared with the public setting.

The team sought to identify factors that may influence whether people receive CPR training, by administering a telephone survey. During a two-month period in 2015, 9,022 individuals completed the survey, which included calls to both landline and mobile phone numbers, and were conducted in English or Spanish. Of these participants—a statistically representative sample of the United States population—65 percent had been trained in CPR at some point in their lives and 18 percent has been trained in the last two years.

Older individuals and those with less education and lower household incomes were found to be the least likely to be CPR-trained.

Those who are 60 years and older are roughly 50 percent less likely to be trained in CPR, as compared to those under the age of 49, the researchers reported. Similarly, those whose highest level of education is a high school diploma were more than five times more likely to never have been CPR-trained, as compared to those with graduate degrees. And those with a household income of less than 15,000 were nearly 50 percent less likely to be currently trained in CPR as compared to those with a household income between 30,000 and 74,999.

Using data from the U.S. Resuscitation Outcomes Consortium Epistry data registry (2011-2015), the team also examined the association of

bystander CPR delivery during SCA events by victim age. They found a statistically significant association of decreased delivery in the home with increased age. That data mirrored the age/CPR training relationship demonstrated in the survey work.

The same trend cannot be said for events that occur outside the home. Researchers found no association of decreased bystander CPR with victim age in the public setting.

"This is a teachable moment," Abella said. "We need more aggressive, innovative, and creative efforts to reach the population at risk. For example, we should consider training videos while you're waiting for a train, renewing your driving licenses, or in the waiting room before you see your doctor."

Penn offers CPR training for family members and friends of cardiac arrest victims treated at the hospital upon discharge. The study researchers have also been investigating digital strategies and mobile applications to better circulate video-only trainings, said first author Audrey Blewer, MPH, assistant director for Educational Programs in Penn's Center for Resuscitation Science and a doctoral candidate in Epidemiology at Penn.

"There's a real mismatch in the people we know may a have cardiac arrest in the future and who might be CPR trained," Blewer said. "The fact that older Americans are much less likely to be currently CPR trained highlights an important training opportunity and message for the public in general. It's not only the young kids who needs to be CPR trained; it's also the older adults. They are ones who are going home with the people who are at risk for cardiac arrests."

Provided by Perelman School of Medicine at the University of

Pennsylvania

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