

Machine learning helps predict survival rates of out-of-hospital cardiac arrest

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Using neighborhood and local data in combination with existing information sources creates a more accurate prediction on a patient's recovery prospects after an out-of-hospital cardiac arrest (OHCA),

according to preliminary research to be presented at the American Heart Association's Resuscitation Science Symposium 2020.

The machine learning algorithms were developed and tested on nearly 10,000 cases of OHCA that happened in Chicago's 77 neighborhoods between 2014 and 2019. Researchers used OHCA information from the existing Cardiac Arrest Registry to Enhance Survival (CARES) database to identify incidents that happened outside of a [health care system](#) or a nursing home facility around the Chicago area. Information about individual communities from the Chicago Health Atlas (CHA), including [crime rates](#), access to [health care](#) and education, was then added.

Researchers merged the CARES and CHA information to train a machine learning model to predict OHCA survival. The addition of the CHA data increased the average recall of OHCA survival predictions from 84.5 to nearly 87%.

"This is exciting," says the study's lead author, Samuel Harford, M.S., a Ph.D. candidate in the department of mechanical and industrial engineering at the University of Illinois at Chicago. "We were able to provide a [machine learning model](#) with information from publicly available, real-world sources that helped us find patterns that might be otherwise unseen, therefore, yielding better results. This strategy has the potential to be helpful in more accurately predicting other clinical outcomes in future studies."

The study had limitations based on the quality of data, and more information that could impact the results such as weather, traffic, EMS routes and socioeconomic status still need to be examined.

More information: Poster: ReSS.APS.01.07 Disparities.

Provided by American Heart Association

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