Black, Hispanic cardiac arrest survivors often treated at hospitals with lower quality measures

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Across the U.S., Black and Hispanic people who survived cardiac arrest occurring outside of a hospital setting were less likely than white people

to survive to hospital discharge or survive with favorable neurological outcomes, potentially due to the quality measures of the hospital to which they are admitted, according to preliminary research to be presented at the American Heart Association's Resuscitation Science Symposium 2023, held Nov. 11–12 in Philadelphia.

A subset of this national study, which found similar results among cardiac arrest survivors in Texas, was simultaneously published in the *Journal of the American Heart Association*.

"The goal of our study was to determine if people from Black and Hispanic neighborhoods who survived cardiac arrest went to the same quality hospitals as people living in predominately white neighborhoods. We were surprised by how infrequently people from historically underrepresented neighborhoods were admitted to higher performing hospitals," said lead study author Ryan Huebinger, M.D., an assistant professor of emergency medicine at McGovern Medical School at University of Texas Health in Houston.

"We know that a variety of disparities exist in bystander CPR for people of color after cardiac arrest, so for this research, we were interested in taking a closer look at how the next step in the chain of survival, the medical care and hospital piece, may play a part in the patients' overall health after cardiac arrest and hospitalization."

According to the American Heart Association, cardiac arrest occurs when there is an electrical, or rhythm, problem with the heart that causes the heart to stop beating. Each year in the U.S., more than 356,000 people experience cardiac arrests that occur outside of a hospital setting. Overall, survival rates for people who experience a cardiac arrest outside of the hospital are low, with between 60 to 80% of victims dying prior to reaching the hospital.

Of those who do survive, people from historically underrepresented populations tend to have worse outcomes. Many people who have survive after cardiac arrest have some level of brain injury due to the lack of oxygen during the event, and the level of their neurological function often indicates their long-term prognosis

Researchers evaluated health records from the Cardiac Arrest Registry to Enhance Survival (CARES) from 2014 to 2021a. A collaborative effort between the U.S. Centers for Disease Control and Prevention and Emory University, CARES is a national database representing about 45% of the U.S. population. The registry collects information from hospitals, Emergency Medical Service agencies and state-based registries.

The study reviewed records of 124,908 people who had experienced a cardiac arrest outside of a hospital setting and survived the event. To compare race/ethnicity of the patients, U.S. census tract information was used. Of the patients in the study, 90,034 were from neighborhoods estimated to have predominantly white residents; 20,600 were from neighborhoods estimated to have a majority of Black residents; and 14,338 were from areas estimated to consist of a majority of Hispanic residents.

For this study, researchers ranked the hospitals to which study participants were admitted based on each hospital's performance on patient outcomes, including survival to discharge and the level of favorable neurological outcomes. The analysis found that while people from predominantly white neighborhoods received care at top performing hospitals 30.6% of the time, people from Black neighborhoods were treated at top hospitals only 7.1% of the time, and people from Hispanic neighborhoods went to top hospitals only 5.2% of the time.

The data was also analyzed with different variables, such as the number of people who received bystander CPR, to try to determine if and how each factor may have potentially affected patients' outcomes including survival to discharge and favorable neurological function.

Overall, the analysis found:

- Outcomes, including survival to discharge and favorable neurological function, were worse for people from Black and Hispanic communities than for people from white communities. Among people from Black communities who were admitted to the hospital after initially surviving cardiac arrest, 19.7% had positive outcomes, compared to 22.1% of Hispanic people and 33.5% of white people.
- While adjusting for bystander CPR had no impact on patient outcomes, the quality performance level of the admitting hospital significantly improved outcomes by greater than 25% for people from both Black and Hispanic communities.

"These findings align with another analysis we did that focused on data for 10,434 adult cardiac arrest survivors from TX-CARES, the Texas affiliate of the national CARES Registry. This is where we first identified that the quality measures of the hospital where patients were treated may play a crucial role in disparities," Huebinger said.

"This means improving quality measures of hospitals could represent an important target for interventions to reduce disparities among patients after cardiac arrest survival."

"We already know that the rate of survival is lower for Black and Hispanic people who experience an out of hospital cardiac arrest, in part because we know they are less likely to receive bystander CPR. This research identifies another critical gap in the care they receive," said

Comilla Sasson, M.D., Ph.D., FAHA, a practicing emergency medicine physician and vice president for health science at the American Heart Association.

"There are a variety of characteristics and factors that influence a hospital's quality measures and performance levels, however, by increasing access to high quality hospitals and improving care at lower performing facilities, we could decrease differences in race and ethnicity outcomes and potentially improve care and outcomes for everyone. This further elucidates the importance of looking at the entire chain of survival, as every link has a significant role in the outcomes for patients with cardiac arrest."

According to Sasson, where an ambulance crew takes patients varies and sometimes depends on the emergency services system used. The determination can be made automatically when a 911 call is made and can depend on the patient's need for specialty care or the proximity of the hospital to the incident. In some cases, patients are routed by a coordinator tasked with distributing patients evenly between regional hospitals.

The major limitation to this study is understanding what is different between these hospitals. While the researchers know from their prior studies that cardiac arrests from low-income and minority communities receive lower rates of targeted temperature management and heart stent placement after cardiac arrests, there may be other important care modalities that differ between high and low performing hospitals.

More research is needed to understand these care differences in order to standardize cardiac arrest care to improve outcomes for all cardiac arrest victims. While socioeconomic status can be tied to race and ethnicity, the researchers did not adjust for income or employment status. Lastly, researchers did not adjust for type of hospital (urbanicity, academic

affiliation or patient volume).

"These findings are important and consistent with multiple studies that have confirmed a close link between racial disparities and hospital quality for many health conditions.

Worse outcomes in Black and Hispanic patients compared to white patients appear to be due to a higher concentration of Black and Hispanic patients in neighborhoods with lower quality hospitals," said Saket Girotra, M.D., an associate professor in the department of internal medicine, a member of the division of cardiology at UT Southwestern Medical Center in Dallas and a volunteer for the American Heart Association's Get With The Guidelines-Resuscitation quality improvement program.

"One could argue that efforts targeted towards improving hospital quality could lead to improved patient outcomes and also reduction in disparities by race and ethnicity. Indeed, our prior work in-hospital-cardiac arrest within the Association's Get With The Guidelines-Resuscitation quality improvement program has shown that to be the case."

Get With the Guidelines-Resuscitation collects resuscitation data from hospitals nationwide to support the implementation of evidence-based guidelines for inpatient CPR.

Provided by American Heart Association