

EDITORIAL COMMENT

Staying Alive

Patients Who Lived Through Disco Era Benefit From Bystander CPR*



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We congratulate Chan et al¹ on a well-designed study that adds to the existing out-of-hospital cardiac arrest (OHCA) literature by exploring the impact of bystander cardiopulmonary resuscitation (CPR) on short- and long-term survival outcomes in older adults. As the authors note OHCA outcomes are understudied in geriatric populations, despite the fact that half of patients in OHCA are over 65 years of age. Utilizing data from the large Cardiac Arrest Registry to Enhance Survival (CARES), the authors analyzed the association between bystander CPR and in-hospital survival and long-term mortality in patients over age 65 years. Older patients who received bystander CPR for OHCA had a 24% higher likelihood of survival to hospital discharge as compared to patients who did not. The benefit of bystander CPR was durable over time and persisted after hospital discharge over a median follow-up of 31 months. Bystander CPR was also correlated with improved neurological outcomes. Interestingly, the benefit was similar across 3 different age groups, suggesting that the neurologic and survival benefit of bystander CPR does not attenuate with age and implying that bystander CPR should not be withheld just because someone might have worn bell bottoms before they went out of style the first time.

The authors incorporated several crucial aspects in the study design. They excluded patients from

extended care facilities because those performing CPR in these settings are often medical professionals, ensuring, as much as possible, a truly bystander-performed OHCA cohort. They included neurological outcomes. In the disco era (and a bit beyond), resuscitation research focused mostly on survival to hospital admission. For older individuals, neurological status and other aspects related to performance of activities of daily activities are as important as survival (sometimes more important). And survival with poor neurological status may be particularly undesirable. Unfortunately, the authors did not have data on other metrics of quality of life from this data set.

They also did not have data on comorbidities and frailty, both important correlates of outcomes but also, possibly, decisions to perform CPR in the first place. New onset frailty after successful resuscitation may also be an important outcome measure. Frailty is likely a better marker of survival and quality of life in bystander CPR than chronological age, and CPR may be more likely to be attempted (or attempted for a longer duration) in older individuals who collapse under a disco ball than those who slump in a wheelchair.

Two prior studies assessed 1-year and 5-year outcomes in patients receiving bystander CPR, but most of the current literature focuses on in-hospital outcomes.^{2,3} The CARES database shows that 38.3% of patients ages 65 and older received bystander CPR compared with 40.2% of all-comers.¹ While the administration of bystander CPR was similar, the survival benefit for those who might have seen the Bee Gees' debut concert tour was less robust than previously reported (2.4-fold higher odds of survival to hospital discharge for all-comers vs 24% higher likelihood of survival in older adults).^{4,5} The authors postulated that this survival difference could be due to bystanders' perception of frailty, thus leading to lower quality CPR due to shallower compressions.

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That said, 2 studies from Japan and Korea prospectively analyzed the quality of bystander CPR based on hand positioning, rate of compressions, and depth of compressions and found that the age of the patient did not impact the quality of CPR.^{6,7} Interestingly, they did find that older bystanders provided poorer quality CPR, likely due to lack of CPR education and physical deconditioning. As the authors point out, though they might have learned early Travolta dance moves, older adults are less likely to be trained in CPR.⁸

Both the authors of this study and other OHCA studies have demonstrated the importance of the location of a cardiac arrest. Bystander CPR is more likely to occur in witnessed arrests in public, urban locations.^{4,5} In the last decade, census data highlight a trend of older individuals moving to rural locations. Rural communities now have a higher proportion of individuals over the age of 65 than urban communities (20% vs 14%).⁹ The same census data show that 26% of older individuals live alone, decreasing the likelihood that a cardiac arrest will be witnessed.

Patients' demographics also influenced whether they received bystander CPR. Corroborating findings from prior studies, the authors found that Black people were less likely to receive bystander CPR, but there were no age or sex difference between patients who received bystander CPR and those who did not.¹

Overall, this study shows that bystander CPR improves both short-term and long-term survival regardless of patient age, affirming the importance of ensuring equitable access to this lifesaving intervention. Both the current study and other recent work show that Black people (and Hispanic people) are less

likely to receive bystander CPR.¹⁰ This inequity is multifactorial and likely stems from implicit bias, structural racism, and lack of access to CPR training in underserved communities. Future areas of study for OHCA must be focused on the implementation of public health interventions to mitigate disparities in bystander CPR and OHCA outcomes including low- or no-cost CPR classes and the fortification of emergency medical services infrastructure in underserved communities. Video and app-based training may play an important role, especially for caregivers of older, hospitalized patients from underserved backgrounds.^{11,12}

In sum, the disco era may be behind us, but the study by Chan et al¹ suggests that age, like race, should not be a factor in whether patients receive bystander CPR for OHCA. Older individuals deserve a chance to keep on groovin'. Future work should explore frailty and multimorbidity as covariates (and outcomes) and test practical interventions to disseminate and improve CPR training ("Stayin Alive" soundtrack on all automated external defibrillators?—just a thought).

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