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Out-of-Hospital Cardiac Arrest: Bystander CPR Impact on Survival, Cost

Bystander cardiopulmonary resuscitation (CPR) is crucial to successful resuscitation following out-of-hospital cardiac arrest (OHCA). New research shows that bystander CPR was positively associated with long-term survival and appears cost-effective, with an incremental cost-effectiveness ratio of USD48,044 per quality-adjusted life year (QALY). The findings are published in *Resuscitation*.

Although early CPR has been associated with return of circulation and survival to hospital discharge, few studies have examined the long-term prognostic role of bystander CPR. In this study, researchers used information from a regional OHCA registry in Greater King County, Washington, USA, and a database of hospital costs to assess the association of bystander CPR with long-term survival and the cost of the incident OHCA hospitalisation in order to estimate the cost-effectiveness of bystander CPR. Cost-effectiveness was based on hospital costs divided by QALYs for a five-year follow-up window.

Investigators found that bystander CPR increased the adjusted odds of survival to hospital admission by 16%, survival to hospital discharge by 26%, and five-year survival by 30%. They estimated costs at USD75,175 for survivors and USD6,506 for those who died in hospital. They calculated an incremental cost-effectiveness ratio of bystander CPR of USD48,044 per QALY. This ratio was adjusted for cardiac arrest characteristics typically reported, supporting the generalisability of this intervention in most patients and settings.

First author, Guillaume Geri, MD, PhD, Post-doctoral fellow at the Li Ka Shing Knowledge Institute of St. Michael's Hospital, Toronto, Canada, told *ICU Management & Practice*, "Besides the effectiveness of a procedure, it is more and more important nowadays to evaluate costs associated with the management of our patients. We aimed to describe inpatient costs related to out-of-hospital cardiac arrest patients treated by emergency medical services and admitted to the hospital and to evaluate the impact of bystander CPR on costs. Interestingly, survival was the main driver of costs and it seemed important to simultaneously consider costs and effectiveness." Dr. Geri explained that in this study, survival was censored at five years post-OHCA as this enabled comprehensive ascertainment of vital status for the population-based cohort. He added that the research team strongly believes that (very) long-term outcome should be preferentially used in cardiac arrest patients, including social and professional events occurring in the survivors to have a clearer idea of the quality of life of such survivors.

The research team notes that the study was observational so that they cannot determine whether the relationship between bystander CPR and long-term survival is causal, despite efforts to account for potential confounders.



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