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Singapore to increase out-of-hospital cardiac arrest survival

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The study finds that dispatch-assisted CPR, training in CPR and use of an Automated External Defibrillator, and a volunteer first responder mobile app, increased the likelihood of laypeople performing CPR during out-of-hospital cardiac arrest,Ã?Â and thus increased survival rates.



A new study published in *The Lancet Public Health* found that a series of public health interventions in Singapore cumulatively increased the likelihood of cardiopulmonary resuscitation (CPR) by bystanders during out-ofhospital cardiac arrests (OHCA) nearly eightfold and survival over threefold, underscoring the importance of such interventions to improve OHCA outcomes.

For a victim of sudden cardiac arrest in an out-of-hospital setting, CPR (performed by pushing hard and fast on the centre of the chest) by a bystander could save their life.

The study by researchers at Duke-NUS Medical School (Singapore), Duke University (Durham, NC, USA), Singapore Health Services (SingHealth), the Singapore Civil Defence Force (SCDF) and the Singapore Ministry of Health's Unit for Prehospital Emergency Care (UPEC) found that three national public health interventions in the city-state increased the rate of bystander CPR more than twofold. These measures included 1) dispatch-assisted CPR, 2) CPR and automated external defibrillator (AED) training, and 3) a first responder mobile application, known as myResponder, which alerts volunteer first responders trained in CPR to give life-saving assistance when they are in close proximity to someone experiencing cardiac arrest before paramedics arrive on the scene.

"Our findings clearly showed that a bundled, national, bystander-focused public health intervention increased the chances of laypeople performing bystander CPR," said Assistant Professor Audrey L. Blewer, the study's lead and corresponding author. "While we were unable to examine the individual effect of the interventions, the study suggests the importance of bundling interventions, especially for the public, to improve outcomes for OHCA."

While previous studies have shown the independent impact of such interventions on bystander CPR, no study has examined the cumulative impact of each added bystander intervention on bystander CPR. In this research, which focused on a population cohort from Singapore, data were analysed from national bystander intervention programmes from 2011–2016. In

this population, when all three measures were adopted, the likelihood of survival increased more than threefold, compared to no intervention.

In the nationally gathered datasets that were analysed in this research, it was seen that, in general, bystander CPR was administered in nearly half (48 per cent) of OHCA events. With the implementation of dispatch-assisted CPR, the likelihood of bystander CPR increased. Additional implementation of CPR and AED training further increased the likelihood of bystander CPR. Finally, the addition of the myResponder mobile application to the intervention strategies resulted in nearly eight times increased likelihood of bystander CPR compared to no intervention.

As next steps, the team will continue to work with the relevant partners to build on robust quality and assurance measures, and ensure adherence to the protocol and resuscitation process metrics. Additionally, Singapore's health authorities continue to optimise the dispatch-assisted CPR protocol to improve outcomes and survival from OHCA. Future work may consider taking aspects of the Singapore protocol and implementing it in other locations, such as across Asia and urban cities in the USA.

The Ministry of Education in Singapore requires that school-aged children are taught CPR in physical education classes. In addition to this requirement, Singapore offers free CPR and AED training to schools, community-based groups, and workplaces, which removes one of the known barriers to CPR training – specifically, cost and access to the course.