

# Prolonging CPR doesn't help heart patients: study

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A study involving nearly 10,000 cardiac arrest patients from 10 North American regions has shown that extending the period of initial cardiopulmonary resuscitation (CPR) by paramedics and firefighters from one to three minutes provides no benefit. The study, led by Dr. Ian Stiell of the Ottawa Hospital Research Institute (OHRI), the University of Ottawa (uOttawa) and the Resuscitation Outcomes Consortium (ROC), resolves a worldwide controversy about cardiac arrest care. It is the largest randomized cardiac arrest trial in the world, published in the *New England Journal of Medicine*.

Every year, more than 350,000 people in Canada and the U.S. suffer a sudden cardiac arrest, and less than 10 per cent survive. Prompt CPR can increase blood flow to the brain and keep the body alive for a short time, but for patients with certain heart rhythms, the heart can only be restarted by providing electrical shocks with a defibrillator.

Traditionally, paramedics and firefighters have analyzed heart rhythm as soon as possible, and provided only brief CPR while preparing a defibrillator. However, several recent studies have suggested it may be better to provide a longer period of initial CPR (up to three minutes) before analyzing heart rhythm. Clinical guidelines have not been able to provide clear guidance on which approach is better, and standard practice has varied around the world.

In the current study, paramedics and firefighters across Canada and the U.S. were randomly divided into groups (called clusters) and instructed to provide 30 to 60 seconds of initial CPR or three minutes of initial

CPR. Part way through the study, the groups were switched. The primary analysis of data from 9,933 patients showed no difference between the groups, with 5.9 per cent of patients in both groups surviving to hospital discharge with satisfactory health. However, when the actual length of CPR was analyzed more closely, it was found that survival tended to decrease as the length of initial paramedic CPR increased in patients who also received bystander CPR and had a heart rhythm amenable to defibrillation. This subgroup represents approximately 10 per cent of all patients in the study. There were no differences in other subgroups analyzed.

"Our study definitively shows that there is no advantage to a longer period of initial CPR," said Dr. Ian Stiell, a Senior Scientist at OHRI, Chair of Emergency Medicine at uOttawa and Physician in The Ottawa Hospital Emergency Department. "The data also suggest that patients who received bystander CPR may fare better with the shorter period of paramedic CPR. While there is some debate about the significance of this result, I think it is better to be on the safe side and stick with the traditional shorter initial CPR approach."

This study was conducted through ROC, a large Canada-U.S. research collaboration aimed at improving survival for patients who suffer cardiac arrest and severe trauma in the community. ROC is funded by the Canadian Institutes of Health Research, Defence Research and Development Canada, the Heart and Stroke Foundation of Canada, the U.S. National Heart, Lung, and Blood Institute, the U.S. National Institute of Neurological Disorders and Stroke, the U.S. Department of Defense and the American Heart Association.

"The Canadian Institutes of Health Research are pleased to support this collaborative effort between Canada and the United States," said Dr. Jean Rouleau, Scientific Director of the Institute of Circulatory and Respiratory Health. "By clarifying the procedures which paramedics and

firefighters should follow in cases of cardiac arrest, this study is a great example of putting health research directly into practice."

"The Resuscitation Outcomes Consortium studies are essential to refining the science of resuscitation and will help save more lives," said Manuel Arango, Director of Health Policy for the Heart and Stroke Foundation of Canada. "This knowledge furthers our understanding of optimal resuscitation techniques and will help inform the next Heart and Stroke Foundation Emergency Cardiac Care guidelines."

More than 60 per cent of patients in this study came from Canadian ROC sites, which include OHRI / uOttawa, the University of British Columbia and St. Michael's Hospital / University of Toronto. The OHRI / uOttawa site was a particularly large contributor, with seven emergency medical services and 13 fire departments in 13 Ontario cities participating.

"I would like to thank the thousands of paramedics and firefighters who made this study such a success." said Dr. Stiell.

"The Ottawa Paramedic Service is proud to participate in important research," said Chief Anthony Di Monte, Ottawa Paramedic Service. "This allows us to add to the body of knowledge in paramedicine and continually maintain the best care for the patients and community we serve."

"Ottawa's paramedics have played a huge role in this research, again guiding the rest of the world in how to provide the best out of hospital care," said Dr. Justin Maloney, Medical Director of the Regional Paramedic Program For Eastern Ontario and Emergency Physician at The Ottawa Hospital. "They have earned a wonderful international reputation."

Another ROC study on an investigational device to improve blood flow during CPR is also published in the September 1, 2011 issue of the *New England Journal of Medicine*.

Provided by Ottawa Hospital Research Institute

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