

Study finds paramedic care delivered on-scene for 10-35 minutes leads to better outcomes

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Less than 10 per cent of paediatric patients who suffer a cardiac arrest outside of the hospital survive. There are many factors which can influence survival rates; paramedic care is one of them.

Thanks to the advanced training of paramedics, today, they can spend more time on the scene doing CPR or providing medical care including administering intravenous fluids and medications. However until now, it has not been known if the length of time spent on the scene and onsite [medical interventions](#) by paramedics are associated with improved survival for paediatric patients.

In the largest paediatric [cardiac arrest](#) study to date, a team of researchers led by The Hospital for Sick Children (SickKids) and Lawson Health Research Institute found that survival was the highest, especially among teens, with 10 to 35 minutes on the scene in the care and under the treatment of paramedics. The study also found that improved survival was associated with intravenous access and fluid administration, whereas advanced airway attempts (endotracheal intubation) and resuscitation drugs were not. The study is published in *Resuscitation*.

"Our initial hypothesis was that more time spent on the scene doing quality CPR with advanced medical interventions would mean better patient outcomes. We found that there is an optimal time between 10

and 35 minutes, and after 35 minutes, the outcomes do not improve and actually get worse," says Dr. Jamie Hutchison, senior author on the study, Staff Physician and Research Director in Critical Care Medicine at SickKids. "Interestingly, we found that while longer on-scene time (more than 35 minutes) was associated with higher rates of resuscitation, it had lower rates of survival [compared to 10 to 35 minutes on the scene]. This paradox is valuable information for paramedics as they weigh the potential benefits of spending more time on the scene while considering how to achieve the best possible outcome for the patient."

This was an observational study looking at data from the Resuscitation Outcomes Consortium (ROC) cardiac arrest database from 11 North American regions, including Vancouver, Hamilton, Toronto and Ottawa between 2005 and 2012. The team studied 2,244 patients ranging from three days old to 19 years old with non-traumatic out-of-hospital cardiac arrest, and evaluated survival to the time of hospital discharge.

"Our findings show that scene time is significantly associated with survival to hospital discharge, and that only some interventions are associated with survival," says Dr. Janice Tijssen, principal author on the study, Researcher at Lawson and Paediatric Intensivist at Children's Hospital, London Health Sciences Centre. "For example, placement of intravenous or interosseous needles was associated with improved survival, likely because it allowed fluid administration that was also associated with better outcomes. We hope the findings will help inform [paramedics](#) as they make decisions on the best way to treat patients."

Adolescents had the highest rate of survival followed by children and then infants. Infants had the shortest scene time, fewest interventions and lowest rate of witnessed events (meaning the cause of the arrest was unknown). It is possible that there may be a large number of infants who had sudden infant death syndrome.

The study also revealed that more than 10 minutes on the scene was associated with more interventions, suggesting that a 'scoop and run' approach of less than 10 minutes does not allow enough time to apply interventions like IV fluids that may benefit the patient. "But the good news is that in the majority of patients (68.7 per cent) had a [scene](#) time between 10 and 35 minutes," adds Tijssen.

Toronto Paramedic Services, Deputy Chief of Program Development and Service Quality, Cindy Nicholson says, "The findings of this study as well as those of other recent research confirms that early intervention and care from Paramedics in the prehospital setting makes a significant difference in quality of life and outcomes for our patients. This study's findings are not only exciting for Toronto Paramedic Services but for the profession in general and most importantly for the patients in our community who benefit from our evidence-based care."

Provided by Lawson Health Research Institute

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