

Longer CPR extends survival in both children and adults

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Experts from The Children's Hospital of Philadelphia were among the leaders of two large national studies showing that extending CPR longer than previously thought useful saves lives in both children and adults. The research teams analyzed impact of duration of cardiopulmonary resuscitation in patients who suffered cardiac arrest while hospitalized.

"These findings about the duration of CPR are game-changing, and we hope these results will rapidly affect hospital practice," said Robert A. Berg, M.D., chief of [Critical Care Medicine](#) at The Children's Hospital of Philadelphia. Berg is the chair of the Scientific Advisory Board of the [American Heart Association](#)'s Get With Guidelines-Resuscitation program (GWTG-R). That [quality improvement program](#) is the only national registry that tracks and analyzes resuscitation of [patients](#) after in-hospital cardiac arrests.

The investigators reported data from the GWTG-Resuscitation registry of CPR outcomes in thousands of North American [hospital patients](#) in two landmark studies—one in children, published today, the other in adults, published in October 2012.

Berg was a co-author of the pediatric study, appearing online today in *Circulation*, which analyzed hospital records of 3,419 children in the U.S. and Canada from 2000 through 2009. This study, whose first author was Renee I. Matos, M.D., M.P.H., a mentored young investigator, found that among children who suffered in-hospital [cardiac arrest](#), more children than expected survived after prolonged CPR—defined as CPR

lasting longer than 35 minutes. Of those children who survived prolonged CPR, over 60 percent had good neurologic outcomes.

The conventional thinking has been that CPR is futile after 20 minutes, but Berg said these results challenge that [assumption](#).

In addition to Berg, two other co-authors are critical care and [resuscitation](#) science specialists at The Children's Hospital of Philadelphia: Vinay M. Nadkarni, M.D., and Peter A. Meaney, M.D., M.P.H.

Nadkarni noted that illness categories affected outcomes, with children hospitalized for cardiac surgery having better survival and neurological outcomes than [children](#) in all other patient groups.

The overall pediatric results paralleled those found in the adult study of 64,000 patients with in-hospital cardiac arrests between 2000 and 2008. Berg also was a co-author of that GWTG-R study, published in *The Lancet* on Oct. 27, and led by Brahmajee K. Nallamothu, M.P.H., M.D., of the University of Michigan. Patients at hospitals in the top quartile of median CPR duration (25 minutes), had a 12 percent higher chance of surviving cardiac arrest, compared to patients at hospitals in the bottom quartile of median CPR duration (16 minutes). Survivors of prolonged CPR had similar neurological outcomes to those who survived after shorter CPR efforts.

The American Heart Association and American Stroke Association designated the adult study as the top finding of the year in heart disease and stroke research in its annual list of major advances. Next steps for CPR researchers are to identify important risk and predictive factors that determine which patients may benefit most from prolonged CPR, and when CPR efforts have become futile. "Taken together, the adult and pediatric results present a clear and hopeful message: persisting longer

with CPR can offer better results than previously believed possible," concluded Berg.

More information: Matos et al, "Duration of CPR and Illness Category Impact Survival and Neurologic Outcomes for In-Hospital Pediatric Cardiac Arrests," *Circulation*, published Jan. 21, 2013.

Goldberger et al, "Duration of resuscitation efforts and survival after in-hospital cardiac arrest: an observational study," *The Lancet*, published Oct. 27, 2012, vol. 380, pp. 1473-1481.

Provided by Children's Hospital of Philadelphia

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