

PC4 Collaborative Effort Prevents Cardiac Arrests in Children with Heart Disease

Simple 'practice bundle' drops pediatric cardiac arrests by 30% across 15 children's hospitals

ANN ARBOR, MI, USA, July 5, 2022 /EINPresswire.com/ -- Big things come in small packages (or 'bundles' in this case). A groundbreaking [Pediatric Cardiac Critical Care Consortium](#) (PC4) study showed a reduction in cardiac arrest in children suffering from heart disease. PC4's Cardiac Arrest Prevention 'practice bundle' uses more technique than technology resulting in a 30% decline in these often fatal events.



This represents the first multicenter initiative aimed at reducing cardiac arrest in the intensive care unit; and its success was made possible by the collaborative network formed by 15 PC4 hospitals"

Dr. Jeffrey Alten, CAP project leader & physician at Cincinnati Children's

Heart disease affects nearly 1 in every 100 children, and about 25% of those children need heart surgery. Cardiac arrest occurs when the heart stops functioning, and chest compressions are required to provide adequate blood flow to the body. Many experts in the field considered cardiac arrests when in the hospital largely unavoidable, but the PC4 cardiac arrest prevention bundle challenges that notion.

"Pediatric cardiac patients are at the highest risk of suffering in-hospital cardiac arrest with very high morbidity and mortality following the arrest event," says Tia Raymond, MD, pediatric cardiologist at Medical City Children's Hospital in Dallas, a lead consultant for the American Heart Association Resuscitation Guidelines and an Executive Committee member of PC4. "High quality cardiopulmonary resuscitation during cardiac arrest combined with post-resuscitation care has been the focus, yet preventing a cardiac arrest all together in this high-risk population should be the priority. Our results from this multicenter collaborative among PC4 sites have demonstrated that identification of high-risk cardiac populations is possible, and that with implementation of a simple bedside cardiac arrest prevention bundle can result in significant reduction of cardiac arrest in this population."

In a study published July 5, 2022 in [JAMA Pediatrics](#), PC4 investigators report that implementing a low-technology cardiac arrest prevention strategy (or bedside bundle) reduced cardiac arrests in the cardiac intensive care unit by an average of 30% across the participating centers. "PC4 analyzed cardiac arrest across all collaborative hospitals to find those with the lowest cardiac arrest rates. We then implemented their practices as a patient care bundle across centers with

amazing results. The success of this project is a result of collaboration, which is the fundamental principle of not only PC4, but also of the overarching organization of Cardiac Networks United”, says Dr. Sarah Tabbutt, a pediatric cardiac intensive care physician at UCSF Benioff Children’s Hospital and the Executive Director of PC4.

The study reports the results of a quality improvement initiative that was conducted within a collaborative learning network of cardiac intensive care unit teams across PC4, which aims to improve the quality of care to patients with critical pediatric and congenital cardiovascular disease in North America and abroad. “This study represents the culmination of years of effort by so many hospitals within PC4,” says Dr. Michael Gaies, a pediatric cardiologist at Cincinnati Children’s Hospital, the founder and Executive Director of PC4 during the study, and the study’s senior investigator.

The cardiac arrest prevention bundle was designed to promote situational awareness and communication to recognize and mitigate deterioration in high-risk patients. Each element of the bundle was specifically chosen to be minimal in cost and technology independent. The bundles were comprised of several elements, including a mandatory twice-daily safety huddle.

The project analyzed over 2,500 patients for which the Cardiac Arrest Prevention bundle was applied. In these patients, there was a 30% relative reduction in intensive care unit cardiac arrests, which translated to an average of 11 fewer intensive care unit cardiac arrests per month at participating hospitals.

Take Home Message

Hospital collaboration and simple bedside strategies can reduce the incidence of often fatal cardiac arrests in the intensive care unit. Collaborative registries such as PC4 are pivotal in improving outcomes in newborns, infants, and children with critical heart disease.

Participating Hospitals

Cincinnati Children’s Hospital Medical Center, Children’s National Hospital, Medical City Children’s Hospital, Le Bonheur Children’s Hospital, Children’s Mercy Hospital, Primary Children’s Hospital, Children’s Wisconsin, University of Alabama at Birmingham, Children’s Hospital of Pittsburgh of University of Pittsburgh Medical Center, Phoenix Children’s Hospital, Benioff Children’s Hospital, Seattle Children’s Hospital, University of Nebraska Medical Center Children’s Hospital and Medical Center, Arkansas Children’s Hospital, Nicklaus Children’s Hospital, Children’s Hospital Colorado, Medical University of South Carolina, Rady Children’s Hospital, and the University of Michigan

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