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PCCI study predicts risk of cardiac arrest or death
Hospital patients identified using electronic health records

Dallas—The Parkland Center for Clinical Innovation (PCCI) has developed a novel, real-time electronic predictive model designed to identify patients at high risk for cardiac arrest or death.

One of the first of its kind, the model provides active surveillance of all hospitalized patients in real time, using data already available in an electronic medical record. The automated electronic model was published in the February 2013 issue of the healthcare informatics journal *BMC Medical Informatics & Decision Making*, and will be tested in a randomized control trial at Parkland late this summer.

To predict a patient's risk of cardiac arrest, also known as cardiopulmonary arrest, or death the model utilizes 14 variables including physiologic, laboratory, Modified Early Warning Score (MEWS), high-risk floor assignment and provider order data. It is able to detect with high accuracy the likelihood of a patient to experience severe clinical deterioration an average of 16 hours prior to an event. This is 6 hours sooner than the institutional Rapid Response Team (RRT).

“Clinical deterioration and death are the ultimate adverse events in hospitalized patients,” says Carlos A. Alvarez, PharmD, MSc, BCPS, assistant professor of Pharmacy Practice at Texas Tech University Health Science Center School of Pharmacy and first author on the paper. “The clinical impact providers can make with an additional 6 hours to help a potentially critical patient could mean the difference between life and death.”

“Clinicians are often overburdened with high patient loads and acute care, making active monitoring of slight yet detrimental changes in patient conditions difficult to track. Our model provides another set of eyes in the hospital, assisting clinicians, so they can intervene before a patient needs intensive care.” says George “Holt” Oliver, MD, PhD, vice president of Clinical Informatics at PCCI.

Other investigators include Song Zhang, PhD; Ethan A Halm, MD, MPH; John J Shannon; Carlos E Girod; and Lauren Cooper of the University of Texas Southwestern Medical Center; and Ruben Amarasingham, MD, MBA, principal investigator on the project, and Christopher A Clark of PCCI.

This study was supported in part by a grant from The Commonwealth Fund, a national, private foundation based in New York City that supports independent research on health care issues and makes grants to improve health care practice and policy.

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Predicting Out of Intensive Care Unit Cardiopulmonary Arrest or Death Using Electronic Medical Record Data:

Carlos A Alvarez, PharmD, Christopher A Clark, Song Zhang, PhD, Ethan A Halm, MD, MPH, John J Shannon, Carlos E Girod, Lauren Cooper and Ruben Amarasingham, MD, MBA *BMC Medical Informatics & Decision Making*, February 2013, Volume 13, No. 28; Available online Feb. 27, 2013.

The PCCI is a non-profit research and development corporation in Dallas, TX that specializes in real-time predictive and surveillance analytics for healthcare. Our software interprets EMR data in real-time, transforming them into useful intervention warning tools that advise physicians and hospitals on complex clinical decisions in every field of medicine. Our vision is to help transform the delivery of healthcare by developing cutting edge software and analytic methods to improve the quality and safety of care at the individual and population methods. Visit us at www.pccipieces.org or follow @pccipieces

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