



Promising New Technology Identifies Certain Deteriorating Critical Care Patients Before “Crash”

New peer-reviewed research by Fifth Eye and Michigan Medicine awarded best paper at international conference on health analytics

January 29, 2021, ANN ARBOR, Mich. — New research shows a groundbreaking clinical tool, in development by [Fifth Eye](#) and Michigan Center for Integrative Research in Critical Care ([MCIRCC](#)), can reliably alert clinicians that a patient is at risk of developing hemodynamic instability — one of the most common causes of death for critically injured or ill patients — well before they deteriorate. This allows for earlier intervention before the patient progresses to cardiac arrest, organ injury, or other serious adverse events.

The noninvasive clinical tool, called an Analytic for Hemodynamic Instability (AHI), is the first solution to establish real-time streaming data for early onset hemodynamic instability. The study of this analytic was first published in November 2020 by the *International Journal of Medical Health Sciences* and was recently awarded “Best Paper” at the 2020 International Conference on Health Analytics.

“Hemodynamic instability refers to the body’s cardiovascular system’s inability to provide adequate blood and oxygen delivery to vital organs ” said co-author, Kevin Ward, MD, of MCIRCC. “Hemodynamic instability can occur suddenly and be very difficult to anticipate. When left unnoticed or treated too late it is a known cause for significant morbidity and mortality in critical illness and injury.”

Traditionally, critical care units monitor patients for hemodynamic instability at intervals with clinical markers, like heart rate, blood pressure, capillary refill and mental status. However, these vital signs rely heavily on clinicians’ ability to identify deterioration, can change late or provide delayed information, and can be convoluted by pain, anxiety and other conditions.

“Doctors and nurses need a better way to consistently and reliably monitor patients so they can anticipate deterioration and initiate early interventions to potentially save patient lives,” said author, Ashwin Belle, PhD, who previously worked in MCIRCC as Analytics Architect of MCIRCC, and is now Chief Analytics Officer and Cofounder at Fifth Eye.

For the study, a critical care team analyzed data from 21 patients who required rapid response team activation. The care team categorized cases by the cause of activation — hemodynamic or nonhemodynamic. Researchers then compared the care team categorization to that of the analytic.

They found the analytic can distinguish hemodynamic instability with 100% accuracy — and that it can do so with a median lead time of 9.5 hours before it became obvious that the rapid response team needed to be called. An additional important aspect of the study is that AHI was able to identify patients who were thought to be in need of a rapid response team activation but in actuality did not need one. This points to the potential for AHI to decrease false alarms and to better allocate resources.

“AHI has several life-saving applications in hospital care, so we are thrilled the International Conference on Health Analytics is bringing attention to this work,” said Jen Baird, CEO, Fifth Eye. “We are so grateful for the clinicians and staff at the Michigan Center for Integrative Research in Critical Care for supporting this study, which could truly revolutionize critical care for hospitals.”

The research paper, titled “A Continuous Real-Time Analytic for Predicting Instability in Acute Care Rapid Response Team Activations,” is [available here](#). AHI is currently pending United States FDA review and not available for sale. Contact Fifth Eye at info@fiftheyeye.com to be notified when AHI becomes available.

About Fifth Eye Inc.

Fifth Eye Inc. is an Ann Arbor, Michigan-based start-up that is developing intuitive real-time clinical analytics based on physiologic waveforms to improve outcomes and reduce costs. Born in a hospital and taught by clinicians, Fifth Eye’s licensed technology from the University of Michigan is in the process of gaining FDA clearance for in-hospital, continuous monitoring of patient clinical trajectory. For more information, please visit www.fiftheyeye.com.

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