

Challenge: **Preventing Sepsis Progression and Decreasing Costs of Care**

Sepsis symptoms are the same as many other conditions, making it difficult to identify patients at risk for deterioration in time to make a difference. Sepsis is involved in a third to half of all hospital patient deaths and has the highest hospital treatment expense of any condition. Even for patients who survive, long-term consequences can include functional debilitation, a lower quality of life, and shortened lifespan.

Solution: Use Rothman Index (RI) predictive analytics to aid clinicians in identifying patients at increased risk of sepsis. The RI algorithm automatically derives one simple score from the vast amount of data in the electronic medical record to create a picture of any patient’s condition over time. Because the data feeding the Rothman Index reflects nursing assessments and the real-time status of multiple body systems, it captures subtle changes in patient condition, often hours or days earlier than existing vitals-based algorithms. For clinical surveillance of children, use the Pediatric Rothman Index (pRI) which accommodates age-dependent factors.

Cause: Many hospitals use patient surveillance and warning systems that are not real-time and do not provide a visual dashboard to help clinicians detect sometimes subtle changes before they become life-threatening. Hospitals are challenged with identifying as many sepsis patients as possible while minimizing false positives and alert fatigue.

Considerations: There are two distinct sepsis populations: those patients who have sepsis ‘present on admission’ (POA), and those who develop it in the hospital, such that it is ‘not present on admission’ (NPOA). Patients developing sepsis NPOA are at a higher risk for tissue damage, organ failure, and death than patients admitted with sepsis.

Implementation Requirements: Rothman Index solutions are built in a top-tier cloud hosting provider, delivering rapid performance, a secure data architecture to guard patient information, HIPAA-compliant data centers, and reduced information technology overhead costs. To facilitate effective workflows, clinicians should determine how they want to access the RI; choices include via a web browser, through the electronic medical record (EMR), via a dedicated kiosk display on the unit or at a system-wide command center, and/or a mobile device.

Post Implementation Impact: With the integration of the Rothman Index into clinical workflows, clinicians can identify sepsis earlier and initiate treatment sooner, preventing patients from advancing along the sepsis spectrum, and averting costly procedures and unnecessary stays in intensive care units. Improved outcomes and decreased costs with a clearer picture of their patients’ health.

References: [Diagnostic accuracy and effectiveness of automated electronic sepsis alert systems: A systematic review - PubMed \(nih.gov\)](#)
[Sepsis as 2 problems: Identifying sepsis at admission and predicting onset in the hospital using an electronic medical record-based acuity score - PubMed \(nih.gov\)](#)
[Mortality Reduction Associated with Surveillance Using an EMR-Based Acuity Score at an Academic Medical Center | BMJ Quality & Safety](#)
[National Inpatient Hospital Costs: The Most Expensive Conditions by Payer, 2013 - Healthcare Cost and Utilization Project \(HCUP\) Statistical Briefs - NCBI Bookshelf \(nih.gov\)](#)
[Surviving Sepsis Campaign Guidelines 2021 | SCCM](#)