St. Luke's University Health Network

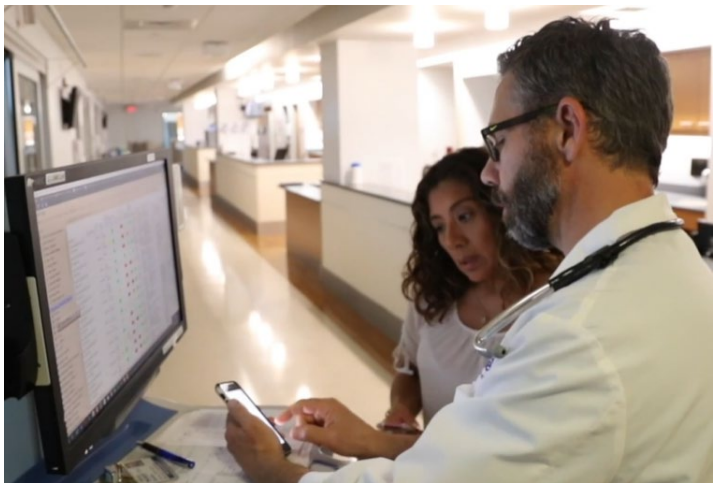
2025 HAP Achievement Award
In Safe Hands Award—Large Division

Realtime Vital Signs and Epic's Deterioration Index Reduces In-Hospital Cardiac Arrests

The Goal

Delayed recognition of patient deterioration contributes to preventable harm, including in-hospital cardiac arrests and failure-to-rescue events. Manual acuity assessments often miss subtle warning signs—especially with less experienced staff—resulting in delayed care and higher mortality. These concerns reinforced the need for more accurate, real-time methods to identify at-risk patients earlier.

The Intervention



From 2019 to 2021, Epic's Deterioration Index (DI) was implemented across medical-surgical units to enable real-time detection of patient decline using 58 continuously monitored clinical variables. Alerts triggered at escalating thresholds were routed to nurses, nursing supervisors, and rapid response teams through a combination of Best Practice Advisories and secure messaging. Implementation involved customizing EMR workflows, integrating real-time vital sign data, developing tiered response protocols, and providing both virtual and bedside support. Guided by cross-disciplinary collaboration, clinical informatics teams addressed challenges such as inaccurate data inputs, alert fatigue, and routing errors by refining model logic and delivering targeted, just-in-time education across all campuses.

Lessons from early adopters informed broader rollout, supporting scalability and ongoing system improvement.

Results

The Deterioration Index model improved operations, quality, and finances across FY22–FY24. Unanticipated transfers dropped by 11 percent, cardiac arrests declined, and survival to discharge rose across all care settings. The model saved over $2.3 million annually and generated $557,000 in additional ICU revenue by reducing transfers and freeing up capacity. These gains reinforced the model's value in advancing system-wide performance and patient outcomes.