

# AUTOMATED HIGH-RISK PATIENT IDENTIFICATION SAVES LIVES

Case Study

Clinical Decision Support

Columbus Regional Hospital

Columbus Regional Hospital has been relentlessly driving toward ever-improving quality for more than a decade.

Two-time recipient of the Most Wired Innovator Award, this 225-bed, not-for-profit hospital serving the southeastern Indiana region has used technology to streamline and improve processes. In 2003, it adopted **Clinical Xpert™ Navigator** from the Healthcare business of Thomson Reuters to equip physicians with mobile access to clinical information. By 2006, clinical nurse specialists, pharmacists, and the rapid-response team were armed with the same technology. Also in 2006, the hospital implemented **Clinical Xpert™ CareFocus**, a Web- and mobile-based patient profiling system, to automate processes, improve clinical outcomes, and save lives.

The goal was to replace a manual process relying on chart review and individual clinician's experience with an automated, real-time process to improve identification of patients with a potential diagnosis of sepsis or congestive heart failure coupled with an early warning tool to identify patients at risk for deterioration.

## COURSE OF ACTION

The first focus of the hospital's quality initiative was timely identification of congestive heart failure patients.

Because congestive heart failure frequently occurs with other diagnoses and spans across all hospital units, it is often difficult to identify this patient population. To tackle this challenge, hospital clinical leadership created evidence-



based clinical profiles based on published studies using data triggers that include combinations of demographics, lab values, medications, vitals, transcribed reports, and diagnoses. Working with Thomson Reuters, the hospital team fine-tuned CareFocus queries so that any patient fitting the congestive heart failure profile—no matter where they were in the hospital—was automatically placed on an at-risk list. As a result, the plan of care was addressed early, resulting in improved clinical outcomes and core measures compliance.

Based on the effectiveness of this automated process, the hospital's clinical leaders applied the same methodology to sepsis—nationally, a major cause of death, and yet eminently responsive to early intervention. The objective was to establish a process to identify and treat sepsis patients early in the course of the disease to prevent further deterioration.

Clinical leaders, using established profiles for sepsis and severe sepsis, developed a profile and identified triggers that would allow nurses and case managers in the medical surgical units to recognize sepsis patients early in the disease process so that goal-directed therapy was started right away.



**THOMSON REUTERS**  
INSIGHT AWARD 2008

**COLUMBUS REGIONAL**  
**HOSPITAL**

**Location:**  
Columbus, IN

**Size:**  
225 beds

**Scope and services:**  
Columbus Regional Hospital is a leading not-for-profit provider of quality healthcare services serving the southeastern Indiana region. The hospital's commitment to serving the community and being at the forefront of quality patient care is recognized by several national accreditation organizations. It is the 2007 recipient of the American Hospital Association—McKesson Quest for Quality Prize,™ the highest honor awarded by the hospital industry, and ranks as one of the Best Places to Work in Indiana. It is also the first hospital in Indiana to receive Nursing Magnet designation.

**Solutions:**  
Clinical Xpert™ Navigator  
Clinical Xpert™ CareFocus



Additional insight gained through the deployment of the sepsis profiles led to the creation of the Early Warning System Trigger Tool (EWS Profile). The goal was to identify patients with a variation in vital sign trending combined with a deviation from lab value parameters that would indicate the early stages of a potential failure-to-rescue event. The automated process resulted in improved rapid response team utilization, interventions, and lives saved.

## RESULTS

Columbus Regional Hospital has made significant strides since the implementation of CareFocus and development of an automated process to identify the onset of congestive heart failure and sepsis. Since the initiation of the program:

- The hospital has seen a 15.6% decrease in mortality per 1,000 patients discharged.
- There has been a 115% increase in calls to the rapid response team for critical care support and assessments; and a 38% reduction in ICU mortality for patients transferred from medical-surgical units with a diagnosis of sepsis.
- There has been a 35% increase in the number of congestive heart failure patients receiving CMS bundle measures.
- Inpatient cardiac and respiratory arrests have decreased by 13% and cardiac and respiratory arrests outside critical care by 22%.

"The move from a manual to an automated process for high-risk patient identification has had a strong, positive effect on the delivery of clinical care," said Diana Boyer, vice president and chief information officer of Columbus Regional Hospital. "The combination of clinical research, application and query design, and process change in concert with expert clinical reasoning greatly enhanced our ability to impact patient care and optimize patient outcomes."

"The Columbus Regional Hospital Trigger Tools program takes academic research and puts it into clinical practice," said Stephen Champion, M.D., medical director of information services. "By doing so, the hospital is able to make clinicians more efficient and effective at their jobs, resulting in significant improvements in clinical outcomes. The program, along with expert clinical reasoning, saves lives."

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### Diana Boyer

Vice President and Chief Information Officer  
Columbus Regional Hospital

In 2008, Columbus Regional Hospital received the Health Data Management Nursing Information Technology Innovation Award for the use of CareFocus in improving clinical outcomes. The same year, Columbus Regional Hospital was acknowledged for its accomplishments in the pursuit of excellence in performance improvement with a Thomson Reuters Insight Award. The Insight Award was established in 2005 to honor and recognize customers who have used Thomson Reuters Solutions and tools to achieve outstanding success at their organizations.

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