Automated Harm Trigger System Enables Real-Time Identification of Patients at Risk
New Study in April 2017 Issue of The Joint Commission Journal on Quality and Patient Safety

(OAKBROOK TERRACE, Illinois, March 16, 2017) – An Office of Inspector General report in 2010 recommended internal hospital reporting of all harms—whether considered a complication, a preventable harm, or a harm caused by system failures or errors (all-cause harm). A study in the April 2017 issue of The Joint Commission Journal on Quality and Patient Safety details how the Adventist Health System Patient Safety Organization, Altamonte Springs, Florida, developed an automated all-cause harm trigger system to enable the identification of current patients who may have experienced harm or may be at risk for harm.

The study, “Developing and Evaluating an Automated All-Cause Harm Trigger System,” by Christine Sammer, DrPH, RN, director, Corporate Patient Safety, Office of Clinical Effectiveness, Adventist Health System, and co-authors, reports a pilot test at two Adventist Health System hospitals of a clinical decision support system with 41 algorithms. Nurse reviewers analyzed the electronic health records of current patients with positive triggers to determine if harm had occurred—a process averaging approximately five minutes per trigger. If harm was identified, it was classified as hospital-acquired or outside-acquired and was grouped into one of five harm categories and assigned a severity level. Nurse reviewers also had the ability to identify patients with potential harm and alert an Intervention Coordinator to evaluate the patient with the goal of limiting or preventing harm.

After the system was implemented, combined data from the two hospitals during an 11-month period indicated:

- A total of 2,696 harms were acquired, of which almost one-third were acquired outside the hospital.
- Hypoglycemia or low blood glucose was the most frequently identified harm
• A nurse reviewer was able to analyze 20 records in 1.5 hours using the automated review process compared to 6.5 hours using the previous manual review process.

The automated harm trigger system, which can serve as a model for other health care organizations, also provided the Adventist Health System Patient Safety Organization with the ability to identify patterns of harm as they evolved, providing hospital quality departments with the opportunity to respond proactively before the patient left the hospital by providing awareness, education and intervention training as needed.

In an accompanying editorial, Eric S. Kirkendall, MD, MBI, associate chief medical information officer, Information Services, Cincinnati Children’s Hospital Medical Center, and associate professor, Departments of Pediatrics and Biomedical Informatics, University of Cincinnati, highlights how the automated harm trigger system described by Sammer et al. enabled the detection of far more events than the manual system, including events before the patient’s admission to the hospital.

“These findings are encouraging for many reasons. The approach taken by Sammer et al. and others who employ similar electronic systems can (1) survey entire patient populations, (2) realize gains of efficiency through automation, (3) quickly tweak trigger/algorithm logic to optimize performance characteristics and (4) serve as a platform for standardized and reliable reporting,” notes Kirkendall.

Also featured in the April 2017 issue:
• “From Board to Bedside: How the Application of Financial Structures to Safety and Quality Can Drive Accountability in a Large Health Care System”
• “Improving Glycemic Control Safely in Non-Critical Care Patients: A Collaborative Systems Approach in Nine Hospitals”
• “A Blueprint for Improving Systemwide Inpatient Glucose Management”
• “Using a Systematic Framework of Interventions to Improve Early Discharges”
• “A Systematic Review of Team Training in Health Care: Ten Questions”

In recognition of Patient Safety Awareness Week, March 12-18, The Joint Commission Journal on Quality and Patient Safety is providing open access to all issues, including the April 2017 issue, through March 31.

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Note for editors
The article is “Developing and Evaluating an Automated All-Cause Harm Trigger System,” by Christine Sammer, DrPH, RN; Susanne Miller, RN, MS; Cason Jones, MLS, MHA; Antoinette Nelson, RN, BSN, MSHSA; Paul Garrett, MD; David Classen, MD, MS; and David Stockwell, MD. The editorial is “Casting a Wider Safety Net: The Promise of Electronic Safety Event Detection.”

The Joint Commission Journal on Quality and Patient Safety

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