DEVELOPING AND TESTING ADVERSE EVENT DETECTION TOOLS TO IMPROVE PATIENT SAFETY IN SURGERY

HILLARY JANE MULL

Boston University School of Public Health, 2011

Major Professor: James F. Burgess, Jr., Ph.D., Professor of Health Policy and Management

ABSTRACT

The Veterans Health Affairs (VA) Surgical Quality Improvement Program (VASQIP) is a valid and reliable method of detecting surgical adverse events (AEs) based on nurse chart-review. Despite the program's success, the current VASQIP sampling protocol excludes 75% of all VA surgeries, including most ambulatory surgeries, and it does not take advantage of administrative, data-based screening tools. We undertook three studies to develop and test tools that may enhance VASQIP AE-detection and improve patient safety in surgery.

We first tested triggers to identify ambulatory surgeries for VASQIP review. A trigger is an algorithm that is derived from clinical logic to flag surgeries likely to have an AE. We applied a set of four triggers to fiscal year (FY) 2008 Boston VA Healthcare System ambulatory surgeries and used nurse chart review to calculate trigger positive predictive value (PPV). PPVs ranged from 12-58%. Of the 198 trigger-flagged ambulatory surgeries, 24% had an AE, as compared to a 3% AE detection rate using VASQIP's sampling methodology.

In the second study, we compared surgical AEs detected by VASQIP and the Agency for Healthcare Research and Quality (AHRQ) Patient Safety Indicators (PSIs). The PSIs flag cases with potentially preventable AEs using administrative data; five surgical PSIs match seven VASQIP AEs. We used the VASQIP data to measure PSI sensitivity (20-68%), specificity (99.1-99.8%), and PPV (31-72%). Nurses reviewed cases to ascertain reasons for disagreement and found that 1) AE definitions varied between the two methods, and 2) both PSIs and VASQIP misidentified cases with an AE.

Our final study assessed the performance of two chart review data- collection processes. We reviewed cases with a potential surgical AE using both an electronic and a paper abstraction tool and compared abstraction time and the number and type of errors generated. The electronic abstraction process was more efficient and produced more accurate data.

These three studies together may provide useful insights into how the VASQIP methodology can be enhanced to improve surgical AE detection. Both triggers and PSIs can improve the selection of cases for VASQIP review, and use of an electronic abstraction tool may increase efficiency and data quality.