

**Project Title:** Toward an Optimal Patient Safety Information System  
**Principal Investigator:** Koss, Richard, M.A.  
**Organization:** The Joint Commission  
**Mechanism:** RFA: HS04-012: Demonstrating the Value of Health Information Technology (THQIT)  
**Grant Number:** R01 HS 015164  
**Project Period:** 09/04 – 03/08, Including No-Cost Extension  
**AHRQ Funding Amount:** \$1,498,434  
**Summary Status as of:** March 2008, Conclusion of Grant

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**Strategic Goal:** Develop and disseminate health IT evidence and evidence-based tools to improve the quality and safety of medication management via the integration and utilization of medication management systems and technologies.

**Business Goal:** Knowledge Creation

**Summary:** This study was designed to understand the “landscape” of hospital incident reporting systems and to examine the use of health information technology to improve reporting, data analysis, and learning from errors in health care. To date, no systematic estimates exist of the characteristics of reporting systems operated by U.S. hospitals or of how these systems are being used. More research is needed to substantiate the value of improved patient safety reporting at both the organizational and individual practitioner levels. Surveys were administered to U.S. hospitals to determine the current state of incident reporting systems and their perceived value. During the first phase of the study, the Adverse Event Reporting Survey (AERS) was administered to a representative sample of 2,050 U.S. hospitals to gather information about hospital incident reporting systems in use. For the second phase of the study, a stratified subsample of 489 hospitals was selected from AERS respondents to complete a questionnaire about their perceptions of their incident reporting system. The Patient Safety Event Taxonomy (PSET) was used to link disparate patient safety data from a sample of hospitals to assess the value of using a common framework to analyze and produce standardized reports of patient safety data. During the last phase of the study, a nonrandom subsample of 20 hospitals was selected to provide the Joint Commission with 30 de-identified incident reports per month for 12 months (April 2007–March 2008). The PSET and hospital incident report data were used to develop a hospital incident reporting ontology (HIRO) to enable adverse event data analysis.

### Specific Aims

- Assess the level of adoption of patient safety reporting systems in U.S. hospitals. **(Achieved)**
- Assess the perceived value of patient safety reporting systems. **(Achieved)**
- Delineate the advantages and disadvantages of information technology applications in adverse event reporting and prevention. **(Achieved)**
- Determine the perceived utility of using a standardized PSET for classifying and organizing adverse event data from many disparate hospital incident reporting systems. **(Achieved)**
- Develop and test a patient safety ontology for adverse events that would facilitate data mining, knowledge sharing and learning from adverse events. **(Achieved)**

**2008 Activities:** Data collection for the final phase of the study concluded in March 2008. Altogether, nearly 7,000 adverse events were classified with the PSET and used for ontology development, though it should be noted that these adverse events came from a small purposive sample and not a representative

sample of hospitals. These reports were classified using the PSET, and data were analyzed concurrent to data collection efforts.

**Preliminary Impact and Findings:** A large percentage of hospitals in this study reported having centralized adverse event reporting systems, but the nature of these systems varied greatly across hospitals. The majority of hospitals use basic office software (e.g., Microsoft® Word or Excel) with a combination of paper/electronic systems. For-profit and larger hospitals are more likely to have sophisticated electronic systems. The information collected by reporting systems differs significantly across large, medium, and small hospitals and across for-profit, nonprofit/nongovernment, and government hospitals. The results show that across most hospitals, the majority of adverse events are reported by nursing staff and the fewest adverse events are reported by physicians. Findings of low participation in adverse event reporting by physicians have been found in numerous other studies in the United States and in other countries. The ways in which hospitals learn about adverse events can impact the way in which events are addressed. There are significant differences in whether action was taken as a result of learning about adverse events through occurrence reports, rounds, telephone calls, or by attending meetings. While nearly all hospitals indicate that they produce summary reports of adverse events, the use of these reports varies widely among hospitals.

Respondents to the second phase of the study reported that for most staff groups, training on their incident reporting system is mandatory. Two open-ended questions in the Value Questionnaire asked respondents what additional information or changes would help improve patient safety in their hospitals. Five overarching themes emerged from respondent comments to these questions: (1) improvements/changes to adverse event reporting processes and systems, (2) improved patient safety culture, (3) external data sharing, (4) access to robust internal data/information, and (5) access to additional resources. Suggested improvements or changes to adverse event reporting processes and systems focused on simplifying the reporting process, instituting anonymous reporting, and shifting to electronic reporting systems in an effort to enhance data integration and linkage to other platforms, including patient records, for more comprehensive analyses.

In the final phase, risk managers were asked how many occurrence reports were entered into their occurrence reporting system for 2006. The number of occurrence reports ranged widely from 344 to 7,263. Overall, participants felt that the HIRO provided an efficient method of managing information over time and that there were many benefits to this application. However, participants felt that the major drawback of the HIRO was that it contained too much information for the end-user. The ability to conduct large-scale data mining of adverse events has been identified as a primary goal within patient safety circles, both domestically and internationally. The development of the HIRO may be the first step toward addressing this goal.

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## Selected Outputs

Adverse Event Reporting Survey – assessed use of incident reporting systems.

Value Questionnaire – assessed perceptions of value of incident reporting.

Value Questionnaire II – gathered feedback on incorporation of PSET classification into incident reporting.

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**Grantee's Most Recent Self-Reported Quarterly Status:** This project is complete. Development of PSET framework has not resulted in a finished product, but it may provide some direction for future patient safety activities. All principal aims of the project are completed. Although the HIRO classification system was not widely adopted, adverse event data is not uniformly collected, making data comparison among hospitals and at a national level virtually impossible. Without a standardized set of terms and

common formats, large-scale comparison of data, data mining, and identification of patient safety issues on a local, regional, and national level is impossible.

**Milestones:** Grantee did not provide quarterly milestone self-assessment in 2008.

**Budget:** Grantee did not provide quarterly budget self-assessment in 2008.