

Global Trigger Tool: Implementation Basics

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Abstract: The use of “triggers,” or clues, to identify adverse events (AEs) during manual chart review has been found to be a useful method for measuring the overall level of harm in a health care organization. The Institute of Healthcare Improvement Global Trigger Tool for Measuring Adverse Events provides a practical sampling methodology for identifying AEs (harm) and measuring the rate of AEs over time. This paper has been written to assist frontline community hospitals that are contemplating beginning a launch of the Global Trigger Tool methodology.

The experience of a hospital system with 2000-plus beds on 8 campuses (50 to 1000 beds per hospital) with 105,000 annual patient admissions, 327,000 Emergency Department visits, and 1,000,000 patient contacts is described. Florida Hospital is part of the 36-hospital Adventist Health System. This article describes the journey of Florida Hospital from initial leadership agreement, to team training, and finally to lessons learned in setting up an ongoing system of harm measurement using the Global Trigger Tool.

Key Words: adverse events, Institute of Healthcare Improvement, global trigger tool for measuring adverse events

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The Institute for Healthcare Improvement’s (IHI) Global Trigger Tool for Measuring Adverse Events provides a useful method for identifying adverse events (AEs, harm) and measuring the rate of AEs over time. The “trigger tool” methodology uses a retrospective review of randomly-selected patient records using “triggers” (or clues) to detect AEs.^{1,2} The IHI trigger tool methodology was chosen to help identify areas for improvement and the enterprise level of harm, to create a capability of tracking and trending AEs beyond traditional incident reports, and to measure the effectiveness of the hospital safety program.

The Global Trigger Tool evolved out of multiple narrow trigger tools (adverse drug events [ADEs], intensive care unit [ICU], perinatal, etc.) developed by the IHI from 1998 forward, and was based on an automated approach used by Intermountain Healthcare (Salt Lake City, UT) to improve the detection and characterization of ADEs in hospital patients.³ It was found that screening for 14 triggers, using the hospital

information system on a real-time basis, identified most ADEs in the hospital, and also allowed mitigation of some of those events.⁴

From a practical point of view, the use of trigger tools is cited in the *National Quality Forum Safe Practices for Better Healthcare 2006 Update*⁵ as a method that can be used to fulfill the specifications of what now have become national standards and are used in current pay-for-performance programs. Safe Practice 1, Practice Element 4, states that “Healthcare organizations must systematically identify and mitigate patient safety risks and hazards with an integrated approach in order to continuously drive down preventable patient harm.” Additional specifications to this safe practice specifically mention “trigger tools.” These specifications state, “Such tools should be used retrospectively through chart review and near-real-time reviews...” The specifications further suggest that the trigger tools can be manually or technology enabled.⁵ The global trigger tool (GTT) AEs metrics address areas targeted by 8 NQF Safe Practices as defined in Table 1.⁵

A STEP BY STEP IMPLEMENTATION APPROACH

Step 1: Getting Started

- (1) Appoint a project manager responsible for coordination of resources (reviewers, data collectors, and chart sampling methodology).
- (2) Engage an executive sponsor to make the resources available and be responsible for the data spread.
- (3) Outline the process for your hospital with clear indications for timelines and responsible individuals.

Step 2: Select and Develop a Team

A team is typically composed of 2 primary reviewers and a physician. The project manager should have skills and experience to coordinate, and ensure that milestones and timeline are met. The primary reviewers should have knowledge of AEs (pharmacists, respiratory therapists, or nurses); however, seasoned nurses have been most commonly used. Nurse reviewers should be registered nurses with knowledge about disease and how the charts are designed and used in the hospital. Physicians should have credibility and broad clinical experience to be of best value to the organization in the implementation of the Global Trigger Tool.

Step 3: Train the Team

- (1) Preliminary reading: Prerequisite is that the team read and understand the IHI white paper, “IHI Global Trigger Tool for Measuring Adverse Events.”¹
- (2) Initial Training Charts: Using the concepts in the IHI white paper, the team must work through the 5 IHI

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TABLE 1. NQF Safe Practices and Adverse Event Areas Targeted by Global Trigger Tool

(1) Create and sustain a health care culture of safety
Practice Element 1: Leadership structures and systems must be established to ensure organization wide awareness of patient safety performance gaps, direct accountability of leaders for those gaps, adequate investment in performance improvement abilities, and that actions are taken to assure safe care of every patient served.
Practice Element 4: Health care organizations must systematically identify and mitigate patient safety risks and hazards with an integrated approach to continuously drive down preventable patient harm.
(15) Pharmacists should actively participate in medication management systems, including, at a minimum, working with other health professionals to select and maintain a formulary of medications chosen for safety and effectiveness, being available for consultation with prescribers on medication ordering, interpretation and review of medication orders, preparation of medications, assuring safe storage and availability of medications, dispensing of medications, and administration and monitoring of medications.
(17) Identify all "high alert" drugs and establish policies and processes to minimize the risks associated with the use of these drugs. At a minimum, such drugs should include intravenous adrenergic agonists and antagonists, chemotherapy agents, anticoagulants and antithrombotics, concentrated parenteral electrolytes, general anesthetics, neuromuscular blockers, insulin and oral hypoglycemics, and opiates.
(21) Prevent surgical site infections by implementing 4 components of care: <ul style="list-style-type: none"> • Appropriate use of antibiotics; • Appropriate hair removal; • Maintenance of postoperative glucose control for patients undergoing major cardiac surgery; and • Establishment of postoperative normothermia for patients undergoing colorectal surgery.
(26) Evaluate each patient undergoing elective surgery for risk of an acute ischemic perioperative cardiac event and consider prophylactic treatment with β -blockers for patients who either: <ol style="list-style-type: none"> (1) Have required β-blockers to control symptoms of angina or patients with symptomatic arrhythmias or hypertension, or (2) Are at high cardiac risk owing to the finding of ischemia on preoperative testing and are undergoing vascular surgery.
(28) Evaluate each patient upon admission, and regularly thereafter, for the risk of developing venous thromboembolism (VTE)/deep vein thrombosis (DVT). Utilize clinically appropriate, evidence-based methods of thromboprophylaxis.
(29) Every patient on long-term oral anticoagulants should be monitored by a qualified health professional using a careful strategy to ensure an appropriate intensity of supervision.
(30) Utilize validated protocols to evaluate patients who are at risk for contrast media-induced renal failure, and use a clinically appropriate method for reducing risk of renal injury based on the patient's kidney function evaluation.

Training Charts provided in the White paper, without looking at the answers.

- (3) Facilitated Training: A facilitated discussion and review of the training charts and key learning points is done with an experienced GTT chart reviewer and/or physician reviewer.
- (4) If possible, arrange interactive discussions with hospital teams that have already implemented a GTT program.

Step 4: Practice Review of 10 Hospital-Specific Medical Records

- (1) A random sampling technique for the hospital to select the patient charts to be reviewed is devised.
- (2) Ten inpatient medical records, based on IHI methodology, are selected.¹

- (3) The team reviews 10 training charts, specifies triggers, determines that harm exists and assigns severity level of harm.⁶
- (4) Interactive discussions, after the records are reviewed independently, ideally should occur with someone familiar with the Global Trigger Tool to optimize the understanding and improve the skills of the team. Some of the first records should be catalogued and saved for training of new nurses and physicians as needed.

Step 5: Design and Development of GTT Processes

- (1) Devise a simple data collection system. The basics must include the types of events detected and event run charts (AEs/1000 days, events/100 admissions, and percent admissions with events).
- (2) Florida Hospital selected a randomization process consistent with The Joint Commission's systematic random sampling methodology.⁷
- (3) Articulate clear processes for training of new reviewers and terms of service.
- (4) Define the time interval for reviews (2 times per month).
- (5) Devise a feedback system to allow the findings of the Global Trigger tool to be used for quality improvement efforts and Board reports.

Step 6: Initial Briefing to Leadership

The objective of the initial presentation to senior leaders is to create an understanding of the implementation, methodology, and value of the GTT. Ultimately, the purpose is to engage these leaders in performance improvement and enlist them in targeting harm. The following are specific points that should be communicated to senior leaders:

- (1) Define the key value of the tool. It measures harm over time, which provides an indicator of the effectiveness of safety work within the organization. Statistical process control charts can be used to identify variation and if due to normal causes or safety interventions.
- (2) Explain how the GTT results are an indication of "systems performance," not individual provider performance.
- (3) Illustrate how the GTT can complement incident reporting, sentinel events, claims, complaints, and concurrent chart review.
- (4) Explain how the random sampling technique will eliminate selection bias, and allow tracking and trending against performance improvement strategies over time.
- (5) Show how prioritization of resource allocation to optimize impact of patient safety initiatives might occur.
- (6) Facilitate the discussion that the GTT cannot be used as a benchmarking tool.
- (7) Explain why the organization should not submit the information to peer review because the AEs often reflect systems, rather than individual provider failure.
- (8) Explain the difference between commission and omission and how the GTT will focus on commission.
- (9) Tie the relevance of the GTT to compliance with the NQF Safe Practices and specifically to Safe Practice 1, "Creating and Sustaining a Culture of Patient Safety," for which there are explicit activities required by governance and administrative leaders.⁵

Step 7: Implement Formal GTT Program

The ideal elements of a sustainable GTT Program are the following:

- Minimum of a 1-year commitment by the chart reviewers.
- Physician authenticator to assure consistency and to arbitrate differences among chart reviewers.
- Training program that includes a plan for new reviewers.
- Program leaders.
- Executive sponsor.

- Linking results to performance improvement programs.
- Quarterly reporting to senior leaders and boards.
- Allocation and prioritization of resources to implement and sustain Global Trigger Tool as an overall measure of the organizational safety systems' effectiveness.

Step 8: Set up the Organizational Information Flow

Once the system has been set up, there has to be information flow from the patient safety officer, through board

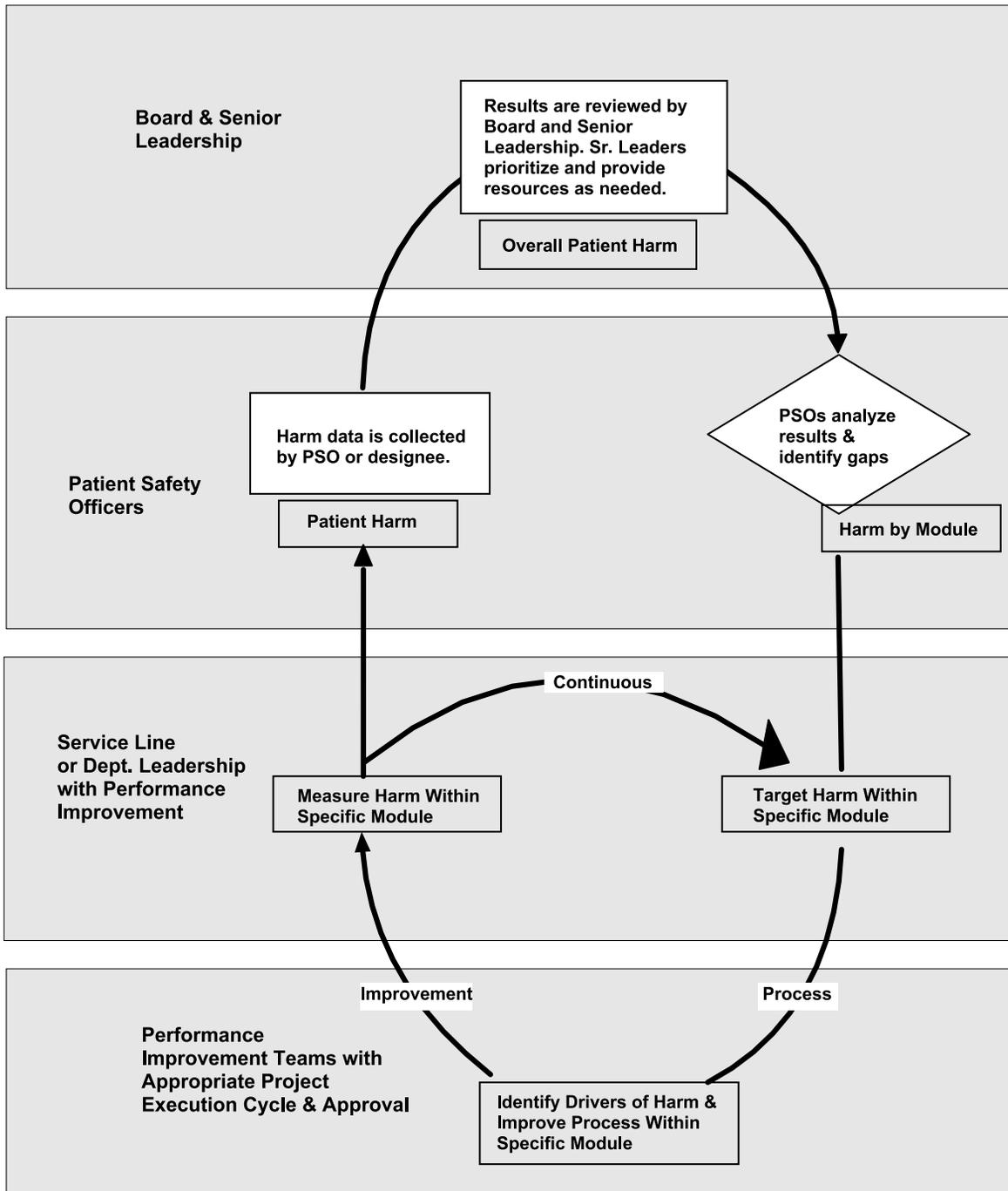


FIGURE 1. Global trigger tool information flow.

TABLE 2. GTT Resource Description Available for Download at www.safetyleaders.org

Database
Report template
Summary form
Standard operating procedures
Educational agenda
Project charter
Project roadmap
Work timeline
Example elevator speech
Organizational information flow
Process flow (high-level and detailed) key quality indicators
Hospital-specific frequently asked questions

and leadership, to performance improvement teams. This information flow demands that awareness of problems become known through use of the GTT and that leadership be involved to make a team accountable to take action, fix the problem, and have overall continuous quality improvement. Figure 1 depicts a proposed information flow.

An organization should decide the level of transparency cascading from the board to the frontline staff. For example, does the frontline staff need to know the overall level of organizational harm or the specific targeted interventions to reduce harm (eg, pharmacy management of anticoagulants to reduce bleeding and transfusions)?

The “4 A Accelerator” Model (awareness, ability, accountability, and action),⁸ incorporated in the Leapfrog Group survey,⁹ is an example of the type of systematic approach this organization took to organizing a sustaining strategy. In implementing a project such as the GTT, organizations must create awareness of the performance gaps identified, tie personal accountability of leaders to closing such gaps, invest finances and compensated staff time in generating ability to make the changes necessary to address such gaps, and finally execute the line-of-sight actions that must be taken to close them and sustain the gains.

RESOURCES

Tools and resources mentioned in this article that are used by Florida Hospital are available for download at www.safetyleaders.org. Table 2 lists the resources that are available.

RESULTS

The results of Global Trigger Tool implementation at this large hospital complex provided many lessons learned, cost information, and reproducibility data among team members. In addition, Florida Hospital has been able to compare its initial GTT data to those reported by IHI.

Lessons Learned:

- (1) Hospital-specific “frequently asked questions” establish internal consistency in harm identification.
- (2) Success requires senior leadership education, awareness, and consent before implementation.

- (3) Chart reviewers’ recommended qualifications are a minimum of 5 years experience, preferably in the emergency department or critical care, and previous chart review experience.
- (4) The IHI white paper¹ is an excellent guide to increase awareness, provide training, and implement the process.
- (5) Florida Hospital chose to avoid patient and physician identifiers because of 3 core reasons: (a) Quality work product is not protected in the State of Florida, (b) HIPAA privacy concerns,¹⁰ and (c). Avoidance of individual blame and shame, and keeping focus on system interventions.
- (6) Chart reviewers require a minimum of 3 to 4 months of experience reviewing charts to start gaining consistency.
- (7) Data may be aggregated and reported without sophisticated databases by using spreadsheet tools; however, tracking and trending are simplified using a database over an extended period.
- (8) Optional, although helpful, is a 20- to 40-minute overview presentation at the introductory training meeting by a Trigger Tool expert. This is useful to set context—a national perspective—and to underscore selected key learning points (eg, preventable vs non-preventable events, outside events, acts of commission vs omission).
- (9) Creating an elevator speech is also helpful. Often physician and nurse reviewers are asked to explain the purpose of the Global Trigger Tool, so providing them with a 15-second to 2-minute script is helpful.
- (10) It is important to develop a work timeline to coordinate and create accountability for chart randomization, chart selection, chart reviews, physician authentication, report generation, analysis and availability of reports to quality or safety committees.

IMPLEMENTATION DATA

Cost

The estimated cost for Florida Hospital Campus implementation was \$611/month/hospital. The 1-time education cost was \$710. These costs include physician, nurses, labor costs, clinical decision support, and health information management if paper charts are required.

Reproducibility of Data

Reproducibility between reviewers was tested after 4 months. Reproducibility between nurses was 91.8%; (95% confidence interval, 91.8–100, Minitab ver 15), and between the 2 nurses compared with the physician was 91.7% (95% confidence interval, 73.0–98.97, Minitab ver 15).

Adverse Event Rates

The harm events at Florida Hospital System were consistent with and within the range of the national rates reported by IHI.¹

CONCLUSIONS

Hospitals are beginning to sort the myriad of standards, incentives, and opportunities as they work toward

patient-centric models of care that increase value to patients rather than simply satisfying competing interests. Patient value is defined as patient outcomes per unit of cost at the medical condition level, over the cycle of care and time.¹¹ Pace-setter hospitals have embraced whole system measurement¹² as drivers of value that lead to safe, efficient, effective, patient-centered, accessible, and equitable care.¹³ Health care providers, payers, and policy-makers must understand these dimensions from the patient level to the national level and their implications on providing value to patients.

The Global Trigger Tool provides the whole system outcome measurement by applying a clinical perspective to the system's outcome; harm as an outcome reflects the overall effectiveness of the hospital's safety program. Hospitals of all sizes can use a small random sampling of patient medical records to understand AEs that remain elusive to even the best incident reporting systems^{4,14} or individual chart audits.¹⁵⁻¹⁸ Even small hospitals can reap the benefits of such whole-system safety measurement without costly technology and clinical decision support through manual chart review.

Although the Global Trigger Tool accuracy, reliability, and reproducibility as an inter-hospital measurement system is sure to be improved through further research, the early implementation of an outcome harm tracking tool is an essential first step. As electronic health records and clinical data warehouses proliferate, innovations such as electronic triggers and automated clinical decision support may supplant the manual identification of harm through chart audit, incident reports, sentinel event tracking, and trigger tools. Ultimately, automation should reduce reliance on human judgment and permit earlier identification and mitigation against potential harm.

The Global Trigger Tool is a valid, low-cost, and easily adopted measurement system for frontline hospitals that is available to help improve patient safety. This tracking system provides ample evidence that demands action, which can ultimately save lives, save money, and deliver value to the communities our hospitals serve.

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