

**HIT Policy Committee
Quality Measures Workgroup**

PATIENT SAFETY TIGER TEAM

October 28, 2010

The Quality Measure Workgroup is one of seven workgroups within the HIT Policy Committee that will provide initial recommendations on quality measures prioritization and the quality measure convergence process pertaining to measure gaps and opportunities for Meaningful Use Stage 2.

The workgroup was divided into six tiger teams, each focused on a different measure domain, to ensure adequate representation for critical measures. The tiger teams were charged with identifying a set of sub-domains, prioritizing these sub-domains, and identifying key measure concepts within each sub-domain.

The Patient Safety Tiger Team members include Neil Calman, Peter Basch, Tripp Bradd, Russ Branzell, Peter Briss, Marc Overhage, and Jacob Reider.

The Patient Safety Tiger Team’s deliberations highlighted a number of sub-domains and key measure concepts that should be addressed to further integrate quality measures and health information technology in order to improve patient safety. The group first focused on identifying sub-domains, which include Medication Safety, Hospital Associated Events, Patient Identification, and Electronic Health Record (EHR) Safety. Within the context of each sub-domain, the group explored a number of measure concepts, including—

<ul style="list-style-type: none">• Documentation and reporting adverse drug events.• Bedside medication verification.• Use of clinical decision support (CDS) for high-risk medications and medication orders.• Correct medication reconciliation for Eligible Providers as well as hospitals.• Reporting of hospital acquired infections (HAI), venous thromboembolic events (VTE), and falls.• Use of CDS to reduce HAIs, falls, and provide prophylaxis for VTE patients.• Measurement of provider compliance with reducing HAIs, falls, and VTEs after an alert has been issued.• Monitoring of pressure ulcers.	<ul style="list-style-type: none">• Conduct of bedside medication verification.• Prevention of patient identification errors.• Review of the number of reports missed in an EHR.• Reporting of incorrect or inappropriate clinical suggestion from an EHR.• Reporting delay of care caused by errors related to EHR use.• Warfarin monitoring.• Reporting of the percentage of high-risk medications given to the elderly.• Reporting of never events as defined by the National Quality Forum (NQF).• Prevention pressure ulcers.
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Following the discussions, the group narrowed its focus to the seven measure concept recommendations because of their significant impact on patient safety in both hospital and ambulatory settings. Criteria used to select these measure concepts include whether a measure concept is health information technology sensitive, promotes the parsimonious application of patient safety across multiple care settings, and is enabled for longitudinal measurement of patient care.

The group also noted during discussions that quality measures in patient safety should focus on reporting in order to monitor improvement and focus on outcomes. The group specifically focused on measure concepts and example measures that have shown to improve through the use of computerized provider order entry (CPOE) and clinical decision support (CDS).

1. Medication Safety

Definition: Measures pertaining to the prevention and reporting of adverse drug events (ADE) and use of evidence-based medicine.

The 2006 Institute of Medicine report *Preventing Medication Errors* estimates that 400,000 preventable adverse drug events occur every year in the United States, costing approximately \$3.5 billion in hospitals and \$887 million in outpatient settings.¹ Consequently, the group identified this sub-domain as an extremely important priority.

Recommended Measure Concept 1.1: Increasing the number of reported ADEs through the Food and Drug Administration (FDA) Adverse Event Reporting System (AERS) database by a mechanism for automatic submission of the report.

An ADE can be defined as an injury caused by a medication.² All ADEs can be reported to the FDA electronic AERS database. The group discussed the relatively low rate of provider and patient reporting compared with that of drug manufacturers. This was thought to be in part a product of usability.

To increase the number of ADEs reported to the FDA AERS database, the group suggests encouraging vendors to build functionality into EHRs that facilitates a seamless workflow that allows documentation and reporting of an ADE in a patient's chart to automatically flow into the FDA AERS database.

Recommended Measure Concept 1.2: Reduction in medication errors through the use of clinical decision support and computerized provider order entry.

CDS and CPOE have been shown to significantly decrease the number of medication errors (preventable ADEs) both in hospital and ambulatory settings.^{3,4} This literature was discussed in group meetings and example measures to monitor effects of CPOE and CDS on medication error prevention were identified, such as NQF 0022, Drugs to Avoid in the Elderly. In addition, the group discussed important gaps such as measures to assess bedside medication administration.

¹ Institute of Medicine Report, Patient Safety: *Preventing Medication Errors*, 2006.

² Bates, DW, et al. *The costs of adverse drug events in hospitalized patients*. Adverse Drug Events Prevention Study Group. *JAMA*. 1997;277:30711.

³ Wessell-Basten, SJ, et al. *Using a clinical decision support system to determine the quality of antimicrobial dosing in intensive care patients with renal insufficiency*. *Quality and Safety in Health Care*. 2010: 19:22–26.

⁴ Bates, DW, et al. *Effect of computerized physician order entry and a team intervention on prevention of serious medication errors*. *JAMA*. 1998; 280: 1311–6.

The group recommends measures that demonstrate the effectiveness of EHRs in preventing medication errors through CPOE and CDS.

2. Hospital Associated Events

Definition: Measures related to the prevention and reporting of HAIs, VTEs, and falls.

The group prioritized hospital associated events because simple preventative measures have been shown to significantly decrease incidence and because both monitoring and prevention can be facilitated through CDS. The measure concepts in this sub-domain include the prevention and reporting of HAIs, VTEs, and falls. The topic of pressure ulcers was also raised in public comment and would fit into this category.

Recommended Measure Concept 2.1: Prevention of HAIs through the use of process improvement.

HAIs affect up to 2 million patients and cost approximately \$20 billion per year.⁵ Efforts to reduce HAIs through process improvement of central line insertion and maintenance and ventilator care have drastically reduced infection rates.^{6 7 8} The tiger team discussed the importance of reporting and implementing proven process improvement measures to reduce the rate of HAIs in hospitals and the role EHRs can play in tracking the rates of HAIs and in prevention through CDS checklists, alerts, and reminders.

The group recommends the standardization and measurement of reporting and process improvement initiatives that can be captured within an EHR.

Recommended Measure Concept 2.2: Prevention of VTEs through the use of CDS.

VTE includes both deep vein thrombosis (DVT) and pulmonary embolism (PE). The effectiveness of VTE prophylaxis is well supported in the literature.⁷ With almost all hospitalized patients having for one risk factor for VTE, and approximately 40 percent of hospitalized patients having three or more risk factors, VTE prevention is a top priority of the group.⁸ In addition, CDS has been shown to be very effective not only in increasing rates of VTE prophylaxis among hospitalized patients, but also in aiding in significant reduction in VTE.⁹

To build on this research, the group recommends the standardization and measurement of VTE incidence as well as the rate of use of VTE prophylaxis in hospitalized patients.

⁵ Palmore, T., MD., et al. Enhancing Patient Safety by Reducing Healthcare-Associated Infections: *The Role of Discovery and Dissemination Infection Control and Hospital Epidemiology* 31:118-123, 2004.

⁶ Pronovost, P., M.D., Ph.D., et al. 2006. *An Intervention to Decrease Catheter-Related Bloodstream Infections in the ICU*. The New England Journal of Medicine, Dec 28, 2006.

⁷ Shojania, KG, et al., eds. 2001. *Making Health Care Safer: A Critical Analysis of Patient Safety Practices* (Evidence Report/Technology Assessment No 43). Rockville, MD: Agency for Healthcare Research and Quality.

⁸ Abdel-Razeq H., et al., *Venous Thromboembolism Prophylaxis for Hospitalized Medical Patients, Current Status and Strategies to Improve*. Ann Thorac Med 2010;5:195-200.

⁹ Kucher, N, et al. *Electronic Alerts to Prevent Venous Thromboembolism Among Hospitalized Patients*. N Engl J Med 2005;352:969-77.

Recommended Measure Concept 2.3: Prevention of falls through the use of CDS.

Falls prevention is a 2010 National Patient Safety goal, and as such, the group viewed this as an important measure concept. The group discussed falls in terms of reporting and prevention through effective screening, which can be facilitated by CDS.

The group recommends measurement of both the incidence of falls and screening of patients for falls risk.

3. Patient Identification

Definition: Measures focused on improving patient safety by positively identifying patients.

The group identified patient identification as a measure concept to help improve patient safety because patient misidentification can result in serious medical errors.

Recommended Measure Concept 3.1: Prevention of patient identification errors.

After reviewing the Gretzky report and a brief third-party environmental scan, the group did not identify any specific measures related to the prevention of patient misidentification. However, the team discussed preventative strategies such as photographs in EHRs. Group members would like to see various EHR functionalities for positively identifying a patient during multiple points of care such as admission, bedside, ambulatory visits, telephone encounters, and e-prescribing.

The group recommends measurement of patient identification errors and EHR functionality to prevent patient misidentification.

4. EHR Safety

Definition: Measures that establish a mechanism to report EHR-related errors to improve EHRs and maximize patient safety in the context of EHR use.

The group identified this sub-domain as EHR specific patient safety errors.

Recommended Measure Concept 4.1: Increase in EHR safety by examining and reporting common EHR errors.

The group discussed the importance of reporting on errors inherently caused by an EHR and the literature on this topic.¹⁰ Examples of EHR-related errors include delay in patient care, inappropriate clinical suggestions, and missed reports in an EHR.

The group recommends measurement of EHR related errors in order to facilitate improvement and progress of CPOE and CDS.

¹⁰ Strom, BL, MD, et al. *Unintended Effects of a Computerized Physician Order Entry Nearly Hard-Stop Alert to Prevent a Drug Interaction*. Arch Intern Med. 2010;170(17):1578–1583.