**National Quality Forum—Evidence (subcriterion 1a)**

**Measure Number** (*if previously endorsed*)**:** 2456

**Measure Title**: Medication Reconciliation: Number of Unintentional Medication Discrepancies per Medication Per Patient

**IF the measure is a component in a composite performance measure, provide the title of the Composite Measure here:** Click here to enter composite measure #/ title

**Date of Submission**: Click here to enter a date

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| **Instructions**  *Complete 1a.1 and 1a.2 for all measures. If instrument-based measure, complete 1a.3.*  *Complete* ***EITHER 1a.2, 1a.3 or 1a.4*** *as applicable for the type of measure and evidence.*  *For composite performance measures:*  *A separate evidence form is required for each component measure unless several components were studied together.*  *If a component measure is submitted as an individual performance measure, attach the evidence form to the individual measure submission.*   * All information needed to demonstrate meeting the evidence subcriterion (1a) must be in this form. An appendix of *supplemental* materials may be submitted, but there is no guarantee it will be reviewed. * If you are unable to check a box, please highlight or shade the box for your response. * Contact NQF staff regarding questions. Check for resources at [Submitting Standards webpage](http://www.qualityforum.org/Measuring_Performance/Submitting_Standards.aspx). |

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| **Note: The information provided in this form is intended to aid the Standing Committee and other stakeholders in understanding to what degree the evidence for this measure meets NQF’s evaluation criteria.**   1a. Evidence to Support the Measure Focus The measure focus is evidence-based, demonstrated as follows:   * Outcome: [**3**](#Note3) Empirical data demonstrate a relationship between the outcome and at least one healthcare structure, process, intervention, or service. If not available, wide variation in performance can be used as evidence, assuming the data are from a robust number of providers and results are not subject to systematic bias. * Intermediate clinical outcome: a systematic assessment and grading of the quantity, quality, and consistency of the body of evidence [**4**](#Note4)that the measured intermediate clinical outcome leads to a desired health outcome. * Process: [**5**](#Note5) a systematic assessment and grading of the quantity, quality, and consistency of the body of evidence [**4**](#Note4) that the measured process leads to a desired health outcome. * Structure: a systematic assessment and grading of the quantity, quality, and consistency of the body of evidence [**4**](#Note4) that the measured structure leads to a desired health outcome. * Efficiency: [**6**](#Note6) evidence not required for the resource use component. * For measures derived from patient reports, evidence should demonstrate that the target population values the measured outcome, process, or structure and finds it meaningful. * Process measures incorporating Appropriate Use Criteria: See NQF’s guidance for evidence for measures, in general; guidance for measures specifically based on clinical practice guidelines apply as well.   **Notes**  **3.** Generally, rare event outcomes do not provide adequate information for improvement or discrimination; however, serious reportable events that are compared to zero are appropriate outcomes for public reporting and quality improvement.  **4.** The preferred systems for grading the evidence are the Grading of Recommendations, Assessment, Development and Evaluation [(GRADE) guidelines](http://www.gradeworkinggroup.org) and/or modified GRADE.  **5.** Clinical care processes typically include multiple steps: assess → identify problem/potential problem → choose/plan intervention (with patient input) → provide intervention → evaluate impact on health status. If the measure focus is one step in such a multistep process, the step with the strongest evidence for the link to the desired outcome should be selected as the focus of measurement. Note: A measure focused only on collecting PROM data is not a PRO-PM.  **6.** Measures of efficiency combine the concepts of resource use and quality (see NQF’s [Measurement Framework: Evaluating Efficiency Across Episodes of Care](http://www.qualityforum.org/Publications/2010/01/Measurement_Framework__Evaluating_Efficiency_Across_Patient-Focused_Episodes_of_Care.aspx); [AQA Principles of Efficiency Measures](http://www.aqaalliance.org/files/PrinciplesofEfficiencyMeasurementApril2006.doc)). |

**1a.1.This is a measure of**: (*should be consistent with type of measure entered in De.1*)

Outcome

Outcome: Click here to name the health outcome

Patient-reported outcome (PRO): Click here to name the PRO

*PROs include HRQoL/functional status, symptom/symptom burden, experience with care, health-related behaviors.* (*A PRO-based performance measure is not a survey instrument. Data may be collected using a survey instrument to construct a PRO measure.)*

Intermediate clinical outcome (*e.g., lab value*): Click here to name the intermediate outcome

Process: Unintentional medication discrepancies are errors in inpatient admission or discharge orders due to faults in the medication reconciliation process. These errors can lead directly to patient harm.

Appropriate use measure: Click here to name what is being measured

Structure: Click here to name the structure

Composite: Click here to name what is being measured

**1a.2** **LOGIC MODEL** Diagram or briefly describe the steps between the healthcare structures and processes (e.g., interventions, or services) and the patient’s health outcome(s). The relationships in the diagram should be easily understood by general, non-technical audiences. Indicate the structure, process or outcome being measured.

Errors in the medication reconciliation process 🡪 Unintentional medication discrepancies in admission or discharge orders 🡪 adverse drug events 🡪 patient harm

Faulty medication reconciliation processes lead to unintentional medication discrepancies in admission and discharge orders. Some of these discrepancies are potentially harmful (i.e., potential adverse drug events), and among these, some will lead to actual adverse drug events, which by definition cause patient injury.

The intervention data described below (see systematic review #2 in section 1.a.3) clearly demonstrates that our measure is responsive to improvements in the medication reconciliation process.  Moreover, it is also clearly related to more distal and relevant patient outcomes: total number of unintentional medication discrepancies tracks closely with potentially harmful medication discrepancies (a kind of potential adverse drug event (potential ADE))(1). Multiple studies have also shown a clear relationship between potential ADEs and actual ADEs (injury due to a medication), and both are similarly responsive to interventions(2).

References:

1. Tam VC, Knowles SR, Cornish PL, Fine N, Marchesano R, Etchells EE. Frequency, type and clinical importance of medication history errors at admission to hospital: a systematic review. *Cmaj.* Aug 30 2005;173(5):510-515.
2. Bates DW, Boyle DL, Vander Vliet MB, Schneider J, Leape L. Relationship between medication errors and adverse drug events. J Gen Intern Med. 1995;10(4):199-205

**1a.3** **Value and Meaningfulness:**  **IF** this measure is derived from patient report, provide evidence that the target population values the measured ***outcome, process, or structure*** and finds it meaningful. (Describe how and from whom their input was obtained.)

**N/A**

**\*\*RESPOND TO ONLY ONE SECTION BELOW -EITHER 1a.2, 1a.3 or 1a.4) \*\***

**1a.2** **FOR OUTCOME MEASURES including PATIENT REPORTED OUTCOMES - Provide empirical data demonstrating the relationship between the outcome (or PRO) to at least one healthcare structure, process, intervention, or service.**

**1a.3.****SYSTEMATIC REVIEW(SR) OF THE EVIDENCE (for intermediate outcome, PROCESS, or STRUCTURE PERFORMANCE measures, including those that are instrument-based) If the evidence is not based on a systematic review go to section 1a.4) If you wish to include more than one systematic review, add additional tables.**

**What is the source of the systematic review of the body of evidence that supports the performance measure? A systematic review is a scientific investigation that focuses on a specific question and uses explicit, prespecified scientific methods to identify, select, assess, and summarize the findings of similar but separate studies. It may include a quantitative synthesis (meta-analysis), depending on the available data. (IOM)**

X Clinical Practice Guideline recommendation (with evidence review)

The Joint Commission National Patient Safety Goal NPSG 03.06.01

☐ US Preventive Services Task Force Recommendation

X Other systematic review and grading of the body of evidence (*e.g., Cochrane Collaboration, AHRQ Evidence Practice Center*)

☐ Other

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| **Source of Systematic Review (1):**   * **Title** * **Author** * **Date** * **Citation, including page number** * **URL** | **The Joint Commission**  **National Patient Safety Goals Effective January 2019**  **Hospital Accreditation Program**  **NPSG.03.06.01**  <https://www.jointcommission.org/assets/1/6/NPSG_Chapter_HAP_Jan2019.pdf> |
| Quote the guideline or recommendation verbatim about the process, structure or intermediate outcome being measured. If not a guideline, summarize the conclusions from the SR. | Maintain and communicate accurate patient medication information.  Elements of Performance:   1. Obtain information on the medications the patient is currently taking when he or she is admitted to the hospital or is seen in an outpatient setting. This information is documented in a list or other format that is useful to those who manage medications. Note 1: Current medications include those taken at scheduled times and those taken on an as-needed basis. See the Glossary for a definition of medications. Note 2: It is often difficult to obtain complete information on current medications from a patient. A good faith effort to obtain this information from the patient and/or other sources will be considered as meeting the intent of the EP. 2. Define the types of medication information to be collected in non-24-hour settings and different patient circumstances. Note 1: Examples of non-24-hour settings include the emergency department, primary care, outpatient radiology, ambulatory surgery, and diagnostic settings. Note 2: Examples of medication information that may be collected include name, dose, route, frequency, and purpose. 3. Compare the medication information the patient brought to the hospital with the medications ordered for the patient by the hospital in order to identify and resolve discrepancies. Note: Discrepancies include omissions, duplications, contraindications, unclear information, and changes. A qualified individual, identified by the hospital, does the comparison. (See also HR.01.06.01, EP 1) 4. Provide the patient (or family as needed) with written information on the medications the patient should be taking when he or she is discharged from the hospital or at the end of an outpatient encounter (for example, name, dose, route, frequency, purpose). Note: When the only additional medications prescribed are for a short duration, the medication information the hospital provides may include only those medications. For more information about communications to other providers of care when the patient is discharged or transferred, refer to Standard PC.04.02.01. 5. Explain the importance of managing medication information to the patient when he or she is discharged from the hospital or at the end of an outpatient encounter. Note: Examples include instructing the patient to give a list to his or her primary care physician; to update the information when medications are discontinued, doses are changed, or new medications (including over-the-counter products) are added; and to carry medication information at all times in the event of emergency situations. (For information on patient education on medications, refer to Standards MM.06.01.03, PC.02.03.01, and PC.04.01.05.) |
| **Source of Systematic Review (2):**   * **Title** * **Author** * **Date** * **Citation, including page number** * **URL** | Mueller SK, Sponsler KC, Kripalani S, Schnipper JL. Hospital-Based Medication Reconciliation Practices: A Systematic Review. *Arch Intern Med.* Jun 25 2012:1-13.  <http://www.ncbi.nlm.nih.gov/pubmed/22733210> |
| Quote the guideline or recommendation verbatim about the process, structure or intermediate outcome being measured. If not a guideline, summarize the conclusions from the SR. | Fifteen of 26 studies reported pharmacist-related [medication reconciliation]  interventions, 6 evaluated IT interventions, and 5 studied other interventions. Six studies were classified as good quality. The comparison group for all the studies was usual care; no studies compared different types of interventions. Studies consistently demonstrated a reduction in medication discrepancies (17 of 17 studies).  Rigorously designed studies comparing different inpatient medication reconciliation practices and their effects on clinical outcomes are scarce. Available evidence supports medication reconciliation interventions that heavily use pharmacy staff and focus on patients at high risk for adverse events. |
| Grade assigned to the **evidence** associated with the recommendation with the definition of the grade | 6 studies were classified as good quality, 5 studies were classified as fair quality, the remainder were classified as poor quality. |
| Provide all other grades and definitions from the evidence grading system |  |
| Grade assigned to the **recommendation** with definition of the grade | Overall recommendation not assigned a grade. The evidence for benefit of interventions was fair. Most studies were small, single-site investigations. Only ten were randomized controlled trials. Descriptions of the interventions and usual care were suboptimal.  Evidence was best for interventions that heavily utilized pharmacy staff and focused on patients at high risk for adverse events.  Several, although not all, used an outcome measure similar to the one presented here and using similar patient populations. |
| Provide all other grades and definitions from the recommendation grading system |  |
| Body of evidence:   * Quantity – how many studies? * Quality – what type of studies? | 26 studies, including 13 RCTs, 10 non-randomized trials with concurrent controls, and 3 pre-post studies. |
| Estimates of benefit and consistency across studies | Reductions in medication discrepancies were consistent in every study that measured this as an outcome (17 of 17). |
| What harms were identified? | None, but most studies did not explicitly measure harms. In the two studies that measured adverse drug events, they were reduced as a result of the medication reconciliation interventions. |
| Identify any new studies conducted since the SR. Do the new studies change the conclusions from the SR? | Larger multi-site studies have been conducted since then, demonstrating the consistent link between medication reconciliation quality improvement interventions and reductions in medication discrepancies as defined by this measure. These include MARQUIS (BMJ Qual Saf. 2018; 27(12): 954-964. PMID: 30126891), which included 1648 patients at 5 hospitals, and MARQUIS2 (Plenary, Society of Hospital Medicine Annual Meeting, National Harbor, MD), which included 4947 patients at 17 hospitals. These studies have substantially added to the evidence base linking medication reconciliation QI interventions and reductions in medication discrepancies. |

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**1a.4 OTHER SOURCE OF EVIDENCE**

*If source of evidence is NOT from a clinical practice guideline, USPSTF, or systematic review, please describe the evidence on which you are basing the performance measure.*

**1a.4.1** **Briefly SYNTHESIZE the evidence that supports the measure.** A list of references without a summary is not acceptable.

**1a.4.2 What process was used to identify the evidence?**

**1a.4.3.** **Provide the citation(s) for the evidence.**