

Nurse-led medication reconciliation and patient education using electronic health record tools

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Objectives

To classify discrepancies between the electronic health record (EHR) and actual drug use by the root cause of the discrepancy in order to guide quality improvement initiatives.

- To quantify and categorize the number and type of medication discrepancies that exist between the medication lists recorded in EHRs and the medication histories obtained from the patient.
- To determine which and how many of the medication discrepancies were system generated vs. patient generated.

To implement reliable systems to involve patients in routinely reconciling EHRs with actual medication use.

To implement a system of comparison of hospital discharge orders and a comprehensive medication assessment conducted after discharge.



E-prescribing

- The transmission, using electronic media, of prescription or prescription-related information between a prescriber, dispenser, pharmacy benefit manager, or health plan either directly or through an intermediary, including an e-prescribing network
 - Generates a complete active medication list
 - Allows eligible professionals to select medications, print prescriptions, transmit prescriptions electronically and conducts all alerts
 - Provides information on lower cost therapeutically appropriate alternatives, if any
 - Provides information on formulary or tiered formulary medications, patient eligibility and authorization requirements



Alerts

- Written or acoustic signals to warn prescriber of possible undesirable or unsafe situations, including potentially inappropriate dose or route of administration of a drug, drug-drug interactions, allergy concerns, or warnings and cautions
- The vast majority of alerts (98.6%) were for a potential interaction with a drug a patient already takes
- Clinicians often override the alerts and rely instead on their own clinical judgment
 - Clinicians overrode more than 90% of the drug interaction alerts and 77% of the drug allergy alerts
- Based on these findings, the following are recommendations to improve medication safety alerts
 - Reclassifying severity of alerts
 - Suppress alerts for medications a patient has already received
 - Customizing the alerts for a clinician's specialty



Classifying Discrepancies Between the EMR and Actual Drug Use

- Discrepancies averaged 2.7 per medication list
- In the majority (70.4%) of the discrepancies between EMR entries and medication assessments, a medication ordered in the EMR was no longer being taken by the patient
- 79.8% of the discrepancies were system generated
 - Medication list not updated (51.6%)
 - End date not entered (48.4%)
- Whereas 20.2% were patient generated
 - The most common patient-generated discrepancy was omission of a multivitamin or OTC product (61.7%)
 - Prescribed by outside clinician (19.1%)
 - Intentional nonadherence (19.1%)



Practice Information

- University of Texas Health Services, Houston, Texas
- Nurse Managed Academic Primary Care Clinic
 - 4 nurse practitioners, 1 physician
 - 5 medical assistants, 1 biller/coder, 1 radiology technician, 1 consultant clinical pharmacist, 1 administrative assistant, 1 systems analyst
- EHR user since 1994
- EHR research network member since 2003



The Problem: Medication Reconciliation

- Why did UTHS decide to work on this?
 - Problem in day-to-day practice
 - Discussion from Medication Safety – Translating Research Into Practice (MS-TRIP) site visit
 - Areas in need of improvement found in MS-TRIP reports



Plan for Improvement

- A complete medication history, including over-the-counter medications, vitamins and herbal products is obtained and documented on every patient during each office visit
 - Medication review, verification, and education increased medication compliance and medication knowledge (Lowe, 2000)
 - 45.6% of practices were fully compliant with this (Medical Group Management Association [MGMA], 2008)



Improvement Plan

- Patients are provided with an up-to-date list of all medications they are receiving upon leaving the practice encounter
- Subjects with written medication card had both higher knowledge and increased compliance (Lourens, 1994)
- Groups that received reminder chart had higher medication compliance and knowledge than those who received counseling only (Raynor, 1993)
- 11.9% of practices were compliant (MGMA, 2008)




Improvement Plan

- All prescriptions are entered into the e-prescribing system to document all prescribed drug therapy and anticipated dates of renewal
- Indications for medications are included on electronic prescriptions
 - 16% of practices were fully compliant (MGMA, 2008)
- "Label for generic and name brand" instructions included on e-prescriptions



Improvement Plan

- Accuracy and transportability of the recorded outpatient medication list are important in the continuum of patient care
- Perform the appropriate medication reconciliation process following patient admission, changes in care or treatment, transfer from one service to another, or post-discharge return to care
- As part of its "5 Million Lives Campaign," the Institute for Healthcare Improvement recommends encouraging patients to play a major role in ensuring that the medication list is kept up to date as they visit multiple providers in the outpatient setting



MS-TRIP Report – Avoiding Potentially Inappropriate Therapy

6/08

- Antibiotics within 3 days of dx – 64%
 - PPRNET median 52%
 - PPRNET benchmark 85%

6/09

- Antibiotics within 3 days of dx – 78%

Avoiding Potential Drug-Disease State Interactions

6/08

- NSAID or COX-2 inhibitor in patients with a dx of hypertension – 83%
 - PPRNET median – 87%
 - PPRNET benchmark – 93%

6/09

- NSAID or COX-2 inhibitor in patients with a dx of hypertension – 87%

Monitoring Potential Adverse Drug Effects

6/08

- Hemoglobin in past year in patients w/ active RX for any anti-platelet or oral anticoagulant – 75%
 - PPRNET median – 75%
 - PPRNET benchmark – 89%
- Glucose in past year in patients with active RX for antipsychotic – 50%
 - PPRNET median – 78%
 - PPRNET benchmark – 93%

6/09

- Hemoglobin in past year in patients w/ active RX for any anti-platelet or oral anticoagulant – 83%
- Glucose in past year in patients with active RX for antipsychotic – 71%

Potential Adverse Drug Event Prophylaxis

6/08

- Folic acid in patients w/ active RX for methotrexate – 60%
 - PPRNET median – 60%
 - PPTNET benchmark – 88%

6/09

- Folic acid in patients w/ active RX for methotrexate – 100%

Conclusions

- Establishing appropriate medication order end dates at the point of prescription order entry could eliminate 50% of the system-generated discrepancies
- A “stretch goal” for all outpatient office settings should be to supply every patient with an accurate list of active medications that would improve patient safety throughout the continuum of patient care



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