Introduction to Leapfrog Measure on Unintentional Medication Discrepancies

Town Hall Meeting
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Agenda

• Background: why medication discrepancies matter
• Experience with this measure: MARQUIS studies
• Measure specifications
• Overview of data collection process
• FAQs
• Other uses for discrepancy data
• Tools to assist sites in this process
• Open Discussion
Background
CASE 1
Case 1 - History of Present Illness

- 60 year-old female with non-ischemic cardiomyopathy and progressive biventricular heart failure is admitted for management of acute-on-chronic systolic heart failure and possible heart transplant

- Scheduled admission to CHF service
  – Overflow to general cardiology service
  – Late admission to a busy long-call team
Case 1 - Past Medical History

- Hypertension
- Hyperlipidemia
- Diabetes mellitus type II
- Hypothyroidism
- Non-ischemic cardiomyopathy (EF 20-30%)
  - Severe mitral regurgitation
  - Moderate aortic stenosis
  - Moderate to Severe tricuspid regurgitation
  - Severe pulmonary hypertension
  - Right ventricular dysfunction
Case 1 – Home Medications

- Losartan 50 mg daily
- Spironolactone 25 mg daily
- ASA 81 mg daily
- Furosemide 80 mg BID
- Digoxin .250 mg daily
- Carvedilol 6.25 mg BID
- Pravastatin 40 mg daily
- Omeprazole 40 mg daily
- Saxagliptin/Metformin 5 mg /1000 mg daily
- Levothyroxine 25 mcg daily
Case 1 – Hospital Course

• During admission history and physical exam, patient provided handwritten list of home medications which included “levothyroxine 25 mg” to the admitting intern.

• Due to busy admitting day, team resident used list to fill out Pre-Admission Medication List (PAML).

• During PAML creation, resident noted levothyroxine units and converted dose to 250 mcg daily. Correct conversion would be 25,000 mcg daily.

• Because patient was new to Partners there was no medications from electronic sources to help generate PAML.
Case 1 – Hospital Course

• Intern, fellow and attending admission notes all report home levothyroxine dose as 250 mcg

• On HD#2, PAML is reviewed by pharmacist who reconciles admissions orders with PAML – this does not include independent verification of preadmission medications

• On HD#3, transplant pharmacist reviews preadmission medications with patient, who verbally confirms erroneous dose

• Patient continues to receive 250 mcg of levothyroxine daily for the next 20 days
Case 1 – Hospital Course

- Patient listed for heart transplant

- PA catheter placed for directed therapy with inotropic agents and diuretics

- HD#18 patient develops fevers and hypotension. Patient is started on antibiotics given concern for mixed septic and cardiogenic shock

- HD#20 patient is transferred to CCU given refractory hypotension

- Taken to cath lab urgently for placement of intra-aortic balloon pump
Case 1 – Labs on CCU Transfer

TSH: 0.153 (admission 3.95)
Free T4: 3.8 (nl 0.9-1.7)
Case 1 – Hospital Course

- Endocrinology consulted and felt that decompensation consistent with thyrotoxicosis

- On detailed review with patient, she reported taking “oval, salmon colored pill” which is consistent with 25 mcg levothyroxine

- Outpatient pharmacy confirmed dose of 25 mcg levothyroxine for > 1 year

- Levothyroxine discontinued
CASE 2
Case 2 - History of Present Illness

- 62-year-old man with stage IV B-cell lymphoma admitted from rehabilitation facility with febrile neutropenia

- Overnight admission to oncology service
  - Passed off to house staff oncology service in morning
• Chronic obstructive pulmonary disease
• Atrial fibrillation
• Viral hepatitis C
• Chronic low back pain
• B-cell lymphoma
Case 2 – Pre-Admission Medications

1. Acyclovir (Acyclovir) 400 MG PO TID
2. Albuterol Inhaler Hfa 1 PUFF INH Q4H prn wheezing
3. Allopurinol 300 MG PO QD
4. Amiodarone 200 MG PO QD
5. Amitriptyline Hcl 12.5 MG PO QHS
6. Artificial Tears 2 DROP BOTH EYES 6x daily
   Apply to right eye
7. Ascorbic Acid (Vitamin C) 250 MG PO QD
8. Calcium Carb Chewable 1000mg(400mg Elem Ca) (Tums Ultra 1000) 2 TAB PO TID prn Other:Heartburn
9. Chlorhexidine Mouthwash 0.12% (Peridex Mouthwash) 10 ML SWISH & SPIT BID
10. Docusate Sodium (Colace) 100 MG PO BID
11. Dutasteride / Tamsulosin 1 CAPSULE PO QD
12. Entecavir 0.5 MG PO QD
13. Ergocalciferol 50000 UNITS PO QWEEK
14. Fentanyl (Patch) 50 MCG TD Q72H
15. Fluconazole 200 MG PO QD
16. Fluticasone Prop/Salmeterol 250/50 (Advair Diskus 250/50) 1 INHALATION INH BID
17. Lasix (Furosemide) 40 MG PO BID
18. Lacri-Lube Ointment 1 APPLICATION LEFT EYE QHS
19. Lactulose 20 mg PO QID
20. Loratadine (Claritin) 10 MG PO QD
21. Metoprolol Succinate Extended Release 50 MG PO QD
22. Miconazole Nitrate 2% Powder 1 APPLICATION TP BID
23. Moxifloxacin Ophthalmic (Tid) (Vigamox) 1 DROP RIGHT EYE QID
24. Multivitamins 1 TAB PO QD
25. Nystatin Suspension (Mouthwash) 10 ML SWISH & SWALLOW QID
26. Olanzapine Odt (Zyprexa Zydiss) (Zyprexa Zydiss) 5 MG PO BID
27. Ondansetron Hcl (Chemo N/V) 8 MG PO Q8H prn nausea
28. Oxycodone 5 MG PO UNKNOWN
29. Pantoprazole 40 MG PO BID
30. Prochlorperazine Maleate (Compazine) 10 MG PO Q6H prn nausea
31. Sennosides (Senna Tablets) 17.2 MG PO BID
32. Tiotropium 18 MCG INH QD
33. Trimethoprim /Sulfamethoxazole Single Strength (Bactrim Ss) 1 TAB PO QD
34. Trypsin - Balsam Peru - Castor Oil Ointment 1 APPLICATION TP BID
35. Zinc Sulfate 220 MG PO QD
Case 2 – Hospital Course

• On night of admission, accurate PAML was created using medication list from rehab facility

• Admitting intern manually entered each pre-admission medication into order entry as opposed to PAML to Order Entry function

• Amitriptyline dose was inadvertently entered as 200 mg daily (mistaken with dose of amiodarone) – 16-fold increase from outpatient dose

• Approved by pharmacist one hour later, did not use medication list comparison function
Case 2 – Hospital Course

- Started on broad spectrum antibiotics for suspected pneumonia
- At 8:30 am on HD#2 received scheduled dose of 200 mg amitriptyline
- At 9:45 am patient became hypotensive and delirious
- Received 2L NS and was started on bicarbonate drip given concern for TCA toxicity
- Transferred to ICU for further management
Background

• Adverse Drug Events (ADEs) are an epidemic patient safety problem
  – Definition: Any injury due to medication
    o Includes side effects, overuse, underuse, misuse
  – ADEs: 5-40% of hospitalized patients, 12-17% post-discharge
Medication Safety at Transitions

- Transitions of care (e.g. in to and out of the hospital) are vulnerable times for patients
  - Multiple medication changes
  - Rushed event, inadequate patient education
  - Discontinuity of care, inadequate follow-up
“A process of identifying the most accurate list of all medications a patient is taking… and using this list to provide correct medications for patients anywhere within the health system.”

MARQUIS Mentored Implementation

- Each site
  - Local champion/mentee
  - QI Team
- Mentor
  - Physician with QI and medication reconciliation experience
- Monthly mentor-mentee calls
- Site visits
- Project management and data analysis support
## Baseline Results from MARQUIS

<table>
<thead>
<tr>
<th>Discrepancy type</th>
<th>All sites (n=488)</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total discrepancies per patient (all types)</td>
<td>3.3</td>
<td>2.0-4.5</td>
</tr>
<tr>
<td>Admission</td>
<td>1.6</td>
<td>0.9-2.4</td>
</tr>
<tr>
<td>Discharge</td>
<td>1.7</td>
<td>1.1-2.1</td>
</tr>
<tr>
<td>History discrepancies</td>
<td>1.6</td>
<td>0.4-3.1</td>
</tr>
<tr>
<td>Admission</td>
<td>0.7</td>
<td>0.3-1.3</td>
</tr>
<tr>
<td>Discharge</td>
<td>0.9</td>
<td>0.4-1.8</td>
</tr>
<tr>
<td>Reconciliation discrepancies</td>
<td>1.7</td>
<td>0.3-2.6</td>
</tr>
<tr>
<td>Admission</td>
<td>0.9</td>
<td>0.1-1.5</td>
</tr>
<tr>
<td>Discharge</td>
<td>0.8</td>
<td>0.3-1.9</td>
</tr>
</tbody>
</table>
## Baseline Adjudicated Results

<table>
<thead>
<tr>
<th>Category</th>
<th>All sites (N=488)</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potentially harmful discrepancies</td>
<td>0.34</td>
<td>0.20-0.60</td>
</tr>
<tr>
<td>Admission</td>
<td>0.10</td>
<td>0.03-0.14</td>
</tr>
<tr>
<td>Discharge</td>
<td>0.24</td>
<td>0.11-0.47</td>
</tr>
<tr>
<td>History Discrepancies</td>
<td>0.10</td>
<td>0.01-0.14</td>
</tr>
<tr>
<td>Reconciliation Discrepancies</td>
<td>0.24</td>
<td>0.07-0.58</td>
</tr>
<tr>
<td>Potential severity: admission</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Significant</td>
<td>0.08</td>
<td>0.03-0.11</td>
</tr>
<tr>
<td>Serious</td>
<td>0.02</td>
<td>0-0.08</td>
</tr>
<tr>
<td>Potential severity: discharge</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Significant</td>
<td>0.18</td>
<td>0.05-0.28</td>
</tr>
<tr>
<td>Serious</td>
<td>0.07</td>
<td>0.01-0.09</td>
</tr>
</tbody>
</table>
Summary of Results of MARQUIS 1

- When adjusted for baseline performance, baseline temporal trends, and any control units, implementation of the intervention was associated with a significant improvement in total medication discrepancy rates over time:
  - 9% reduction in discrepancies per month, over baseline trends, compared with control units.

Adjusted for patient age, service, insurance, marital status, number of prior admissions, number of high-risk medications, Elixhauser comorbidity score, DRG weight, median income by zip code, and season; clustered by site, with number of meds as model offset.
Experience with this Measure

• MARQUIS
  – Five sites, N=1479

• MARQUIS2
  – 18 sites, N=1407 to date, will be close to 2500 by the end of the study
<table>
<thead>
<tr>
<th></th>
<th>PHARMACIST</th>
<th>IT-RELATED</th>
<th>OTHER</th>
</tr>
</thead>
<tbody>
<tr>
<td>↓ Medication Discrepancies</td>
<td>10/10</td>
<td>3/3</td>
<td>4/4</td>
</tr>
<tr>
<td>↓ Potential Adverse Drug Events (PADE)</td>
<td>2/3</td>
<td>1/1</td>
<td>2/2</td>
</tr>
<tr>
<td>↓ Preventable Adverse Drug Events (ADE)</td>
<td>1/2</td>
<td>1/1</td>
<td>---</td>
</tr>
<tr>
<td>↓ Healthcare Utilization</td>
<td>2/7</td>
<td>0/1</td>
<td>---</td>
</tr>
</tbody>
</table>

Successful programs: Intensive pharmacy staff involvement
Focus on high risk subset of patients
Why the new Leapfrog Measure?

- Progress in improving medication reconciliation is often hampered by a lack of good measures of its quality.

- The Joint Commission metric encourages pro-forma compliance without understanding the actual quality of the process.

- The solution is to do good quality measurement.
  - “You can’t manage what you can’t measure.”

- NQF and Leapfrog now recognize this.
NQF Endorsed Measure
Number of Unintentional Medication Discrepancies per Patient

Measure Description:
This measure assesses the actual quality of the medication reconciliation process by identifying errors in admission and discharge medication orders due to problems with the medication reconciliation process. The target population is any hospitalized adult patient. The time frame is the hospitalization period.

At the time of admission, the admission orders are compared to the preadmission medication list (PAML) compiled by trained pharmacist (i.e., the gold standard) to look for discrepancies and identify which discrepancies were unintentional using brief medical record review. This process is repeated at the time of discharge where the discharge medication list is compared to the PAML and medications ordered during the hospitalization.

Numerator Statement:
For each sampled inpatient in the denominator, the total number of unintentional medication discrepancies in admission orders plus the total number of unintentional medication discrepancies in discharge orders.

Denominator Statement:
The patient denominator includes a random sample of all potential adults admitted to the hospital. Our recommendation is that 25 patients are sampled per month, or approximately 1 patient per weekday.

So, for example, if among those 25 patients, 75 unintentional discrepancies are identified, the measure outcome would be 3 discrepancies per patient for that hospital for that month.

Exclusions:
Patients that are discharged or expire before a gold standard medication list can be obtained.

Risk Adjustment:
No
Leapfrog Measure
Measure Specifications

• Number of unintentional medication discrepancies in admission and discharge orders
  • Per medication, per patient
• Excludes most neutraceuticals, OTCs, and PRNs, except where clinically relevant
• Data collection on 10 randomly selected patients per quarter
Overview of Data Collection Process

- Identify and randomize patients
- Meet patients, complete basic demographic information
- Collect Gold Standard medication history
- Compare GS history to Admission Orders
- Compare GS history to Discharge Orders
- Contact providers if necessary
- Document results in Word and then Excel Worksheets
Overview of Data Collection Process

• Identify and randomize patients
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• Document results in Word and then Excel Worksheets
Identify and Randomize Patients

• Who: project manager
• When: on a regular basis
  o Goal is 10 patients per quarter
  o Sample patients admitted from different days of the week
    – E.g., 3/10 patients per quarter admitted on the weekend
• Obtain list of admitted patients the day before on target units/services
  o How would your site obtain this list?
• Copy and paste list into an Excel worksheet
• Use daily random number table we will provide
• Select top 5 patients to approach for each patient you need to interview
• Email list of names and room numbers to pharmacist
Identify and Randomize Patients

- 4/10/17
  - First patient to approach would be the 12\textsuperscript{th} patient on your admission list, then the 15\textsuperscript{th}, etc.
Collect Gold Standard Medication History

- Who: pharmacist
- When: within 24 hours of admission, usually next morning
- Use best practices to take this medication history
- Exclude the following categories of medications:
  - PRNs except inhalers, nitroglycerin, opioids, muscle relaxants, and sedatives
  - Topical lotions/creams, normal saline nasal spray, herbals, supplements, vitamins unless clinically relevant (e.g., iron in a patient with iron-deficient anemia, calcium and vitamin D in a patient with osteoporosis or known vitamin D deficiency)
Pharmacist

Why do you need a pharmacist to collect the gold-standard history?

• Studies show they do this better than other personnel
• Politically, you want the best trained people taking this history if all outcomes are based on it
• Pharmacy students have variable interest and ability and often change over too quickly
• Practically, a licensed pharmacy resident who has been trained in this task and can provide continuity (e.g., at least several months) can serve in this role
### Best Practices

- **Ask the patient open-ended questions about what medications she or he is taking** (i.e., doesn’t read the list and ask if it is correct)

- **Use probing questions to elicit additional information:** non-oral meds, non-daily meds, PRN medications, non-prescription meds

- **Use other probes to elicit additional medications:** common reasons for PRNs, meds for problems in the problem list, meds prescribed by specialists

- **Ask about adherence**

- **Use at least two sources of medications,** ideally one provided by the patient and one from another “objective” source (e.g., patient’s own list and ambulatory EMR med list)

- **Know when to stop getting additional sources** (e.g., if patient has a list or pill bottles and seems completely reliable and data are not that dissimilar from the other sources, and/or the differences can be explained)
<table>
<thead>
<tr>
<th>Best Practices (continued)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Know when to get additional sources if available (e.g., if patient is not sure, relying on memory only or cannot resolve discrepancies among the various sources of medication information)</td>
</tr>
<tr>
<td>When additional sources are needed, use available sources first (e.g., pill bottles if present). Then obtain pharmacy data. If the medication history is still not clear: obtain outpatient provider lists, pill bottles from home and/or other sources.</td>
</tr>
<tr>
<td>Use resources like Drugs.com to identify loose medications (i.e., for a bag of medications, not in their bottles, provided by a patient)</td>
</tr>
<tr>
<td>Return to patient to review new information, resolve all remaining discrepancies</td>
</tr>
<tr>
<td>Get help from other team members when needed</td>
</tr>
<tr>
<td>Educate the patient and/or caregiver of the importance of carrying an accurate and up to date medication list with them</td>
</tr>
</tbody>
</table>
Pharmacist Role: GS History

• Once GS Med Hx complete, enter data into Word worksheet for each medication
  o Medication name
  o Dose, route, frequency (DRF), including units
  o Check box if PRN, OTC
  o Patient adherence
  o Sources of data used to collect history

Sample Patient #: ________

Gold Standard Medication

Name:

Dose/Route/
Frequency:

Drug Class:
☐ PRN
☐ OTC

Pt Adherence:
☐ Completely non-adherent*
☐ Sporadically non-adherent
☐ Adherent
*if completely non-adherent, do not include
Comments:

All Sources Used:
☐ Patient
☐ Pill Bottles
☐ Outpatient EMR
☐ Transfer Records
☐ Pharmacy(s)
☐ Other:
☐ Patient’s family/Caregiver
☐ Pt’s Own Med List
☐ Outpatient Provider(s)
☐ Past DC Summary
☐ Pharmacy Database
Overview of Data Collection Process

• Identify and randomize patients
• Meet patients, complete basic demographic information
• Collect Gold Standard medication history
• Compare GS history to Admission Orders
• Compare GS history to Discharge Orders
• Contact providers if necessary
• Document results in Word and then Excel Worksheets
Identification of Discrepancies

- **Compare GS Med Hx to Admission Orders**
  - **Who:** pharmacist
  - **When:** After discharge orders are written, but ideally before the patient leaves
  - **Pull up admission orders (usually in EHR)**
  - **For each medication in GS Med Hx, compare to admission orders and document in the paper form**
    - Same
    - Omission
    - Different dose/route/freq
    - Duration
    - Substitution (i.e., different medication in class)
    - Duplication
    - Formulation
    - Additional medication
    - Other
  - **Provide the medication name, dose/route/frequency, etc. under “Details”**
Flow Diagram for Admission Discrepancies

Discrepancy between GS Med and admission orders?
- No
  - Done (don’t check off any differences)
- Yes
  - Team’s PAML is incorrect?
    - Yes
      - History error. If clinically important, may need to contact team to correct error.
    - No
      - Look in medical records. Documentation of why med was changed?
        - No
          - Is the discrepancy clinically relevant?
            - Yes
              - Intentional (Clinical Reason)
            - No
              - Use your best judgment. Was the discrepancy likely intentional? When in doubt, assume unintentional.
                - Unintentional
                  - Reconciliation error
                - Intentional
                  - Intentional (Clinical Reason)
        - Yes
          - Contact the clinical team? Did you do this on purpose?
            - No
              - Reconciliation error. Team may need to correct the error.
            - Yes
              - Intentional (Clinical Reason)
In certain situations, you may need to contact the provider

**Questions for Provider:**

- If possible, don’t call the provider until the discharge orders have been written (to avoid altering measurement)
- Call the admitting provider for questions about the admission orders and call the discharging provider for questions about the discharge orders
- Complete reasons for discrepancies as needed (e.g., for admission discrepancy, whether reason is intentional vs. reconciliation error)
- If there are serious unintentional discrepancies, you should contact the inpatient provider to correct them. If you do not hear back or are not satisfied with the response, then contact your Leapfrog site leader / CQO
  - Example: patient should have been discharged on a diuretic or an antiepileptic but was not
### Document Admission Discrepancies

<table>
<thead>
<tr>
<th>Admission Comparison</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Note Differences:</strong> (select all that apply)</td>
</tr>
<tr>
<td>□ Dose</td>
</tr>
<tr>
<td>□ Frequency</td>
</tr>
<tr>
<td>□ Additional med</td>
</tr>
<tr>
<td>□ Duplication</td>
</tr>
<tr>
<td>□ Duration</td>
</tr>
</tbody>
</table>

**Reason:**
- □ Unintentional (History or Reconciliation Error)
- □ Intentional (Clinical Reason)

---

**Were there any unintentional discrepancies between the gold standard and the admission order?**

- □ Yes
- □ No

_If “yes,” count as 1_
Identification of Discrepancies

• Compare GS Med Hx to Discharge Orders

  • Who: pharmacist
  • When: After discharge orders are written, but ideally before the patient leaves the hospital (if possible)
  • Identifying who has discharge orders: site project manager will ideally do this at each site and email the pharmacists before noon each day.
    • Might need to contact case managers on the various teams/units to obtain more accurate information regarding pending discharges
  • Access discharge orders
  • For each medication in GS Med Hx, compare to discharge orders and document on the Word worksheet
    • Same
    • Omission
    • Different dose/route/freq
    • Duration
    • Substitution (i.e., different medication in class)
    • Duplication
    • Formulation
    • Additional medication
    • Other
Flow Diagram for Discharge Discrepancies

Discrepancy between GS Med and discharge orders?

- No
  - Done (don’t check off any differences)

- Yes
  - Team’s PAML is incorrect?
    - Yes
      - History error. If clinically important, may need to contact team to correct error.
    - No
      - Look in medical records. Documentation of why med was changed?
        - No
          - Reconciliation error
        - Yes
          - Intentional (Clinical Reason)

- Is the discrepancy clinically relevant?
  - No
    - Use your best judgment. Was the discrepancy likely intentional? When in doubt, assume unintentional.
      - Unintentional
        - Reconciliation error
      - Intentional (Clinical Reason)
  - Yes
    - Contact the clinical team? Did you do this on purpose?
      - No
        - Reconciliation error. Team may need to correct the error.
      - Yes
        - Intentional (Clinical Reason)
Document Discharge Discrepancies

Discharge Comparison

Note Differences:
(select all that apply)
- Dose
- Frequency
- Additional med
- Duplication
- Duration

Reason:
- Unintentional (History or Reconciliation Error)
- Intentional (Clinical Reason)

Were there any unintentional discrepancies between the gold standard and the discharge order?

- Yes
- No

*If “yes,” count as 1*
Additional Medications

- Unintentional additional medications need to be counted when ordered on admission or discharge
- In the denominator, count each medication once
- In the numerator, count once or twice depending on whether ordered at admission, discharge, or both

<table>
<thead>
<tr>
<th>Additional Medication:</th>
<th>Unintentionally Ordered on:</th>
<th>Comments:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name:</td>
<td>☐ Admission (count as 1)</td>
<td></td>
</tr>
<tr>
<td>Dose/Route/Frequency:</td>
<td>☐ Discharge (count as 1)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>☐ Both (count as 2)</td>
<td></td>
</tr>
</tbody>
</table>

| Name:                  | ☐ Admission (count as 1)    |           |
| Dose/Route/Frequency:  | ☐ Discharge (count as 1)    |           |
|                        | ☐ Both (count as 2)         |           |

| Name:                  | ☐ Admission (count as 1)    |           |
| Dose/Route/Frequency:  | ☐ Discharge (count as 1)    |           |
|                        | ☐ Both (count as 2)         |           |
• Add up all the gold standard medications, admission and discharge discrepancies in gold standard medications, unintentional additional medications, and admission and discharge discrepancies due to unintentional additional medications.

**Total # Unintentional Additional Medications:** _______
*(Enter into column F in the Med Rec Excel Workbook)*

**Total # of admission and discharge discrepancies due to Unintentional Additional Meds:** _______
*(Number of medications that were ordered unintentionally at admission (count as 1), discharge (count as 1), or both admission and discharge (count as 2). Enter into column H in the med Rec Excel Workbook.)*

**Total Number of Gold Standard Meds:** _______
*(enter into column B in the Med Rec Excel Workbook)*

**Total # of admission and discharge discrepancies in Gold Standard Meds:** _______
*(For each Gold Standard Med, count the number of ‘yes’ responses to the error question. Minimum number of discrepancies per med is zero. Maximum number of discrepancies per med is 2. Enter into column D in the Med Rec Excel Workbook)*
Putting it All Together

- Then put those numbers into the Excel spreadsheet for each patient

Section 8B: Medication Reconciliation

Question #3
33

Question #4
9

Question #5
7

Question #6
9

Press function key F9 to recalculate before using results

CAUTION: Don't print all pages; most are blank rows! First, print preview to find last page N with data; then File->Print only Page(s) From: 1 To: N
• The average number of discrepancies per medication per patient is then automatically calculated

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**Your Hospital's Results:**

Note: this is for your reference only, the below information does not need to be entered into the online survey and will be calculated by Leapfrog

<table>
<thead>
<tr>
<th>Numerator:</th>
<th>18</th>
</tr>
</thead>
<tbody>
<tr>
<td>Denominator:</td>
<td>40</td>
</tr>
<tr>
<td>Rate:</td>
<td>0.45, unintentional medication discrepancies per medication per patient</td>
</tr>
</tbody>
</table>
Notifying the Team

If Need to Notify Team:
- If the pharmacist notifies a member of the medical team, document this in the “pharmacist comments” section of the worksheet
  - When did notification occur?
    - Before admission orders
    - After admission orders but before discharge orders
    - After discharge orders
  - Also document:
    - Any recommended action
    - Action taken by team (if any)
    - Other comments
Frequently Asked Questions
Frequently Asked Questions

• What orders are considered admission orders?
• All orders written from the time of admission until 8:00 a.m. the following morning or until 8 hours after the time of admission, whichever comes first.
Frequently Asked Questions

• Should admission orders that are discontinued prior to discharge be included?
• Yes. Some of these orders may end up being counted in question #5 (additional medications that were unintentionally ordered).
• Are there any types of admission orders that can or should be excluded?

• Yes, most intentionally ordered additional medications can be excluded, for example:
  – Medication orders that are clearly related to the chief complaint (e.g. levofloxacin for pneumonia when pneumonia is the admitting diagnosis).
  – Medication orders that clearly documented (e.g. lovenox for DVT prophylaxis).
  – Standard PRN orders at your hospital (e.g. Tylenol PM if that is in the standard order set at your hospital).
Frequently Asked Questions

• If a dose and a route discrepancy are found for the same medication, does it count as one or two in the number of unintentional discrepancies?

• The number of unintentional discrepancies is a count of medication orders where an unintentional discrepancy occurred.

• A medication order may have several errors associated with it (e.g. dose, route, timing, etc.). You should not count the number of errors associated with the same medication order.

• However, discrepancies with admission orders and discharge orders are counted separately.
  – For example, if a medication on the gold standard list is ordered for a patient on admission with the incorrect dose, this counts as one discrepancy. If this medication is ordered on discharge with the same incorrect dose, this would count as a second discrepancy.
  – But a medication with a dose and frequency discrepancy in admission orders counts as one discrepancy.
Frequently Asked Questions

• Do all of the additional medications that were ordered unintentionally in (see question #5) count as unintentional discrepancies in #6?

• Yes. If a medication is unintentionally ordered at admission, then this counts as one discrepancy. If the same medication is unintentionally ordered at discharge, then this counts as a second discrepancy.

• If an unintentionally ordered medication in Question #5 was ordered on both admission and discharge, then this would count as two discrepancies in Question #6 (but counts as one medication in Question #5).
Other Uses for Discrepancy Data
Make it Count Twice

• Take full advantage of the data you are collecting
• Provide feedback to history-takers and ordering providers when errors are caught
• Use the cases when talking with hospital leadership
• Use the data to estimate costs to hospital of ADEs and return on investment of interventions
• Track discrepancy rates over time as launch, refine, and spread interventions
Tools and Resources
Overview | Medication Reconciliation Implementation toolkit

Unintentional medication discrepancies during transitions in care (such as hospitalization and subsequent discharge) are very common and represent a major threat to patient safety. One solution to this problem is medication reconciliation. In response to Joint Commission requirements, most hospitals have developed medication reconciliation processes, but some have been more successful than others, and there are reports of pro forma compliance without substantial improvements in patient safety. There is now collective experience about effective approaches to medication reconciliation, but these have yet to be consolidated, evaluated rigorously, and disseminated effectively.

In 2010, the Agency for Healthcare Research and Quality (AHRQ) awarded the Society of Hospital Medicine (SHM) a $1.5 million grant for a three-year Multi-Center Medication Reconciliation Quality Improvement Study (MARQUIS). The goal of MARQUIS is to develop better ways for medications to be prescribed, documented, and reconciled accurately and safely at times of care transitions when patients enter and leave the hospital.

Role of the Hospitalist:

- Take responsibility for the accuracy of the medication reconciliation process for each patient under your care.
- Lead, coordinate, or participate in medication reconciliation quality improvement efforts along with other key team members on the “front lines” to inform the hospital QI team on key interventions that would lead to improved patient outcomes.
- Become trained in taking the “best possible medication history” and effective discharge medication counseling.
- Identify patients who are at high risk for a medication reconciliation error and would benefit from a more intensive medication reconciliation process.

Funded by AHRQ grant HS0195898
MARQUIS Project Team
MARQUIS Toolkit*

- A compilation of the “best practices” around medication reconciliation, with resources to support deployment of the intervention components

  - MARQUIS Implementation Manual
  - Best Possible Medication History (BPMH) Pocket Cards
  - Taking a Good Medication History Video
  - Good Discharge Counseling Video
  - ROI Calculator

*All available for download at www.hospitalmedicine.org/marquis
MARQUIS 2
Multi-Center Medication Reconciliation Quality Improvement Study

Best Possible Medication History (BPMH)
Quick Tips

Goal → Obtain complete information on the patient’s medication regimen, including:
- Name of each medication
- Formulation (e.g., extended release)
- Dosage, Route, Frequency
- Non-prescription medications (e.g., herbals, OTCs, vitamins)

Try to use at least two sources of information and explore discrepancies between the different sources.

If your starting point is a medication list:
- Review and verify each medication with the patient.
- It is best to start by having the patient tell you what he or she is taking; do not read the list aloud asking if it is correct.

Questions to elicit a complete medication list:
- For each medication, elicit the dose and time(s) of day taken.
- When appropriate, ask about formulation and route of administration.
- Start with an open-ended question: What medications do you take at home?
- Use Probing Questions (on the back) to minimize missed medications.

Time-saving tips:
✓ Start with easily accessible sources (e.g., outpatient EMR med list, recent hospital discharge orders).
✓ If patients use a list or pill bottles and seem completely reliable (and data are not that dissimilar from the other sources, and/or the differences can be explained), then other sources are not needed.
✓ If patients are not sure, relying on memory only, or cannot clearly “clean up” the other sources of medication information, then use additional sources such as community pharmacy data.
✓ If the medication history is still not clear (e.g., suspected differences between what the patient is supposed to be taking and what they actually take) then contact outpatient physician office(s) and/or have the family bring in the pill bottles from home.
Probing Questions:

✓ Ask about scheduled medications.
✓ Ask about PRN medications.
  • Which medicines do you take only sometimes?
  • What symptoms prompt you to take them?
  • How many doses per week do you take?
  • What is the most often you are allowed to take it?
  • Do you often take something for headaches? Allergies? To help you fall asleep? When you get a cold? For heartburn? For constipation?
✓ Assessing the purpose of each medication may lead to additional prompts.
  • What is each medicine for?
  • Do you take any other medications for that?
✓ Ask about medications for specific conditions that the patient has.
  • What medicines do you take for your diabetes, high blood pressure, etc.?
✓ Ask about medications prescribed by subspecialists who follow the patient.
  • Does your [arthritis doctor] prescribe any medications for you?
✓ Ask about medications that are easy to forget.
  • Do you take any inhalers, nebulizers, nasal sprays, ointments, creams, eye drops, ear drops, patches, injections or suppositories?
  • Do you take any medications in the evening or at night?
  • Do you take any medicines once a week or once a month?
✓ Ask about non-prescription products.
  • Which medicines do you take that do not require a prescription? (Over-the-counter medicines, vitamins, herbals and minerals)
✓ Assess recent medication use and adherence.
  • When did you take the last dose of each of your medicines?
  • Tell me about any problems that you have had taking these medicines as prescribed.
  • Many patients have difficulty taking their medications exactly as they should every day. In the last week, how many days have you missed a dose of your [medication]?
Additional Resources for Leapfrog Sites

- Recorded two-part webinar for pharmacists
  - How to take a gold-standard medication history
  - How to measure discrepancies
  - Comes with homework related to John Doe case
  - Covers additional optional tasks related to MARQUIS2 study
MARQUIS Collaborative

• Grew out of demand from non-MARQUIS sites that wanted to improve med rec processes

• Assistance beyond MARQUIS Implementation Guide:
  – Project management tools
    o Pre-implementation checklist
    o Timeline
    o Milestones
    o Quarterly webinars
    o Monthly “office hours”
• Assistance beyond MARQUIS Implementation Guide:
  
  – Data collection tools
    o Webinars
    o Worksheets, spreadsheets
    o Completely compatible with Leapfrog measure
  
  – Training materials
    o Videos
    o Simulated cases
• Assistance beyond MARQUIS Implementation Guide:
  – Tools to make business case to C-suite
    o Slide decks
    o Return on investment calculators
  – Peer support
    o Interactive online community
• 14 months, $4700 per site
• We encourage all Leapfrog sites to apply
  – [www.hospitalmedicine.org/marquisrecruit](http://www.hospitalmedicine.org/marquisrecruit)
• Nominal fee to cover expenses
• First 6 sites to start this month
• Hope to expand it to dozens of sites over time
• NYS IPRO encouraging their hospitals to join, they plan to help with mentorship and support
Open Discussion
Thanks!