Optimizing Medication Reconciliation during Care Transitions

Kenneth Boockvar, MD, MS
Jewish Home Lifecare
Mount Sinai School of Medicine
JJ Peters VA Medical Center

Managing SNF/Hospital Transitions
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Learning objectives

To convey:

- Research that describes the problem of medication management during transitions
- Research on improvement
- Practical lessons for practitioners
Speaker Disclosure:

Relevant financial relationship(s): none

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- VA Health Services Research and Development
- New York State Dept of Health
- Foundation for Health in Aging
What is a care transition?

- Care transition = Patient transfer or handoff
The case of Ms. K, who broke her hip
Ms. K

- At hospital admission, her sertraline was omitted
- After hospital discharge, a high TSH was not followed up
- She was surprised to learn that she would not walk normally for up to 12 weeks
# Care lapses from transitions

<table>
<thead>
<tr>
<th>Type</th>
<th>Prevalence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medication discrepancies</td>
<td>42%</td>
</tr>
<tr>
<td>Test result not followed-up</td>
<td>12%</td>
</tr>
<tr>
<td>Work-up discrepancies</td>
<td>8%</td>
</tr>
<tr>
<td>Any of above</td>
<td>49%</td>
</tr>
</tbody>
</table>

Mount Sinai Practice Improvement Cluster

- Years: c. 1999-2001
- Supported by Hartford Foundation, United Hospital Fund, and Samuels Foundation
- Participants: nursing homes in Manhattan and Brooklyn and their referral hospitals
The problem: transfer forms

<table>
<thead>
<tr>
<th></th>
<th>NH-to-H</th>
<th>H-to-NH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recent events</td>
<td>99%</td>
<td>99%</td>
</tr>
<tr>
<td>Medications</td>
<td>98</td>
<td>99</td>
</tr>
<tr>
<td>Chronic conditions</td>
<td>98</td>
<td>98</td>
</tr>
<tr>
<td>MD name</td>
<td>96</td>
<td>99</td>
</tr>
<tr>
<td>Mental status</td>
<td>92</td>
<td>66*</td>
</tr>
<tr>
<td>Health care proxy</td>
<td>90</td>
<td>33*</td>
</tr>
<tr>
<td>Vital signs</td>
<td>90</td>
<td>23*</td>
</tr>
<tr>
<td>ADL function</td>
<td>84</td>
<td>74</td>
</tr>
<tr>
<td>Lab results</td>
<td>67</td>
<td>91*</td>
</tr>
</tbody>
</table>

* p ≤ .05

-Boockvar et al. JAMDA (2005)
The real problem: Medication discrepancies

<table>
<thead>
<tr>
<th></th>
<th>NH-to-H</th>
<th>H-to-NH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-transfer medications</td>
<td>6.5</td>
<td>6.1</td>
</tr>
<tr>
<td>Medication discrepancies</td>
<td>2.8</td>
<td>1.5</td>
</tr>
</tbody>
</table>

- Boockvar et al., Arch Int Med (2004)
Lessons

- **If**: Seeing medication information does not mean it is accurate
- **Then**: Practitioners should routinely access and compare multiple sources of medication information
  - to get a “gold standard” med list
Improvement Study #1

- MD/PharmD medication reconciliation intervention
- Years: c. 2002-2005
- Supported by New York State Dementia Grant
- Participants: Jewish Home Lifecare and Mount Sinai
## Medication reconciliation tool

<table>
<thead>
<tr>
<th>(Pharmacist)</th>
<th>(Physician)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Discrepancies:</strong></td>
<td><strong>Action:</strong></td>
</tr>
<tr>
<td>1. ___________</td>
<td>1. ___________</td>
</tr>
<tr>
<td>2. ___________</td>
<td>2. ___________</td>
</tr>
<tr>
<td>3. ___________</td>
<td>3. ___________</td>
</tr>
<tr>
<td><strong>Contraindicated meds:</strong></td>
<td><strong>Action:</strong></td>
</tr>
<tr>
<td>1. ___________</td>
<td>1. ___________</td>
</tr>
<tr>
<td><strong>Formulary suggestions:</strong></td>
<td><strong>Action:</strong></td>
</tr>
<tr>
<td>1. ___________</td>
<td>1. ___________</td>
</tr>
<tr>
<td><strong>Signature</strong></td>
<td>Signature</td>
</tr>
</tbody>
</table>
Impact: Medication reconciliation and ADEs

- Rate in medication reconciliation group: 2.3%
- Rate in control group: 11.6%
- 80% reduction

Improvement Study #2

- Controlled trial at a U.S. Veterans Affairs hospital
- Computerized medication reconciliation process; MD/PharmD
- Outcomes: ADEs caused by admission medication changes; 72-hour risk score

-Boockvar Arch Int Med (2011)
Medication reconciliation process

MD

Collects pre-admission medication history

 Writes orders

 Completes medication reconciliation document, resolves discrepancies

 Revises orders and documents as necessary

PharmD

Reviews medication history and reconciliation
OUTPATIENT MEDICATIONS FOR THE LAST 90 DAYS

PLEASE NOTE: The label 'Expired' or 'Suspended' does NOT mean the provider has discontinued this medication. The patient may be intended to be taking this medication.

Computer is the source for the following medication list:

ACTIVE:

FUROSEMIDE 40MG TAB Sig: TAKE ONE TABLET BY MOUTH DAILY

EXPIRED:

ACETAMINOPHEN 325MG TAB Sig: TAKE TWO TABLETS BY MOUTH EVERY 6 HOURS WHEN NEEDED FOR PAIN OR FEVER

ATORVASTATIN CALCIUM 80MG TAB Sig: TAKE ONE TABLET BY MOUTH EVERY DAY FOR CHOLESTEROL

DEXAMETHASONE ELIXIR 0.5MG/5ML Sig: TAKE 1 TEASPOONFUL BY MOUTH EVERY 12 HOURS

*Indicates a Required Field
At this time the inpatient orders omit or change the dosage or frequency of these outpatient medications:

**Reason:**

- omitted
- increased dose
- decrease dose
- other

**Reason:**

**Reason:**

**Reason:**

The following new medications are being ordered at this time:

**OUTPATIENT MEDICATIONS FOR THE LAST 90 DAYS**

Computer is the source for the following medication list:

Orders: Inpatient Medications

*Indicates a Required Field*
## Results

<table>
<thead>
<tr>
<th>Category</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patients / Admissions – n / N</td>
<td>612 / 795</td>
</tr>
<tr>
<td>Age, yr</td>
<td>66.9</td>
</tr>
<tr>
<td>Male – %</td>
<td>97.5</td>
</tr>
<tr>
<td>Number of conditions</td>
<td>3.1</td>
</tr>
<tr>
<td>Number of medications</td>
<td>6.4</td>
</tr>
<tr>
<td>Use of non-VA system medication – %</td>
<td>10.4</td>
</tr>
<tr>
<td>Illness severity score</td>
<td>2.0</td>
</tr>
<tr>
<td>Admission after 6pm – %</td>
<td>54.0</td>
</tr>
<tr>
<td>Surgical team – %</td>
<td>3.9</td>
</tr>
</tbody>
</table>
Result: Medication reconciliation reduced ADEs due to error

- ADE rate in medication reconciliation group: 5.3%
- ADE rate in control group: 9.2%
- 43% reduction
Lessons

- **If**: Medication reconciliation reduces harm during transitions
- **Then**: It should be done at every transition
Goal: Maintain and communicate accurate patient medication information

...Obtain information on the medications the patient is currently taking... Compare it with the ordered medications in order to identify and resolve discrepancies... Provide the patient with written medication information upon discharge... Explain the importance of managing medication information
Reconciliation steps

1. Whenever new information is discovered or orders created, compare with older sources -- Not only at transitions, also at routine visits
2. Identify/record differences and rationale
3. Alert prescriber if necessary
4. Inform/educate patient and family
Minimum documentation:

- Prior medications
  - Prescribed and over-the-counter
  - Pre-nursing home and pre-hospital regimens
  - Diagnostic indications

- Prescribing plan going forward
  - Continued medications
  - Changed medications
  - Diagnostic rationale
Recommended look-back period

Transfer  Transfer

Home  |  Hospital  |  Nursing home

Reconciliation 1

Reconciliation 2
Achieving high quality medication reconciliation

- Observations and interviews with house staff physicians and pharmacists
Pharmacist approach to medication reconciliation

Characterized by:

- Extensive information access and processing
- Long, comprehensive note
- Time to completion: 5-15 minute
- Attitude/belief: Medication reconciliation helps make decisions and prevent mistakes
MD approach

Characterized by:

- Scant information access and processing
- Scant documentation
- Time to completion: 1 minute
- Attitude/belief: medication reconciliation is a requirement but is not useful
Lessons

- **If:** Pharmacists, but not MDs, do medication reconciliation well

- **Then:** Engage pharmacists; involve MDs in a way that fits into their workflow; engage nurses
Top barriers to medication reconciliation

- Long medication list; many medications unlikely to cause harm
- Not enough time / competing tasks
- Patients are unreliable
The problem: Adverse drug events (ADEs)

<table>
<thead>
<tr>
<th>Harm (ADE)</th>
<th>Drug and discrepancy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pain</td>
<td>Omission of strong analgesic</td>
</tr>
<tr>
<td>Lethargy</td>
<td>Dose increase of sleep medication</td>
</tr>
</tbody>
</table>

-Boockvar et al., Arch Int Med (2004)
The real problem: only a few discrepancies cause ADEs

65 adverse drug events

1350 prescribing discrepancies

Rate = 65/1350 = 0.048
The real problem: most ADEs are minor and not caused by error

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Temporary symptoms (% of ADEs)</td>
<td>42</td>
</tr>
<tr>
<td>Temporary disability (%)</td>
<td>10</td>
</tr>
<tr>
<td>Additional hospital stay (%)</td>
<td>3</td>
</tr>
<tr>
<td>Result of a prescribing error (%)</td>
<td>48</td>
</tr>
</tbody>
</table>
Lessons

- **If**: Medication reconciliation is inefficient
  - Only a fraction of discrepancies cause harm
  - Most harm is minor
  - Half of harmful discrepancies are actually appropriate changes

- **Then**: We must make medication reconciliation more efficient
## Higher risk medication discrepancies

<table>
<thead>
<tr>
<th>Medication</th>
<th>ADEs/discrep</th>
<th>PPV (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opioid analgesic</td>
<td>15/54</td>
<td>.28 (.17-.42)</td>
</tr>
<tr>
<td>Non-opioid analgesic</td>
<td>5/37</td>
<td>.14 (.05-.30)</td>
</tr>
<tr>
<td>Nitrates</td>
<td>3/43</td>
<td>.07 (.02-.20)</td>
</tr>
<tr>
<td>Warfarin</td>
<td>3/45</td>
<td>.07 (.02-.19)</td>
</tr>
<tr>
<td>Angiotensin block</td>
<td>5/80</td>
<td>.06 (.02-.15)</td>
</tr>
<tr>
<td>Antiepileptic</td>
<td>3/53</td>
<td>.06 (.02-.17)</td>
</tr>
<tr>
<td>Antihypertensive</td>
<td>5/107</td>
<td>.05 (.02-.11)</td>
</tr>
<tr>
<td>Benzodi+antipsych</td>
<td>4/85</td>
<td>.05 (.02-.12)</td>
</tr>
<tr>
<td>Insulin</td>
<td>3/65</td>
<td>.05 (.01-.14)</td>
</tr>
</tbody>
</table>
### Higher risk patients

<table>
<thead>
<tr>
<th>Predictive factor</th>
<th>Total ADEs</th>
<th>ADEs from error</th>
<th>72h risk score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of medications</td>
<td>1.11</td>
<td>1.15</td>
<td>0.36</td>
</tr>
<tr>
<td>Illness severity</td>
<td>1.14</td>
<td>1.12</td>
<td>0.12</td>
</tr>
<tr>
<td>Surgical team</td>
<td>3.34</td>
<td>3.87</td>
<td>0.97</td>
</tr>
<tr>
<td>Use of non-system medication</td>
<td>1.45</td>
<td>1.63</td>
<td>0.62</td>
</tr>
<tr>
<td>Medication reconciliation</td>
<td>1.04</td>
<td>0.57</td>
<td>-0.31</td>
</tr>
</tbody>
</table>
Making medication reconciliation more efficient

- Check high priority drugs immediately and come back to low priority drugs later
  - When recording medications, put high-priority drugs at top of list and alphabetize others

- Target high risk patients:
  - Post-surgical, non-system use, more severe illness, more meds
Top barriers to medication reconciliation

- Long medication list; many medications unlikely to cause harm
- Not enough time / competing tasks
- Patients are unreliable
# Causes of medication discrepancy

<table>
<thead>
<tr>
<th>Factor</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient nonintentional nonadherence</td>
<td>34%</td>
</tr>
<tr>
<td>Instructions incomplete, inaccurate, or illegible</td>
<td>16%</td>
</tr>
<tr>
<td>Conflicting information from different data sources</td>
<td>15%</td>
</tr>
<tr>
<td>Drug duplication</td>
<td>8%</td>
</tr>
</tbody>
</table>

Coleman et al., 2005
Lessons

- **If**: Patients are a “weak link”
- **Then**: Educate patients and families to be a “strong link”
  – Teach-back method
Recap

- Seeing medication information ≠ accurate
  - Use multiple sources; together = gold standard

- Medication reconciliation reduces harm
  - Do it at every transition, every encounter

- Don’t count on MDs for reconciliation
  - Empower patients; engage RNs and pharmacists

- Medication reconciliation is inefficient
  - Target high risk medications and patients
Tools and Resources

- Regional Health Information Organization (RHIO) / National Health Information Network (NHIN)
- “Transitions of Care in the Long-term Care Continuum,” AMDA Practice Guideline
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Questions