Medication Error Detection by Hospitalized Patients and Analysis of Patient Satisfaction Using a Daily Medication List

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Background

• The call to engage patients more actively in their own care during hospitalization is relatively recent
• Hospital routines may do little to actively support patient and family involvement
• The “Speak Up” initiative by The Joint Commission, is one effort to change this culture
• The patient is the last safety stop / chance to prevent medication errors
Medical error detection and reporting has been studied primarily from the perspective of the health care provider.

Error identification and reporting from a patient perspective are not well researched.

An essential component to error reporting is problem/error recognition.

Patients and families may lack essential information needed to identify potential problems and errors.

Additionally, patients may interpret something as an error without realizing it is a planned change for a specific reason.
Previous study

• An IRB approved Pilot study was conducted on an adult medicine unit by pharmacy resident
• A list of the patient’s current daily medications was provided to patients enrolled in the pilot
• After reviewing the medication list, patients were asked if they had any questions or concerns
• 30 patients identified 19 medication errors.
• Examples of patient-identified errors included:
  • Incorrect medication allergy information
  • Medication reconciliation mistakes
  • Duplicate medications
  • Medication inappropriate for patient comorbidity
• 100% of patients completing satisfaction survey indicated that they would like to receive a medication list during any future hospitalizations.
Current Study: Purpose

- Determine if:
  - Patients receiving a daily medication list can identify medication errors, and
  - They feel more able to be involved in their care while hospitalized as compared with control group (standard of care)
  - Determine if patients would regularly like to have a list of their active hospital medications
Methodology

Inclusion Criteria
- ≥18 years of age
- Newly admitted to adult general medicine unit (separate control and intervention units)

Exclusion Criteria
- Non-communicative
- Cognitively impaired
- Non-English speaking
- Unable to read

Intervention Unit
(Patients receive a medication list daily from their nurse)
- Days 1-4
  - Daily medication list questions
- Day 5
  - (or sooner if day of discharge)
  - Daily medication list questions
  - Final Survey

Control unit
(Patients do not receive a medication list unless requested)
- Day 1
  - Final Survey

IRB approved
Medication List Uses Patient Friendly Terms

<table>
<thead>
<tr>
<th>Medication Name</th>
<th>Dose</th>
<th>Route</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>aspirin EC tablet 81 mg</td>
<td>81 mg</td>
<td>Oral</td>
<td>daily</td>
</tr>
<tr>
<td>insulin glargine (LANTUS SOLOSTAR) injection</td>
<td>40 Units</td>
<td>Subcutaneous</td>
<td>nightly at bedtime</td>
</tr>
<tr>
<td>lisinopril (PRINivil,ZESTRIL) tablet 10 mg</td>
<td>10 mg</td>
<td>Oral</td>
<td>daily</td>
</tr>
<tr>
<td>ondansetron (ZOFRAN) tablet 4 mg</td>
<td>4 mg</td>
<td>Oral</td>
<td>every 8 hours as needed for nausea, vomiting</td>
</tr>
</tbody>
</table>
Enrollment

257 total patients enrolled

157 patients on intervention unit

79 completed entire study

100 patients on control unit

78 discharged prior to study completion

No difference in age or gender between groups
Early Lessons

- Original plan to survey for 5 days, but quickly changed to 3 to catch more patients on final day survey

- Early difficulty finding patients who received the list – took some time for nursing staff to get into the habit of printing for each patient

Did you receive a Daily Medication List?

- No
- Yes
- Offered but declined list
Intervention Unit: Percent of patients with questions or concerns about medications after reviewing list

Day 1  Day 2  Day 3  Day 4  Day 5

p=0.002
Final Day Questions

Final Day survey questions - responses from a total of 179 subjects (100 control; 79 intervention)

<table>
<thead>
<tr>
<th>Question</th>
<th>% responding “yes”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ask questions about your medications to your doctor, nurse, or pharmacist?</td>
<td>64.8%</td>
</tr>
<tr>
<td>Identify any medication issues you considered a problem or mistake?</td>
<td>21.8%</td>
</tr>
</tbody>
</table>
### What were the questions you asked?

<table>
<thead>
<tr>
<th>Questions</th>
<th>Intervention Group</th>
<th>Control Group</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purpose of the drug</td>
<td>51.9%</td>
<td>53.0%</td>
<td>NS</td>
</tr>
<tr>
<td>Time of day to take the drug</td>
<td>17.7%</td>
<td>10.0%</td>
<td>NS</td>
</tr>
<tr>
<td>Side effects</td>
<td>11.4%</td>
<td>16.0%</td>
<td>NS</td>
</tr>
<tr>
<td>Other</td>
<td>21.5%</td>
<td>10.0%</td>
<td>0.027</td>
</tr>
<tr>
<td>Did you let your doctor, nurse or pharmacist know about your concern?</td>
<td>Control unit</td>
<td>Intervention unit</td>
<td>p value</td>
</tr>
<tr>
<td>---------------------------------------------------------------</td>
<td>--------------</td>
<td>-------------------</td>
<td>---------</td>
</tr>
<tr>
<td>91.3% responded Yes</td>
<td>100% responded Yes</td>
<td>0.341 (NS)</td>
<td></td>
</tr>
</tbody>
</table>
Problems Identified and Questions Asked by Patients

- Specific questions asked by patients and issues were reviewed by the study team and categorized by common themes.
- Major themes were:
  - Communication (31) (i.e., patient unaware of intended medication changes)
  - Pain Related (10)
  - Hospital Procedures (8)
  - Medication Timing (6)
  - Side Effects/Misc (9)
Communication-related Questions asked by Patients

• “Why was I switched to a different medication?”
• “This dose is different than what I take at home”
• “I have hepatitis, but they ordered Tylenol for me”
• “Why am I not getting Xanax that I take at home?” (patient was ordered clonazepam in hospital)
• “Why is Tylenol listed twice” (both po and rectal routes ordered for pm)
• “… medication on my list but I’ve never received it”
## Feedback from Patients on Medication List

<table>
<thead>
<tr>
<th>Description</th>
<th>% moderately to strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Made me more aware of the medications I was taking while in the hospital</td>
<td>89.7%</td>
</tr>
<tr>
<td>Improved medication safety</td>
<td>87.3%</td>
</tr>
<tr>
<td>I was encouraged by my doctor, nurse, or pharmacist to ask questions about my medications</td>
<td>91.0%</td>
</tr>
<tr>
<td>Using the medication list made it easier for me to ask questions of my doctor, nurse, or pharmacist</td>
<td>84.8%</td>
</tr>
<tr>
<td>Using the medication list caused me to be more involved in my medical care while in the hospital</td>
<td>80.8%</td>
</tr>
</tbody>
</table>
Feedback from Patients on Medication List (cont’d)

- Would you like to receive medication lists if you are hospitalized again?
  - 100% of intervention unit vs 83% on control units said Yes (p = 0.000)

- How often would you like to receive a medication list?
  - Daily: 36%
  - Every other day: 11%
  - Once during visit: 17%
  - Upon request: 17%
  - Other: 19%
I am confident that I could

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Control</th>
<th>Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tell a nurse in the hospital that the medication being delivered to me is late.</td>
<td>92.0%</td>
<td>93.7%</td>
</tr>
<tr>
<td>Tell a nurse or doctor in the hospital that I have an allergy to a medication I am being asked to take.</td>
<td>98.0%</td>
<td>97.4%</td>
</tr>
<tr>
<td>Tell a nurse in the hospital that the medication I am being asked to take does not look like the right medication.</td>
<td>94.9%</td>
<td>91.1%</td>
</tr>
<tr>
<td>Ask my nurse to explain the purpose of a medication I am being asked to take.</td>
<td>93.9%</td>
<td>94.9%</td>
</tr>
<tr>
<td>Ask my doctor why I am being prescribed a new medication.</td>
<td>93.9%</td>
<td>97.5%</td>
</tr>
</tbody>
</table>
Before giving (you/your family member) any new medicine, how often did hospital staff tell (you/your family member) what the medicine was for?

Before giving (you/your family member) any new medicine, how often did hospital staff describe possible side effects?

74 Med = Intervention unit
75 Med = Control Unit
Did the daily medication list make a difference?

- Patients liked receiving the list
- Patients on both control and intervention units were confident they would speak up about problems and concerns
- Medication list provided an opportunity for patients to raise concerns
- Patients identified important medication issues when given a daily medication
- Patients identified errors where there was none. We saw this as an opportunity for improved communication to patients:
  - Explaining formulary medication changes, explaining intentional starting/stopping of medications.
- Patients want to receive the medication lists if hospitalized again
Clinician Survey

- Electronic survey link sent to staff who cared for patients on the intervention unit during the study time
- 28 staff completed the survey and were asked if they were aware patients were receiving list
  - 3 pharmacists (100% aware)
  - 5 physicians (60% aware)
  - 20 RNs (90% aware)
<table>
<thead>
<tr>
<th>0 = strongly disagree, 100=strongly agree</th>
<th>Pharmacist (2) Mean (Std Dev)</th>
<th>MD (5) Mean (SD)</th>
<th>RN (20) Mean (SD)</th>
<th>Total (27) Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are more likely to ask questions about the drugs they are receiving than a patient who has not received a list.</td>
<td>87.50 (13.44)</td>
<td>71.20 (19.64)</td>
<td>73.63 (18.02)</td>
<td>74.23 (17.86)</td>
</tr>
<tr>
<td>Are more likely to ask questions about their hospital stay and care (progress, plans for the day, plans for discharge, etc).</td>
<td>89.00 (11.31)</td>
<td>63.00 (27.92)</td>
<td>60.89 (18.24)</td>
<td>63.46 (20.25)</td>
</tr>
<tr>
<td>Have discussed potential problems/mistakes on the list (allergy error, change from home medication, etc) to one of their caregivers.</td>
<td>64.00</td>
<td>69.40 (12.66)</td>
<td>70.84 (19.05)</td>
<td>70.28 (17.35)</td>
</tr>
<tr>
<td>Have raised questions that resulted in the orders/plan of care being changed for them.</td>
<td>50.00</td>
<td>62.60 (20.61)</td>
<td>62.11 (22.87)</td>
<td>61.72 (21.66)</td>
</tr>
<tr>
<td>Are more likely to be actively engaged in their care.</td>
<td>87.50 (14.85)</td>
<td>67.80 (23.91)</td>
<td>63.00 (24.67)</td>
<td>65.81 (24.14)</td>
</tr>
</tbody>
</table>
Would you like to have patients receive a daily list of the medications they are receiving during their hospital stay?

<table>
<thead>
<tr>
<th></th>
<th>Pharmacist</th>
<th>MD</th>
<th>RN</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Some, but not all Patients</td>
<td>1</td>
<td>1</td>
<td>14</td>
<td>16</td>
</tr>
<tr>
<td>Yes</td>
<td>2</td>
<td>4</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td>Total</td>
<td>3</td>
<td>5</td>
<td>20</td>
<td>28</td>
</tr>
<tr>
<td>% yes</td>
<td>66.7%</td>
<td></td>
<td></td>
<td>35.7%</td>
</tr>
</tbody>
</table>
Summary and Conclusions

• Patients universally gave positive feedback about the opportunity to receive a daily list of their inpatient medications.

• Patients most often had questions or identified concerns early during their hospital stay when given a medication list.

• In this project patients did not identify a large number of medication errors but did help us identify opportunities for enhanced communication with them regarding changes to their medications.

• Our experience with a daily medication list as a tool for patient engagement was positive and we plan to more widely implement this strategy in our hospital.

• We believe this strategy may be useful for other healthcare organizations.