Clinical Safety & Effectiveness
Session # 6

Increasing Medication Reconciliation in an Outpatient HIV Clinic

CENTER FOR PATIENT SAFETY & HEALTH POLICY
UT Health Science Center
SAN ANTONIO

Educating for Quality Improvement & Patient Safety
Team Members

CSE Course Participants:

Delia Bullock, MD
Assistant Professor of Medicine
Division of Infectious Disease, School of Medicine
UT Health Science Center San Antonio
Medical Director
University Health System FFACTS Clinic

Veronica Young, PharmD, MPH
Clinical Assistant Professor, UT Austin College of Pharmacy and Pharmacotherapy & Education Research Center, School of Medicine
UT Health Science Center San Antonio
Associate Director, Drug Information Service
Team Members (cont.)

Team Members:

Paul Alfieri, RN, ACRN  
Clinic Nurse Supervisor, FFACTS Clinic

Betty Vestal, MSN, RN  
Director, Clinical Services, FFACTS Clinic

Elisa Fischer  
Administrative Associate, UT Austin College of Pharmacy

Facilitator: Amruta Parekh, MD, MPH  
Center for Patient Safety and Health Policy  
School of Medicine, UT Health Science Center San Antonio
Table 1. Aim Statement

<table>
<thead>
<tr>
<th>Project Aim</th>
<th>To increase the percentage of medication reconciliation conducted by providers at the UHS Immunosuppression Clinic (FFACTS) to 100%</th>
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</thead>
<tbody>
<tr>
<td>Intervention Period</td>
<td>October 1 to December 31, 2010</td>
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<tr>
<td>Rationale</td>
<td>Improve patient safety by meeting Joint Commission’s National Patient Safety Goal #8 – “accurately and completely reconcile medications across the continuum of care”</td>
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Project Milestones

• Team created August 2010
• AIM statement created August 2010
• Weekly team meetings August-November 2010
• Background data, brainstorm sessions, workflow and fishbone Analyses September-October 2010
• Interventions implemented October - December 2010
• Data analysis October 2010 - January 2011
• CS&E presentation January 20, 2011
Medication Reconciliation

• National Patient Safety Goal (NPSG) #8
  “accurately and completely reconcile medications across the continuum of care”

• Definition
  process of identifying the most comprehensive and accurate list of medications a patient is taking, and using this list to provide correct medications to the patient anywhere in the system
Med Rec (cont.)

• Medication discrepancies (medical record vs. patient’s list) reported in the ambulatory setting: 26% - 88%

• Medication error accounts for:
  – > 7,000 deaths annually\(^1\)
  – > $3.5 billion in hospital costs\(^2\)

1. Institute of Medicine. To err is human: building a safer health system, 1999.
Med Rec (cont.)

**Why?** Avoid medication errors - omissions, duplications, dosing errors, drug interactions

**When?** At every transition of care; during any episode of care

**What?** *Communicate* the updated list to appropriate care providers, caregivers, and the patient

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**Example: reconciled medication list**

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Medication reconciliation - AMBULATORY [Jan 14, 2011]
Complete: General

Allergies:
- No Known Medication Allergies:

Medications:
- doxycycline hyclate 100 mg tablet: 1 tab(s) orally once a day, Active, 30, 0
- econazole topical 1% cream: 1 app apply topically 2 times a day, Active, 60, 2
- albuterol CFC free 90 mcg/inh aerosol with adapter: 2 puff(s) inhaled 4 times a day x 30 days, Active, 240, 6
- Advair Diskus 100 mcg-50 mcg powder: 1 puff(s) inhaled 2 times a day x 30 days, Active, 60, 6
- erythromycin 250 mg tablet: 1 tab(s) orally every 6 hours x 30 days, Active, 120, 6
- Nexium delayed release capsule 40 mg: 1 cap(s) orally once a day, Active, 30, 6
- Lipitor tablet 10 mg: 1 tab(s) orally once a day (at bedtime), Active, 30, 6
- Oramorph SR tablet, extended release 30 mg: 1 tab(s) orally every 6 hours x 30 days, Active, 120, 6
- Ativan tablet 1 mg: 1 tab(s) orally twice a day x 30 days, Active, 60, 1
- acetaminophen-hydrocodone tablet 325 mg-10 mg: 1 tab(s) orally every 6 hours, Active, 120, 6
- 3cc syringe and needles for depo IM injections: 1 IM once a week, Active, 12, 3
- Depo-Testosterone solution cypionate 200 mg/mL: 1.5 mL intramuscularly every 2 weeks, Active, 1, 6
- Viracept tablet 625 mg: 2 tab(s) orally 2 times a day, Active, 120, 6
- Truvada tablet 200 mg-300 mg: 1 tab(s) orally once a day, Active, 30, 6

Medication Reconciliation:
Medications: Reviewed and updated based on chart & patient information.

Electronic Signatures:
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Case

• 40-year-old man with HIV; well-controlled
• Presents for follow-up complaining of easy bruising and gum bleeding
• Physical examination was normal, including skin and gums
• Medication reconciliation conducted

• 4 months later, patient presents after a fall and minor trauma with severe ecchymosis to right knee, elbow and shoulder

• Patient reports taking aspirin 325 mg 8 tablets every night
• Aspirin was not listed on the reconciled list from previous clinic visit
Problem Identified

Haphazard application of medication reconciliation

- Providers were not consistently conducting medication reconciliation
- The list of reconciled medication was not consistently given to the patient
Figure 1. Process Analysis – Pre-Intervention Flow chart

1. Patient arrives at FFACTS Sign in
   - Wait in waiting room
   - Nurse takes patient to triage area
     - Nurse takes vitals, chief complaint, Hx; Updates Rx record in Sunrise
     - Exam room available
       - Exam room available
         - YES
           - Wait for provider in exam room
             - Provider interviews & examines patient; Makes changes to meds as needed; Review medicine list in Sunrise
               - Provider performs medication reconciliation?
                 - YES
                   - Nurse reviews plan and med list; dismisses patient with F/U appt, labs, and med list (may or may not have been reconciled)
                 - NO
                   - NO
                     - Patient goes back to waiting room
                     - Nurse reviews plan and med list; dismisses patient with F/U appt, labs, and med list (may or may not have been reconciled)
                     - NO
Figure 2. Process Analysis - Fishbone

Personnel (RPh)
- No active role in med rec
- Physically not located in clinic
- Lack of communication between staff
- Multiple physicians in UHS
- Physicians outside UHS
- Multiple pharmacies outside UHS

Personnel (Nurse)
- Time constraints
- Perceived lack of importance
- Questions necessity of med rec when MD make changes anyway
- Separate locations for MD notes and nurses notes
- Separate med note must be opened to print
- Can’t print med rec note from Rx Writer
- 2 systems for medicine records (Sunrise vs. pharmacy)

Personnel (MD)
- No formal training
- No incentive to comply
- Time constraints
- No formal training
- Separate locations for MD notes and nurses notes
- Separate med note must be opened to print
- Can’t print med rec note from Rx Writer
- 2 systems for medicine records (Sunrise vs. pharmacy)

System
- No training for personnel
- Lack of communication between staff
- Multiple physicians in UHS
- Physicians outside UHS
- Multiple pharmacies outside UHS
- No reminder prompts to do med rec
- No method to increase awareness of patient safety goals

Database
- Lack of sense of empowerment
- Reliant on provider
- Lack of knowledge of meds
- Health literacy

Patient
- Haphazard Application of Medication Reconciliation
Rapid Cycle PDCA: Plan-Do-Check-Act
# PDCA: “Plan”

## Table 2. Process Improvement Plan

<table>
<thead>
<tr>
<th>Metric</th>
<th>Percentage of medication reconciliation conducted by providers per month pre- and post-intervention</th>
</tr>
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<tbody>
<tr>
<td><strong>Interventions Planned</strong></td>
<td>Communication, verbal &amp; written (group, individual) Reminders</td>
</tr>
<tr>
<td><strong>Monitoring period</strong></td>
<td>3 months (October, November, December 2010)</td>
</tr>
<tr>
<td><strong>Method</strong></td>
<td>Each month, 10 unique medical records from each provider were randomly selected and reviewed for compliance; 100 medical records total per month</td>
</tr>
<tr>
<td><strong>Outcome</strong></td>
<td>Individual and group compliance were measured</td>
</tr>
<tr>
<td><strong>Decision analysis tools</strong></td>
<td>Pareto diagram (individual data) Run chart (individual and average data)</td>
</tr>
</tbody>
</table>
Brainstorming and Planning the Project
## PDCA: “Do”

### Table 3. Interventions in October and November

<table>
<thead>
<tr>
<th>Interventions</th>
<th>10/2010</th>
<th>11/2010</th>
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<tbody>
<tr>
<td>1. Medication reconciliation responsibility delegated to providers</td>
<td>√</td>
<td></td>
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<tr>
<td>2. Improved clinician and staff awareness of medication reconciliation through written education (letter sent via email)</td>
<td>√ √</td>
<td></td>
</tr>
<tr>
<td>3. Medical Director met with individual physicians</td>
<td>√ √</td>
<td></td>
</tr>
<tr>
<td>4. Medical Director met with the staff (nurses, case managers)</td>
<td>√</td>
<td></td>
</tr>
<tr>
<td>5. Medical Director met with individual staff</td>
<td></td>
<td>√</td>
</tr>
<tr>
<td>6. Worked with IT to add a new field in Sunrise to document medication reconciliation (“checkbox”)</td>
<td>√</td>
<td></td>
</tr>
<tr>
<td>7. Developed reminder posters for providers; posted in exam rooms</td>
<td></td>
<td>√</td>
</tr>
<tr>
<td>8. Developed staff/ patient awareness posters; posted in patient waiting and nurses areas</td>
<td></td>
<td>√</td>
</tr>
</tbody>
</table>
Patient arrives at FFACTS Sign in

Wait in waiting room

Nurse takes patient to triage area

Nurse takes vitals, chief complaint, Hx; Updates Rx record in Sunrise

Wait for provider in exam room

Provider interviews & examines patient; Makes changes to meds as needed; Review medicine list in Sunrise

Exam room available

YES

Provider performs medication reconciliation?

YES

Reconciled med list mailed to patient

Exam room available

NO

Patient goes back to waiting room

YES

NO

Nurse reviews plan and med list; dismisses patient with F/U appt, labs, and med list (may or may not have been reconciled)
Figure 4. “Check Box” in Sunrise
ATTENTION

Do you know your medicines?

ASK about your medicines at EVERY clinic visit
ATTENTION

Do you know your medicines?

ASK about your medicines at EVERY clinic visit

Figure 6. Reminder Poster
Check that Box in Sunrise
Medication Reconciliation
DONE!
Implementation Issues

• Coordinating providers and staff
• Understanding the importance of med rec
• Getting “buy-in”
• Collecting data required multi-steps; time-consuming
PDCA: “Check”

Figure 8. Baseline data of percentage of medication reconciliation conducted by providers at the UHS Immunosuppression Clinic (Jul-Sept %)
Figure 9. Percentage of medication reconciliation conducted by provider by months
Figure 9. Percentage of medication reconciliation conducted by provider by months
Table 4. Percent Medication Reconciliation Conducted

<table>
<thead>
<tr>
<th>Provider</th>
<th>Baseline(%)&lt;sup&gt;1&lt;/sup&gt;</th>
<th>Oct (%)</th>
<th>Nov (%)</th>
<th>Dec (%)</th>
<th>AVG% provider</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>70</td>
<td>100</td>
<td>60</td>
<td>90</td>
<td>80</td>
</tr>
<tr>
<td>B</td>
<td>60</td>
<td>60</td>
<td>60</td>
<td>50</td>
<td>58</td>
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<tr>
<td>C</td>
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<td>80</td>
<td>70</td>
<td>60</td>
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<td>40</td>
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<td>60</td>
<td><strong>38</strong></td>
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<td>I</td>
<td>60</td>
<td>20</td>
<td>20</td>
<td>40</td>
<td><strong>35</strong></td>
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<tr>
<td>J</td>
<td>80</td>
<td>80</td>
<td>40</td>
<td>80</td>
<td>70</td>
</tr>
<tr>
<td>AVG% (month)</td>
<td>72</td>
<td>60</td>
<td>49</td>
<td>58</td>
<td></td>
</tr>
</tbody>
</table>

1. Baseline: data from July/Aug/Sept 2010
PDCA: “Check” (cont.)

• Poster reminders appear to be affecting changes in patients’ behavior
  – Prompted patients to ask more questions about their medicines
PDCA: “Act”

- Continue this quality improvement project
- Re-evaluate intervention methods
- Obtain feedback from providers and staff
- Revise metric to collect data: separate providers and nurses
Figure 10. Re-evaluation of the cause-and-effect diagram

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Haphazard Application of Medication Reconciliation
Return on Investment

• ROI has not been evaluated at this time
• Evidence: model for calculating ROI for med rec in the in-patient setting
• Need for a model in the out-patient setting
• Variables:
  – Project errors that could result from unreconciled med list
  – Project cost associated with different types of med errors
  – Project savings resulting from med errors prevented
Conclusion

• To completely and accurately reconcile medications is an important patient safety goal
• Consistency requires a team-approach
• Future plans to continue this process improvement project
  – Feedback from providers and staff
  – Re-evaluate interventions
  – Re-define metric to measure compliance
Acknowledgements

The team of providers and staff at the FFACTS Clinic
Thank you and Questions