Title of Session: Research Highlights from the ASHP Foundation
Program #: 204-000-06-227-L01
Presentation Date and Time: Tuesday, December 5, 2006, 0800 to 1100

Presentation Title:
Collaborative Pharmacist and Nurse Before/After Study to Evaluate Patient Safety Using Electronically Standardized Admission and Discharge Medication Reconciliation in a Tertiary Care Hospital
Joan S. Kramer, Pharm.D., BCPS, Clinical Research and Hospital Medicine Specialist, Wesley Medical Center, Wichita, KS (PI-85)

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Speaker Biography:
Joan S. Kramer, PharmD, BCPS
Dr. Joan Kramer is the Clinical Research and Hospital Medicine Specialist at Wesley Medical Center in Wichita, KS. Dr. Kramer completed her doctor of pharmacy degree at The University of Kansas and an ASHP-accredited primary care residency at the James A. Haley VA in Tampa, FL. Dr. Kramer’s commitment to education involves precepting pharmacy students and residents in hospital medicine and oncology. Her research includes immunosuppressive medication compliance, mycophenolate mofetil pharmacokinetic studies, vaccination, deep vein thrombosis prophylaxis and medication reconciliation. Her professional memberships include ASHP, ACCP, AST, KPHA and KSHP.

Presentation Outline:
Collaborative Pharmacist and Nurse Before/After Study to Evaluate Patient Safety Using Electronically Standardized Admission and Discharge Medication Reconciliation in a Tertiary Care Hospital

I. Significance of Medication Reconciliation
II. Goals
   a. Feasibility
   b. Standardized system
c. Targeted population
d. Collaborative – Pharmacist/Nurse

III. Methods
a. Prospective Before/After design
b. Potential subjects identified through the use of trigger questions
c. Statistical analysis
d. Inclusion/exclusion criteria
e. Medication reconciliation process
f. Report development

IV. Results
a. Patient enrollment
b. Demographics
c. Admission medication reconciliation
d. Before phase vs. After phase nurse interventions
e. After phase vs. Before phase pharmacist interventions
f. After phase pharmacist time motion results
g. Physician participation
h. Patient satisfaction

V. Challenges

VI. Experience of medication reconciliation implementation

Abstract:
PI-85

<T1> Collaborative pharmacist and nurse before/after study to evaluate patient safety using electronically standardized admission and discharge medication reconciliation in a tertiary care hospital

<AU> Kramer, J. S.
<AA> Wesley Medical Center, Pharmacy Dept., 550 N. Hillside, Wichita, KS 67214, USA Internet: joan.kramer@wesleymc.com

<AB> Background: Study goals were to implement and evaluate the feasibility and impact of a collaborative, standardized, targeted, electronic-based, pharmacist- and nurse-conducted admission and discharge medication reconciliation documentation process. Methods: This prospective Before/After study was conducted on a 48-bed adult general medical unit. Potential patients were identified through a set of trigger questions the nurse asked the patient during the admission assessment. Before phase: admission medication histories and discharge medication counseling followed standard care processes. After phase: pharmacists obtained the patient medication history and collaborated with nurses, using electronic admission and discharge medication
reconciliation. The Clinical Patient Care System was programmed to allow pharmacists to electronically document medications for reconciliation. **Results:** Four reports were developed and implemented to assist with medication reconciliation. One hundred forty-seven patients were enrolled during the Before phase and 136 patients in the After phase. In the Before phase, nurses completing the patient admission medication history identified more incomplete medication orders (p=0.0016) and medication dose changes (p=0.0009). In the After phase, pharmacists completed more dose changes (p=0.0184), documented a greater number of allergies (p<0.0001) and called a total of 50 retail pharmacies to obtain medication information for admission reconciliation. Prescribers completed both admission and discharge medication reconciliation in the After phase for 78 patients (56.9%). **Conclusion:** Patients who had their medications electronically reconciled reported a statistically significant (p=0.001) greater understanding of what medications should be continued after discharge, how and when to take their medications and potential side effects.

<AB> Learning objectives:
1. Explain the results of patients surveyed who had medication reconciliation documentation process completed during hospitalization.

<AB> Self-assessment questions:
1. True or False. Patients who received a Patient Discharge Medication Profile report at discharge did have a good understanding their medications, including when and how to take their medications and potential side effects.

<AB> Answers:
1. True

**Additional Handout Material:**
Admission and Discharge Medication Reconciliation Process
Patient Assessment

Nurse

Does patient meet criteria?

Nurse takes home history and medications in the history

Pharmacist takes home profile and documents in the Meditech system and ‘HI’ order

Nurse prints home history and places in

Pharmacist "locks" the medication profile in the pharmacy

Nurse calls physician to patient admission orders review home medication

Pharmacist prints the medication reconciliation places in the physician order of the patient

Home medication marked to reflect order

Pharmacist and nurse contacting the physician to the admission

Home medication history scanned to pharmacy for processi

Physician called to obtain admission orders and to home

Inpatient profile is pharmacy module pharmacy

Home medication report is marked to reflect medications to be admission. The report is pharmacy for order

* TRIGGER

- Do you > 7 medications (total prescriptions, over-the-counter, product
- Do you have
- Do you have chronic obstructive disease
- Do you have
- Do you have any cardiac condition infarction (MI), congestive heart arrhythmias, hypertension
- Were you admitted with an reaction
- Do you need vaccinated pneumococcal disease (i.e. never Pneumococcal ® received it more than 5
- Do you need to be vaccinated influenza (e.g. not yet vaccinated
- Do you have more than 3 allergy
- Do you have medications that identify

Transferred

Discharge

Transferred
Bibliography:


23. IHI 100k lives campaign: prevent adverse drug events. 2006. (Accessed 03/24/06, 2006, at


Slides: See PowerPoint file
Collaborative Pharmacist and Nurse Before/After Study to Evaluate Patient Safety Using Electronically Standardized Admission and Discharge Medication Reconciliation in a Tertiary Care Hospital

Joan S. Kramer, PharmD, BCPS
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Wesley Medical Center, Wichita, KS
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- James C. Garrelts, BS, PharmD
- LaDonna S. Hale, PharmD
- Tina M. Nester, PharmD
- Patty Cochran, BSN, MSN
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- Robert D. Haneke, BS, PharmD
Wesley Medical Center

- Full scope of inpatient and outpatient diagnostic and treatment services
- Medical staff of 700 physicians
- > 2,000 other healthcare providers and support staff
- Licensed 760-bed, 102 bassinet teaching hospital
- Serves Wichita, much of Kansas and parts of northern Oklahoma.

Wesley Medical Center
Wichita, Kansas
www.wesleymc.com
Medication Reconciliation

Significance

- 60% of medication errors occur during transitions in care
- 5% of U.S. hospitals utilize pharmacists to obtain medication histories
- Joint Commission for the Accreditation of Healthcare Organizations requirement
Study Goals

• Feasibility
• Standardized system
• Targeted population
• Collaborative – Pharmacist/Nurse
Methods

• Prospective Before/After design
• 48-bed adult general medical unit
• Potential subjects identified by trigger questions
• Approved by local scientific review committee and Institutional Review Board
Methods

Statistical Analysis

• Categorical data: Fisher’s Exact Test
• Continuous measures: unpaired t test
• Statistical significance set a priori at p<0.05
Methods

Inclusion criteria
• Admission to study unit
• > 18 years old
• Trigger question criteria met
• Signed consent (later verbal)

Exclusion criteria
• Nursing medication history > 2 hours post-admission
• 23-hour observation patients
• Transfer to or from another unit
• Intentional drug overdose
• Patients unusable to provide content
Reconciliation Process

Patient Admission Assessment initiated by

Nurse takes home medication history and documents medications in the admission history.
Pharmacist Order Entry Process

Mode: Order Entry  Process Orders

Patient PHA, POSTER PATIENT  Acct # W00000003081  Status ADM IN  U # W000000230
Attend Dr. Logan, James E  MD  A/S 34/M  W.71S  Rm W.4721-1  Reg 10/03/05

NOTE:
ALLERGIES: NO KNOWN DRUG ALLERGIES
BIRTH:
HT: 170.18 cm (5ft, 7in)  WT: 63.503 kg (140lb, 0oz)  BSA: 1.73 m²  IBW: 66.10 kg
HT/WT EDIT: 10/06/05  CR CL: 93.49 ml/min (Est)
ADM DIAGNOSIS:
RESIDENTS:
CONSULT:

<table>
<thead>
<tr>
<th>Medication</th>
<th>Dose/Vol</th>
<th>Sig/Rate</th>
<th>Route</th>
<th>C Start</th>
<th>Stop</th>
<th>L</th>
<th>Sta</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATENOLOL 25MG TABLET</td>
<td>25 MG</td>
<td>DAILY</td>
<td>PO</td>
<td>* 10/14-1500</td>
<td>10/14-1501</td>
<td></td>
<td>CKD</td>
</tr>
<tr>
<td>ATORVASTATIN 10MG TABLET</td>
<td>10 MG</td>
<td>QHS</td>
<td>PO</td>
<td>* 10/14-1500</td>
<td>10/14-1501</td>
<td></td>
<td>CKD</td>
</tr>
<tr>
<td>FUROSERIDE 40MG TABLET</td>
<td>40 MG</td>
<td>QAM</td>
<td>PO</td>
<td>* 10/14-1500</td>
<td>10/14-1501</td>
<td></td>
<td>CKD</td>
</tr>
<tr>
<td>POTASSIUM CL 20 MEQ SQ. TAB</td>
<td>20 MEQ</td>
<td>DAILY/6KFT</td>
<td>PO</td>
<td>* 10/14-1500</td>
<td>10/14-1501</td>
<td></td>
<td>CKD</td>
</tr>
<tr>
<td>SAW PALMETTO (NUTRACEUTICAL) 1</td>
<td>2 CAPS</td>
<td>BID</td>
<td>PO</td>
<td>* 10/14-1500</td>
<td>10/14-1501</td>
<td></td>
<td>CKD</td>
</tr>
<tr>
<td>WARFARIN SODIUM 3MG TABLET</td>
<td>6 MG</td>
<td>QPM</td>
<td>PO</td>
<td>* 10/14-1500</td>
<td>10/14-1501</td>
<td></td>
<td>CKD</td>
</tr>
</tbody>
</table>

Func Enter Orders
Dr HM DEA  Status INP  Order Type HM
**Mode: Order Entry**

**Process Orders**

**Patient** PHA, POSTER PATIENT  
**Acct #** W00000003081  
**Status** ADM IN  
**U #** W000000230  
**Attend** Dr Logan, James E MD  
**A/S** 34/M  
**W.7TS**  
**Rm** W.4721-1  
**Reg** 10/03/05

**NOTE:**

**ALLERGIES:** NO KNOWN DRUG ALLERGIES

**HT:** 170.18cm (5ft, 7in)  
**WT:** 63.503kg (140lb, oz)  
**BSA:** 1.73m2  
**IBW:** 66.10 kg

**BIRTH:**

**HT/WT EDIT:** 10/06/05  
**CR CL:** 93.49 ml/min (Est)

**ADM DIAGNOSIS:**

**CONSULTS:**

<table>
<thead>
<tr>
<th>Medication</th>
<th>Dose/Vol</th>
<th>Sig/Rate</th>
<th>Route</th>
<th>C</th>
<th>Start</th>
<th>Stop</th>
<th>L</th>
<th>Sta</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATENOLOL 25 MG TABLET</td>
<td>25 MG</td>
<td>DAILY</td>
<td>PO</td>
<td>*</td>
<td>10/14-1500</td>
<td>10/14-1501</td>
<td>CKD</td>
<td></td>
</tr>
<tr>
<td>ATORVASTATIN 10 MG TABLET</td>
<td>10 MG</td>
<td>QHS</td>
<td>PO</td>
<td>*</td>
<td>10/14-1500</td>
<td>10/14-1501</td>
<td>CKD</td>
<td></td>
</tr>
<tr>
<td>Furosemide 40 MG TABLET</td>
<td>40 MG</td>
<td>QAM</td>
<td>PO</td>
<td>*</td>
<td>10/14-1500</td>
<td>10/14-1501</td>
<td>CKD</td>
<td></td>
</tr>
<tr>
<td>POTASSIUM CL 20 MEQ SA,TAB</td>
<td>20 MEQ</td>
<td>DAILYWKBFT</td>
<td>PO</td>
<td>*</td>
<td>10/14-1500</td>
<td>10/14-1501</td>
<td>CKD</td>
<td></td>
</tr>
<tr>
<td>SAW PALMETTO (NUTRACEUTICAL) 1</td>
<td>2 CAPS</td>
<td>BID</td>
<td>PO</td>
<td>*</td>
<td>10/14-1500</td>
<td>10/14-1501</td>
<td>CKD</td>
<td></td>
</tr>
<tr>
<td>WARFARIN SODIUM 3 MG TABLET</td>
<td>6 MG</td>
<td>QPM</td>
<td>PO</td>
<td>*</td>
<td>10/14-1500</td>
<td>10/14-1501</td>
<td>CKD</td>
<td></td>
</tr>
</tbody>
</table>

**Med** LANDOT.122 - DIGOXIN 0.125 MG TABLET  
**Dose** 0.125 MG  
**Rt PO** Sig DAILY - 0900 &DAILY  
**Sch** SCH CM **Par**  
**Disp** 0  
**Start** 10/14/05 1500  
**Cart Amt** 0  
**Total Doses** Stop 10/14/05 1501  
**Queries?** Inv 7TSOUTH (ENTIRE)  
**Cart Amt** 0
### Locking Patient Profile Screen

**Enter/Edit PHA Patient Data**

<table>
<thead>
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<tbody>
<tr>
<td>Acct #</td>
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<tr>
<td>Loc</td>
<td>W.7TS</td>
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<tr>
<td>U #</td>
<td>W000000230</td>
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<tr>
<td>Ag/Sx</td>
<td>34/M</td>
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<tr>
<td>Rm</td>
<td>4721</td>
</tr>
<tr>
<td>Reg</td>
<td>10/03/05</td>
</tr>
<tr>
<td>Attending Dr</td>
<td>Logan, James E MD</td>
</tr>
<tr>
<td>Status</td>
<td>ADM IN</td>
</tr>
<tr>
<td>Bed</td>
<td>1</td>
</tr>
<tr>
<td>Cart</td>
<td>7TS</td>
</tr>
<tr>
<td>Height</td>
<td>5 ft 7 in 170.18 cm</td>
</tr>
<tr>
<td>Weight</td>
<td>140 lb 63.503 kg</td>
</tr>
<tr>
<td>Creatinine Clearance</td>
<td>93.49 ml/min (Est)</td>
</tr>
<tr>
<td>Body Surface Area</td>
<td>1.73 m2</td>
</tr>
<tr>
<td>Edited</td>
<td>10/06/05 1537</td>
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<tr>
<td>Serum Creat Resulted On</td>
<td></td>
</tr>
</tbody>
</table>

**NOTES:**

*** CHEMOTHERAPY SPECIFIC PATIENT FIELDS ***

**DIAGNOSIS:**

**ONCOLOGY PROTOCOL:**

**HOME MED PROFILE ENTERED:** Y

**MEPERIDINE STUDY:**

**External Comments** [Edit?]  **Internal Comments** [Edit?]

**Diseases**

---

**Locked by:**

**Locked on:**

**Locked by:**

---

**Locked on:**
### HOME MED RECONCILIATION REPORT

**PHARMACY PATIENT**

**W00000003081**

**ADMIT DATE:** 10/01/05

**HEIGHT:** 74.00 in

**AGE/SEX:** 70/M

**WEIGHT:** 170.00 lbs

**BBA:** 5.03 M

**ALLERGIES:**

<table>
<thead>
<tr>
<th>ORDER #</th>
<th>DRUG NAME/ORDER DESCRIPTION</th>
<th>DOSE</th>
<th>ROUTE</th>
<th>FREQUENCY</th>
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</thead>
<tbody>
<tr>
<td>00002231</td>
<td>ATENOLOL 25 MG TABLET</td>
<td>25 MG</td>
<td>PO</td>
<td>DAILY</td>
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<tr>
<td>00002230</td>
<td>ATORVASTATIN 10 MG TABLET</td>
<td>10 MG</td>
<td>PO</td>
<td>DHS</td>
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<tr>
<td>00002243</td>
<td>DIGOXIN 0.25 MG TABLET</td>
<td>0.25 MG</td>
<td>PO</td>
<td>DAILY</td>
</tr>
<tr>
<td>00002234</td>
<td>Furosemide 40 MG TABLET</td>
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<td>PO</td>
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</tr>
<tr>
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<td>20 MEQ</td>
<td>PO</td>
<td>DAILY/REPT</td>
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<tr>
<td>00002233</td>
<td>SAW PALMETTO (NONPHARMACEUTICAL) 1 EA EACH</td>
<td>SEE Dose INSTRUCTIONS</td>
<td>PO</td>
<td>BID</td>
</tr>
<tr>
<td>00002244</td>
<td>VANCOMYCIN 1 GM IN D5W 250 ML</td>
<td>250 ML/HR</td>
<td>IV</td>
<td>Q12H</td>
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<tr>
<td>00002232</td>
<td>WARFARIN SODIUM 1 MG TABLET</td>
<td>1 MG</td>
<td>PO</td>
<td>QAM</td>
</tr>
</tbody>
</table>

**PHYSICIAN SIGNATURE:**

**DATE:** Today

---

This profile is part of the PERMANENT PATIENT MEDICAL RECORD

**DO NOT DISCARD!!!**
**DISCHARGE MEDICATION RECONCILIATION REPORT**

*** PERMANENT PART OF THE PATIENT’S RECORD -- PLACE IN THE <<ORDERS SECTION>> ***

**PHA, POSTER PATIENT**

<table>
<thead>
<tr>
<th>W00000003081</th>
<th>AGE/SEX: 34/M</th>
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<table>
<thead>
<tr>
<th>4-721-1</th>
<th>W.TTS</th>
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<table>
<thead>
<tr>
<th>ADM: Lassan, James E MD</th>
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</thead>
</table>

<table>
<thead>
<tr>
<th>ALLERGIES: NO KNOWN DRUG ALLERGIES</th>
</tr>
</thead>
</table>

TO DISCONTINUE A LISTED ORDER: Mark a line through the order and write ‘DC’ beside it.
TO CHANGE A LISTED ORDER: DC it (as above) and write the new order in ‘ADDITIONAL ORDERS’.

<table>
<thead>
<tr>
<th>STATUS</th>
<th>DRUG NAME/ORDER DESCRIPTION</th>
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<th>ROUTE</th>
<th>FREQUENCY</th>
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<table>
<thead>
<tr>
<th>8:12.28</th>
<th>MISCELLANEOUS ANTIBACTERIALS</th>
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<table>
<thead>
<tr>
<th>HOME</th>
<th>VANCOMYCIN 1 GM IN DSW 250 ML</th>
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<table>
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<tr>
<th>LABEL COMMENTS: Treatment or Prevention of infection</th>
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</thead>
</table>

<table>
<thead>
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<th>20:12.04</th>
<th>ANTICOAGULANTS</th>
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<table>
<thead>
<tr>
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<th>WARFARIN SODIUM 3 MG TABLET</th>
<th>CHANGE TO:</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>LABEL COMMENTS: For Anticoagulation</th>
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</table>

<table>
<thead>
<tr>
<th>24:04</th>
<th>CARDIAC DRUGS</th>
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</thead>
</table>

<table>
<thead>
<tr>
<th>HOME</th>
<th>DIGOXIN 0.125 MG TABLET</th>
<th>CHANGE TO:</th>
</tr>
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</table>

<table>
<thead>
<tr>
<th>LABEL COMMENTS: THIS MEDICATION MAY INCREASE PATIENT RISK OF FALL</th>
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</table>

<table>
<thead>
<tr>
<th>24:04B</th>
<th>BETA BLOCKERS</th>
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<table>
<thead>
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<th>HOME</th>
<th>ATENOLOL 25 MG TABLET</th>
<th>CHANGE TO:</th>
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</thead>
</table>

<table>
<thead>
<tr>
<th>LABEL COMMENTS: FOR HYPERTENSION</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>24:06</th>
<th>ANTILIPIDIC AGENTS</th>
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</table>

<table>
<thead>
<tr>
<th>HOME</th>
<th>ATORVASTATIN 10 MG TABLET</th>
<th>CHANGE TO:</th>
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</thead>
</table>

<table>
<thead>
<tr>
<th>LABEL COMMENTS: For Hypercholesterolemia</th>
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</thead>
</table>

<table>
<thead>
<tr>
<th>INPT</th>
<th>SIMVASTATIN 20 MG TABLET</th>
<th>CHANGE TO:</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>LABEL COMMENTS: For Hypercholesterolemia</th>
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</thead>
</table>

<table>
<thead>
<tr>
<th>40:12</th>
<th>REPLACEMENT PREPARATIONS</th>
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<th>POTASSIUM CL 20 MEQ SA.TAB</th>
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</thead>
</table>

<table>
<thead>
<tr>
<th>LABEL COMMENTS: For Potassium Replacement</th>
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</thead>
</table>

<table>
<thead>
<tr>
<th>INPT</th>
<th>POTASSIUM CL 20 MEQ SA.TAB</th>
<th>CHANGE TO:</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>LABEL COMMENTS: For Potassium Replacement</th>
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</thead>
</table>
## Discharge Medication Selection

### Use (R)Ctrl Key/Box Key to Select Rxs

<table>
<thead>
<tr>
<th>Key</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>↑</td>
<td>Normal Saline 0 mL Flush BID &amp; PRN IV</td>
</tr>
<tr>
<td></td>
<td>Potassium Cl 20 Meq Sa. Tablet Daily &amp; BID PO</td>
</tr>
<tr>
<td></td>
<td>Simvastatin 20 mg Tablet QHS PO</td>
</tr>
<tr>
<td>✓</td>
<td>Warfarin Sodium 3 mg Tablet QPH PO</td>
</tr>
<tr>
<td></td>
<td>Vancomycin 1 gH in 50 mL Minibag Q12H IV</td>
</tr>
<tr>
<td>24:04</td>
<td>Digoxin 0.125 mg Tablet Daily PO</td>
</tr>
<tr>
<td>✓24:04</td>
<td>Digoxin 0.25 mg Tablet Daily PO</td>
</tr>
<tr>
<td>✓24:04</td>
<td>Atenolol 25 mg Tablet Daily PO</td>
</tr>
<tr>
<td>24:04B</td>
<td>Atenolol 25 mg Tablet Daily PO</td>
</tr>
<tr>
<td>✓24:04B</td>
<td>Furosemide 40 mg Tablet QAM PO</td>
</tr>
</tbody>
</table>
# PATIENT DISCHARGE MEDICATION PROFILE

<table>
<thead>
<tr>
<th>PATIENT</th>
<th>W00000003081</th>
<th>AGE/SEX</th>
<th>34/M</th>
<th>WEIGHT</th>
<th>63.5029329kg</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>DRUG NAME/DESCRIPTION</th>
<th>DOSE</th>
<th>ROUTE</th>
<th>FREQUENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATORVASTATIN 10 MG TABLET (LIPITOR)</td>
<td>10 MG</td>
<td>ORAL</td>
<td>AT BEDTIME</td>
</tr>
<tr>
<td>COMMENTS: For Hypercholesterolemia</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>KUR: For Potassium Replacement</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>POTASSIUM CL 20 MEQ SA.TAR (K DUR)</td>
<td>20 MEQ</td>
<td>ORAL</td>
<td>DAILY WITH BREAKFAST</td>
</tr>
<tr>
<td>WARFARIN SODIUM 3 MG TABLET (COUMADIN)</td>
<td>3 MG</td>
<td>ORAL</td>
<td>EVERY AFTERNOON</td>
</tr>
<tr>
<td>COMMENTS: For Anticoagulation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>KUR:</strong> IF THIS IS NEW DRUG TREATMENT FOR THIS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DIGOXIN 0.25 MG TABLET (LANGEN)</td>
<td>0.25 MG</td>
<td>ORAL</td>
<td>DAILY</td>
</tr>
<tr>
<td>COMMENTS: For Atrial Fibrillation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>KUR:</strong> THIS MEDICATION MAY INCREASE PATIENT RISK OF FALL</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ATEVRLOG 30 MG TABLET (KEDRIM)</td>
<td>30 MG</td>
<td>ORAL</td>
<td>DAILY</td>
</tr>
<tr>
<td>COMMENTS: For Atherosclerosis</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FURONESIDE 40 MG TABLET (LASIK)</td>
<td>40 MG</td>
<td>ORAL</td>
<td>EVERY MORNING</td>
</tr>
<tr>
<td>COMMENTS: For Skin rash</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>KUR:</strong> THIS MEDICATION MAY INCREASE PATIENT RISK OF FALL</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FAMOTIDINE 20 MG TABLET (PEPCID)</td>
<td>20 MG</td>
<td>ORAL</td>
<td>EVERY 12 HOURS STANDARD</td>
</tr>
<tr>
<td>COMMENTS: For GURD</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**NURSE PLEASE PRINT LEXICOMP PATIENT INSTRUCTION SHEET FOR THIS MEDICATION**

This profile is a part of the PERMANENT PATIENT MEDICAL RECORD

**DO NOT DISCARD!!!**
Results: Patient Enrollment

Before Phase
- 147 patients enrolled
- September 2004 through February 2005

After Phase
- 136 patients enrolled
- May 2005 through October 2005
Results: Demographics

After vs. Before Phase Trigger Question Results

- More patients identified with $\geq$ 7 medications ($p<0.0001; CI 0.5284 - 0.7604$)
- History of CAD ($p<0.0001; CI 0.3274 - 0.5444$)
Results: Admission Medication Reconciliation

After vs. Before Phase Number of Medications

- Prescription medications
  \( (6.2 \pm 4.3 \text{ vs. } 4.9 \pm 3.5; p=0.0059) \)
- OTC medications
  \( (2 \pm 1.9 \text{ vs. } 1 \pm 1.6, p=0.0001) \)
- Total medications
  \( (8.3 \pm 5.2 \text{ vs. } 6 \pm 4, p=0.0001) \)
Results: Before Phase vs. After Phase Nurse Interventions

- Incomplete medication orders (24 in 8 patients vs. 6 in 4 patients, p=0.0016)
- Medication dose changes (11 in 7 patients vs. 0 in 0 patients, p=0.0009)
- 59 interventions vs. 27 interventions (p=0.0003)
Results: After Phase vs. Before Phase Pharmacist Interventions

• Greater number of dose changes (15 in 12 patients vs. 5 in 3 patients, p=0.0184)
• Greater number of allergies identified (24 allergies in 17 patients vs. 0 in 0 patients, p<0.0001)
• 50 pharmacies contacted
• 48 interventions vs. 24 interventions (p=0.0003)
Results: After Phase Pharmacist Time Motion Results (minutes)

- Admission medication history $12.9 \pm 9.34$
- Medication clarifications $1.18 \pm 5.84$
- Interventions $1.4 \pm 2.25$
- Self-documented time $16.3 \pm 17.5$
Results: After Phase Physician Participation

• Admission and discharge reconciliation completed for 78 patients (57.4%)
• Admission reconciliation not completed for 10 patients (7.3%)
• Discharge medication reconciliation not completed for 34 patients (25%)
Results: Patient Satisfaction

• After phase reported improved understanding of discharge medication:
  • Continuation (p=0.007)
  • Dose and route (p=0.007)
  • Frequency and special instructions (p=0.006)
  • Side effects (p=0.001)
  • Overall understanding (p=0.001)
• More patients remembered speaking to a pharmacist in the After phase (63% vs. 8%, p<0.001)
Challenges

• Adequately staffed pharmacist personnel
• Prescriber collaboration
• Technical support availability
Medication Reconciliation: What We Learned

• Required teamwork and communication
• Intensive time commitment
• After phase patients reported a greater understanding of their medications
  • Attention to detail
  • Opportunity for additional patient medication education
Acknowledgements

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