August 31, 2011

Patient Safety & Best Practice
Closed Loop Medication Distribution
Use of Pharmacy Unit Council
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John Muir Medical Center
Walnut Creek Campus

- A 330-bed acute care facility
- Trauma Center for Contra Costa County and portions of Solano County – Level II
- Magnet Recognized Hospital in 2008
- One of the region's premier healthcare providers:
  - Orthopedics
  - Neuroscience
  - Cancer Care
  - Women’s/Children Services
  - Level 3 NICU
  - Surgical Services
The Growth of Medication Safety Initiatives
1999 - 2009

Pending...
~ Clinical IT Transformation(& CPOE)
~ IV Room renovation

Rules/Alerts/Prompts
Pyxis Connect
Computerized MAR
Unit Dosing
Bedside Barcoding
MedMarx
Comp ADR P&T Rpt
Allscripts
No NCR
Comp Drug Info Resources
Comp Pre-printed Ordersets
Elect Med Reconciliation
Horiz Med Manager Rx Sys
SMART pumps
Comp Pharmacist Intervention
Pt Safety Alerts RDE Reports
EMAPS
Robot RX
VigiLanz ADE Monitoring

Robust use of
Rules/Alerts/Prompts
Pyxis Connect Order Imaging
Computerized MAR
Unit Dosing pre-pack and bar-coding
Bedside Med Verification
Barcoding
MedMarx
Comp ADR P&T Rpt
Allscripts
No NCR
Comp Drug Info Resources
Comp Pre-printed Ordersets
Elect Med Reconciliation
Horizon Med Manager Rx Sys
SMART pumps
Comp Pharmacist Intervention
Pt Safety Alerts RDE Reports
EMAPS
Robot RX
VigiLanz ADE Monitoring
Rx Access

Pre 1995
1995 - 2004
2005
2006
2007
2008
2009
John Muir Medical Center- Walnut Creek Campus- Evolution of Drug Distribution

- 1999- “Hybrid”- Central Manual Fill supported by limited number of Pyxis MedStations
- 2007- “Hybrid”- Central Fill by Robot Rx supported by Pyxis
- 2011- Central Robot Fill- Pyxis 4000 - Med Carousel Added
Care Fusion Unit

- Services 15-20 Med Surg or 8-10 Critical Care Patients
- Composed of a 6 drawer main, 7 drawer auxiliary, 2-column tower and remote refrigerator device
- Typically two units per floor
- Patient specific envelopes and cassettes housed in tower as well
Percentage of unit doses dispensed

1999
- Manual Fill: 35%
- Pyxis: 65%

2007
- Manual Fill: 15%
- Pyxis: 35%
- Robot: 50%

2011
- Manual Fill: 5%
- Pyxis: 5%
- Robot: 40%
- Carousel: 50%
John Muir Medical Center - Walnut Creek
Medication Safety Dispensing Errors

<table>
<thead>
<tr>
<th>Year</th>
<th>Doses Dispensed</th>
<th>Dispensing Errors</th>
<th>Error Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1999</td>
<td>2,372,500</td>
<td>9,125</td>
<td>0.38%</td>
</tr>
<tr>
<td>2008</td>
<td>2,482,000</td>
<td>3,650</td>
<td>0.14%</td>
</tr>
<tr>
<td>2011</td>
<td>3,011,250</td>
<td>1,825</td>
<td>0.06%</td>
</tr>
</tbody>
</table>
# Time spent (daily) in Drug Distribution (excludes technician hourly rounds)

<table>
<thead>
<tr>
<th>Year</th>
<th>Cassette Fill</th>
<th>Check</th>
<th>Pyxis Fill (TECH)</th>
<th>Pyxis Check (Rph)</th>
<th>Robot RX Fill (Tch)</th>
<th>Robot RX Check (Rph)</th>
<th>Carousel Replenishment</th>
<th>Carousel Disp</th>
<th>Total Hours</th>
<th>Prod Hrs/pt day</th>
</tr>
</thead>
<tbody>
<tr>
<td>1999</td>
<td>12</td>
<td>8</td>
<td>8</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>31</td>
<td>0.14</td>
</tr>
<tr>
<td>2008</td>
<td>6</td>
<td>2</td>
<td>6</td>
<td>3</td>
<td>4</td>
<td>1</td>
<td></td>
<td></td>
<td>22</td>
<td>0.073</td>
</tr>
<tr>
<td>2011</td>
<td>4</td>
<td>1</td>
<td>8</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>26</td>
<td>0.072</td>
</tr>
</tbody>
</table>
Closed Loop Process Flow

ROBOT-Rx:
Dispensing 90% of the Patient Cassette and 90% of all First Dose requirements for both oral and non-oral solid meds.

Scheduled Meds in Patient Cassettes, Mobile Workstation, or Nurse Servers

ROBOT-Rx:
Dispensing 90% of the Patient Cassette and 90% of all First Dose requirements for both oral and non-oral solid meds.

Scheduled Meds

MedCarousel: Non-Robot Manual Picks, Restocking AcuDose-Rx ADC, Inventory & Expiration Date Management

Nurse administers meds using HARx

CareFusion
Narcotics, PRN, First/stat doses

Tadpole Label and Over wrap Packager for all non-oral solid meds.

PakPlus: Robot-Ready Bar-code Packages for Oral Solids & AcuDose-Rx ADC Restock

Packaging Service:PakPlus
John Muir Medical Center
Concord Campus

- Acute care facility
  - licensed for 313 beds
- One of the region's premier healthcare providers
  - Cardiac Care
    - Interventional Cardiology
    - Open Heart Surgery
  - Neurology
  - Cancer Care
  - Orthopedics
Pharmacy Unit Council

- Innovative way to empower stakeholders: Patient centered care
- Quality
- Leadership
- Employee Satisfaction
The Why’s

- Empowerment structure
- Vision of our Director
- Learning from nursing colleagues
- Trust our talents
- Incorporate development of Pharmacy Unit Council as part of RCA process for medication errors.
- Purpose is to improve work flow, increase patient safety, and to reduce medical errors
Who is the Pharmacy Unit Council?

- The Pharmacy Unit Council consists of four staff pharmacists and two pharmacy technicians.
- Their first meeting was on June 23, 2011.
- The council members selected a Team Leader and a secretary.
What is the Pharmacy Unit Council?

- “The Unit Council will meet on a monthly basis to discuss and assist management in the decision making process and to help implement changes that will improve Pharmacy operations.”

- “We represent you, the front line staff, so that we as a whole have input in the decision making process. This Unit Council will also represent pharmacy with other practice groups such as Nursing Practice Council, the nursing quality council, and medication error reduction team. By working with nursing, our hopes are to improve patient care while possibly easing our work day.”

Excerpted from communication sent to staff.
What projects will the group work on?

- "There is no set agenda for the Unit Council. The group will actively discuss any concerns or ideas that may pertain to pharmacy workflow, day to day operations or improving patient safety."

- “These projects/ideas may be suggested by the unit council members, the management staff, the hospital’s quality department, and most importantly the staff pharmacists and technicians.”

- Priority given to Patient and medication safety topics and referrals
How can a topic/project be suggested for discussion by the Unit Council?

“We will always need your input, whether it is an idea for a possible change, or even may be positive or negative feedback for changes that may be implemented. Please feel free to bring up and topics or concerns with any member of the unit council. I have asked a distribution group to be set up to make it easier to email the group with ideas or feedback for future meetings. I will forward an email once this distribution group has been set up.

Hopefully this clears up some questions that may come up in regards to the newly formed unit council. Please feel free to ask if you may have any further questions or concerns.” Excerpted from communication sent to staff.
Problem #1 – Constant interruptions while entering orders. Main interruption is phone calls

- Ideas for improvement
- Could train pharmacy technicians so that they are able to handle phone calls rather than transfer calls
- Could add another line
- Maybe designate a person for phone calls
- Follow-up on certain orders
- Have technicians take down information of a phone call (name, room #, etc.)
- Have a phone memo to write down info
### Phone call communication form

<table>
<thead>
<tr>
<th>Incoming Phone Calls Communication Form</th>
<th>For internal use only</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ Stat ☐ Missing ☐ New</td>
<td>MD</td>
</tr>
<tr>
<td>RN: ____________________ Date/Time:___</td>
<td>IV Room</td>
</tr>
<tr>
<td>Pt. Name: ___________ Room #: _________</td>
<td>Allergy</td>
</tr>
<tr>
<td>Communication: ________________________</td>
<td>Pyxis</td>
</tr>
<tr>
<td>_________________________________</td>
<td>MAR issue</td>
</tr>
<tr>
<td></td>
<td>Non-Rph issue</td>
</tr>
<tr>
<td></td>
<td>Other</td>
</tr>
<tr>
<td>RN Phone Ext: ________________________</td>
<td></td>
</tr>
</tbody>
</table>
From the data collected on the initial pilot, it’s leaning to be a positive thing but more data needed.

Need pharmacists feedback i.e. Utilize the internal box note to help with the data: 50% of the RPH felt the phone triage helped them complete orders before moving on to answer call.

The initial pilot of phone triage we had a few days of extra tech on hand but on any other day will there be extra techs? Next pilot to have a group of techs to triage the RPH phone.

Evening shift, phone triage will not be possible; looking at BCA to phone triage for morning shift.

Maybe revise phone list so RN will know to call tech line or Rph line.

Techs felt their regular shift duties weren’t completed on time due to triaging the phones.

Will pilot phone triage in 2 weeks and will send an email to RPH and Techs informing when this will occur, plan a day when there are sufficient amount of techs on shift.
Further drilldown on phone calls

Breakdown of Calls answered by the technician

- Order Entry/Clarification: 54%
- Missing Dose: 18%
- Non-RPH: 13%
- IV Room: 10%
- Physician: 4%
- Allergy: 1%

Total: 100%
## Workflow interruptions

<table>
<thead>
<tr>
<th>Time</th>
<th>Pharm</th>
<th>Tech</th>
<th>Phone</th>
<th>Door</th>
<th>Left Station</th>
<th>Check Meds</th>
<th>Stats (emergency)</th>
<th>Nursing Communication</th>
<th>RXP13</th>
<th>Eating/Drinking</th>
<th>Interruptions/hour</th>
</tr>
</thead>
<tbody>
<tr>
<td>1339</td>
<td>I</td>
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<td>1454</td>
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<td>1618-1633</td>
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<tr>
<td>Total Interruptions:</td>
<td>65</td>
<td>34</td>
<td>2</td>
<td>20</td>
<td>0</td>
<td>8</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Percentages of Interruptions</td>
<td>52.30%</td>
<td>3.10%</td>
<td>30.80%</td>
<td>0%</td>
<td>12.30%</td>
<td>0%</td>
<td>0%</td>
<td>1.50%</td>
<td>0.00%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average # of Interruptions/Hour: 8/4/2011</td>
<td>≃ 21</td>
<td>≃ 1</td>
<td>≃ 13</td>
<td>0</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>≃ 1</td>
<td>0</td>
<td>≃ 41</td>
<td></td>
</tr>
</tbody>
</table>
Workflow interruptions

Pharmacist: 52%
Technician: 3%
Phone: 31%
Left Workstation: 12%
Nursing Communication: 2%

RPH: 1 (Unit Dose AM Shift) Average Interruptions/Hour = 41
Workflow interruptions

Interruptions To Pharmacy Workflow

JMMC Average # of Interruptions/Hour = 25.2
Barriers or challenges in the process

- Change management
- Communication
- Scheduling all council members to meet monthly
- Specific M easurable A ttainable R elevant T ime-based/timely goals: pre and post implementation data, analysis and management
Small test of changes

- Work in progress
- Changed night shift technician hours
- Standardized delivery locations of medications and IV’s
- Collected baseline data on workflow interruptions
- Piloted triaging of incoming phone calls
- Implemented changes in ADC (Pyxis) refill procedure to improve technician workflow
Questions

[Cartoon: "Pharmacy Prescriptions. Don’t worry about that—after paying for those you can’t afford to drive!"

Thaves 8-1]