Pharmacy Strategic Plan

Implementation and Measurement of a Standard Pharmacy Clinical Practice Model Across a Multi-Hospital System

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Director System, Pharmacy Clinical Services
OVERVIEW

- Role of Clinical Pharmacist
- PH&S Pharmacy Strategic Plan
- “Standard” Practice Model
- Implementation Challenges
- Outcomes Measures
- Next Steps
- Conclusions
Providence Health & Services
as of December 31, 2008

- Employees: 49,434
- States: 5
- Hospital ministries: 26
- Ambulatory centers: 12
- Employed physicians: 822
- Health plan members: 283,769
- Long-term care beds: 1,827
- Assisted living units: 636
Long Range Vision for Pharmacy Work Force in Hospitals and Health Systems

Role of the Pharmacist in Hospitals

- Reviewing individual patients’ medication orders for safety and effectiveness and taking corrective action as indicated.
- Collaboratively managing medication therapy for individual patients.
- Educating patients and caregivers about medications and their use.
- Leading continuous improvements in the medication use process.
- Leading the interdisciplinary and collaborative development of medication use policies and procedures.
Clinical Pharmacist Affect Mortality

- Review of patient data base for nearly 3 million patients at 885 hospitals.
- Compared hospitals with 14 different pharmacy clinical services to those without.
- Seven services associated with reduced mortality rate.
  - Drug Use evaluation
  - Patient Education
  - ADR Management
  - Pharmacy Protocol Management
  - Code Team Participation
  - Admission Drug Histories
  - Participation on Rounds.
Clinical Pharmacy Services and Mortality Rates

Relationship between clinical pharmacist staffing and deaths/1000 admissions

Number of Clinical Pharmacists/100 occupied beds

Number of deaths/100 occupied beds

Number of deaths/1000 Admissions
How Common Are these Services?

- Only 38% of hospitals overall have service-specific pharmacists review therapy.
  - 72% at hospitals greater than 400 beds
  - 26% at hospitals 200 beds or less

- Only 24% of hospitals have pharmacists reviewing medication therapy for 75% or more of patients.
Why Are Pharmacy Clinical Service So Variable?
**Pharmacy Resource Council Strategic Plan Framework**

**PH&S Mission, Vision & Values**

We will succeed as “One Ministry Committed to Excellence”

**PRC Vision:**
Enhancing quality of life through safe & effective medication use

**PRC Outcomes:**
- Utilize a standardized system to demonstrate the value of clinical pharmacy
- 100% of CMS clinical quality indicators met relative to pharmaceutical care
- Implement technology solutions to eliminate preventable medication adverse events
- Pharmacist will review the therapy of 100% of patients with complex & high-risk medication regimens
- Achieve system-wide target of 90% compliance with market share contracts
- Develop & adopt a standardized training and competency assessment program at least biannually with 100% compliance
- Compliance with regulatory requirements

**PRC Strategic Priorities:**
Attract and retain the best workforce

**Leverage Technology**
- Implement proven technology applications
- Coordinate and enhance pharmacy informatics resource
- Standardize technology

**Enhance Quality & Scope of Pharmacy Clinical Services**
- System wide reporting tool
- Benchmark internally and externally
- Implement standard practice model

**Leverage System Wide Capabilities**
- Direct patient care
- Communicate success
- Develop Common Metrics / Benchmarking Program
- Regional P&T Process
- Shared services / resources
- Identify and share best practice

**Operating Commitments**
- Mission Inspired
- People Centered
- Service Oriented
- Quality Focused
- Financially Responsible

**Tactics:**
*(Specific Steps to Achieve Individual Strategies)*

- Participate in and develop education programs.
- Develop HR strategy
- Career advancement

- Enhance Quality & Scope of Pharmacy Clinical Services
- Direct patient care
- Communicate success
- Develop Common Metrics / Benchmarking Program

- Financially Responsible
- Share services / resources
- Identify and share best practice
Clinical Practice Initiative for Pharmacy

- Enhance the quality and scope of pharmacy clinical services
  - Implement a standard clinical practice model for pharmacy
  - Implement reporting tool for clinical pharmacy interventions
  - Develop standard metric to measure and benchmark clinical services system wide
PRACTICE MODEL OPTIONS

- Order Review Based
- Target Drug Based
- Rounding Based
- Profile Review Based
- CPOE Based?
ORDER REVIEW BASED

GOOD POINTS

- Potentially Economical
- Avoids Most Major Drug Related Problems (DRPs)
- Concurrent
- Unit Pharmacist Aware of Current Therapy
- Address Issues Quickly After Order Written

BAD POINTS

- Dispensing a Priority for All Pharmacists
- Difficult to Follow Up on Complex Issues
- No Time for Projects
- Difficult to Get Big Picture of Care
- Perception of RPh Role
- Single-Check Only
TARGET DRUG BASED

GOOD POINTS
- Efficient/ Economical
- Address Most Major DRPs
- RPh Able to Prioritize
- Improved Perception of RPh Role
- Can Allow for Protocol/ Project Time

BAD POINTS
- Missed Opportunities for Improved Care
- Narrow Focus
- Disconnected From Big Picture of Patient Care
- Perceived as Having Narrow Focus/Role by Hospital Staff
- Reactive
ROUNDING BASED

GOOD POINTS
- Comprehensive Care
- Proactive Input
- Incorporation of RPh into Healthcare Team
- Improve as Practitioner
- Opportunity to Educate Physicians and Other Staff

BAD POINTS
- Inefficient
- Requires Hospitalist and/or Teaching Model for Medical Care
PROVIDENCE
Health & Services

PROFILE REVIEW BASED

GOOD POINTS
- Efficient/ Economical
- Address Most DRPs
- RPh Able to Prioritize
- Improved Perception of RPh Role
- Can Allow for Protocol/ Project Time
- Ability to be Proactive

BAD POINTS
- Requires Resources in Staffing and Tools
- Rely on Order Review by core staff
- Not as Complete Care as Rounding Model
PH&S “Standard” Practice Model

- Unit-based Clinical Staff
- Defined (Specialized) Clinical Services
- Profile Review / Rounding
- Documentation Program
- Clinical Decision Support
- Centralized Order Entry
- Standards of Care / Protocols
Practice Model Requirements

Distribution:
- Staff Dedicated to Order Review
- Order Image Scanner Technology
- Distribution Efficiency: e.g. Tech Check Tech, Triage Tech/RPh, Automation

Clinical Practice:
- Staff Dedicated to Drug Therapy Management
- Intervention Program (Quantifi®)
- Decision Support Tools (Sentri 7®)
STANDARDS OF PRACTICE

- Workflow
- Documentation
- Order Entry Review
- Profile Review
- Rounding
- Competencies
- Preceptor
DEDICATED STAFF OPTIONS - PER CLINICAL SERVICE

Single RPh → 2 RPh’s → 3 or more

Highly Specialized → Specialized & Generalized → Generalized
2 RPH’S - PER CLINICAL SERVICE

Alternating Between Clinical Service and Distribution (e.g. month on, month off)

- Still build relationships
- Professional development
- Opportunity to work with a partner
- High level of care
- Time for projects
- Students
- More flexible, can scope for any hospital size
- Comprehend whole pharmacy process
- High level of staff satisfaction
Where the Rubber Hits the Road – Implementation Challenges

- CHANGE!
- Resources
  - F.T.E.s
  - I.T. Resources
  - Automation, scanning equipment, etc
- Recruitment
- Training
Financial Impact of Practice Model

1. Documented changes in therapy by pharmacist – direct and cost avoidance combined savings
2. Supply costs
3. Premier Outlook® benchmark data

Evaluation of Three Providence Hospitals

- Providence Sacred Heart Medical Center (PSHMC)
- Providence Holy Family Hospital (PHFH)
- St. Patrick Hospital (SPH)
2004 Goal: Document Financial Impact of Pharmacy Clinical Practice Model

- 12 “decentralized” clinical services already established
- Implementation of clinical documentation program.
- Savings by intervention type per service (values based on cost-avoidance)
- Performance report shared monthly with each clinical service
- Track total expense and benchmark data
## Example Service Line Pharmacy Savings Report

### Expenses & Cost Saving Initiatives per Pharmacy Service Line

#### SURGICAL SERVICES

<table>
<thead>
<tr>
<th>EXPENSES</th>
<th>2 Week Period Starting 7/25/2004</th>
<th>Year To Date Starting 6/13/04</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salary Expense</td>
<td>$4,008.00</td>
<td>$15,078.40</td>
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</tbody>
</table>

#### COST SAVING INITIATIVES

<table>
<thead>
<tr>
<th>Changes Made in Therapy</th>
<th># of Interventions</th>
<th>2 wk total</th>
<th>Year To Date</th>
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<tbody>
<tr>
<td>Allergy Avoided</td>
<td>2</td>
<td>$182.16</td>
<td>$182.16</td>
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<tr>
<td>Med Order Clarification</td>
<td>31</td>
<td>$2,823.48</td>
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<tr>
<td>Consult</td>
<td>7</td>
<td>$-</td>
<td>$-</td>
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<tr>
<td>Med DC'D by RPh</td>
<td>15</td>
<td>$1,366.20</td>
<td>$2,914.56</td>
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<tr>
<td>Dose Adjusted</td>
<td>21</td>
<td>$1,912.68</td>
<td>$4,462.92</td>
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<tr>
<td>Duplicate DC'D</td>
<td>1</td>
<td>$91.08</td>
<td>$273.24</td>
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<tr>
<td>DVT Prophylaxis by RPh</td>
<td>0</td>
<td>$-</td>
<td>$-</td>
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<tr>
<td>Epogen Use Avoided</td>
<td>0</td>
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<td>$-</td>
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<tr>
<td>Formulary Sub</td>
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<td>$594.00</td>
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<tr>
<td>Interaction Avoided</td>
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<tr>
<td>Med Changed</td>
<td>0</td>
<td>$-</td>
<td>$182.16</td>
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<tr>
<td>Adjust for Renal Fx</td>
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<td>$728.64</td>
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<td>Route Changed</td>
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<td>Med Started</td>
<td>15</td>
<td>$1,366.20</td>
<td>$2,368.08</td>
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#### Other Initiatives

<p>| | | | |</p>
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<thead>
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<tbody>
<tr>
<td>N/V</td>
<td></td>
<td>$-</td>
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<tr>
<td>Routine Order (item cost)</td>
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<tr>
<td>Misc Cost Savings</td>
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<td>$-</td>
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</tr>
</tbody>
</table>

#### TOTAL COST SAVINGS

|               |                  | $9,355.40  | $19,385.44  |

#### NET SAVINGS/LOSS

|               |                  | $5,347.40  | $4,307.04   |
### Expenses & Cost Saving Initiatives All Pharmacy Service Lines

<table>
<thead>
<tr>
<th>Service Line</th>
<th>2 weeks starting 7/25/2004</th>
<th>YTD Starting 6/13/04</th>
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</thead>
<tbody>
<tr>
<td>Salary Expense</td>
<td>Dollars Saved</td>
<td>Profit/Loss</td>
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<td>NICU</td>
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<td>Peds Onc</td>
<td>$3,923</td>
<td>$8,065</td>
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<tr>
<td>Surg</td>
<td>$4,008</td>
<td>$9,355</td>
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<tr>
<td>Neur/Nephro</td>
<td>$4,884</td>
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<td>Cardiology</td>
<td>$4,070</td>
<td>$7,075</td>
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<td>$4,070</td>
<td>$5,042</td>
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<td>CTT</td>
<td>$4,070</td>
<td>$9,480</td>
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<tr>
<td>Psych</td>
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<td>$2,256</td>
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<tr>
<td>IMR</td>
<td>$1,712</td>
<td>$783</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>$46,586</strong></td>
<td><strong>$66,883</strong></td>
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## Expenses & Cost Saving Initiatives All Pharmacy Service Lines

<table>
<thead>
<tr>
<th>Service Line</th>
<th>2 weeks starting</th>
<th>YTD</th>
<th>Salary Expense</th>
<th>Cost Saving Initiatives</th>
<th>NET SAVINGS/LOSS</th>
<th>Salary Expense</th>
<th>Cost Saving Initiatives</th>
<th>NET SAVINGS/LOSS</th>
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<tbody>
<tr>
<td>ED/OR</td>
<td>$2,931</td>
<td>$5,927</td>
<td>$2,996</td>
<td>$44,587</td>
<td>$10,766</td>
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</tr>
<tr>
<td>ICU</td>
<td>$4,885</td>
<td>$6,410</td>
<td>$1,525</td>
<td>$78,654</td>
<td>$71,976</td>
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<tr>
<td>Peds</td>
<td>$2,687</td>
<td>$14,406</td>
<td>$11,719</td>
<td>$49,459</td>
<td>$88,573</td>
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<tr>
<td>NICU</td>
<td>$1,647</td>
<td>$3,481</td>
<td>$1,834</td>
<td>$47,117</td>
<td>$52,333</td>
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<tr>
<td>Peds Onc</td>
<td>$3,354</td>
<td>$7,926</td>
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<td>Surg</td>
<td>$4,264</td>
<td>$12,155</td>
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<td>$64,257</td>
<td>$52,333</td>
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<td>Neur/Nephro</td>
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<td>$65,220</td>
<td>$261</td>
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<tr>
<td>Cardiology</td>
<td>$3,903</td>
<td>$7,419</td>
<td>$3,516</td>
<td>$59,742</td>
<td>$8,533</td>
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<tr>
<td>Oncology</td>
<td>$3,903</td>
<td>$4,873</td>
<td>$970</td>
<td>$59,742</td>
<td>$18,293</td>
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<td>CTT</td>
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<td>$16,319</td>
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<td>$62,312</td>
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<tr>
<td>Psych</td>
<td>$2,606</td>
<td>$2,476</td>
<td>($130)</td>
<td>$43,936</td>
<td>($11,195)</td>
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<tr>
<td>IMR</td>
<td>$1,224</td>
<td>$308</td>
<td>($916)</td>
<td>$23,474</td>
<td>$4,020</td>
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<td><strong>Total</strong></td>
<td><strong>$39,705</strong></td>
<td><strong>$88,483</strong></td>
<td><strong>$48,778</strong></td>
<td><strong>$649,946</strong></td>
<td><strong>$345,124</strong></td>
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</tbody>
</table>
Cost Savings Documented PSHMC
(savings from documentation program)

Overall Pharmacy Clinical Service Profit/Loss

Conversion date

Dollars

Salary Expense
Dollars Saved via Interventions/Projects

2 Week Starting Date
## Premier Outlook Report Q4 2005 SHMC

### Pharmacy: CMI Adjusted Pt. Days

<table>
<thead>
<tr>
<th>Demographics</th>
<th>Labor</th>
<th>Expense</th>
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</thead>
<tbody>
<tr>
<td>Facility</td>
<td>Average Monthly Volume</td>
<td>Worked FTEs</td>
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<tr>
<td>Summary</td>
<td>61</td>
<td>21,458</td>
</tr>
<tr>
<td></td>
<td>Peer 25th</td>
<td>21,123</td>
</tr>
<tr>
<td></td>
<td>Peer 33rd</td>
<td>21,730</td>
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<tr>
<td></td>
<td>Peer 50th</td>
<td>22,411</td>
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<tr>
<td>Detail</td>
<td>144</td>
<td>23,067</td>
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<tr>
<td></td>
<td>98</td>
<td>19,226</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>21,755</td>
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<tr>
<td></td>
<td>140</td>
<td>35,870</td>
</tr>
</tbody>
</table>

### Summary

- **61** 21,458 63.06 0.51 0.59 12.35% 3.00% $18.67 $43.67 $2.38 $64.71
- **Peer 25th** 21,123 46.68 0.38 0.41 7.74% 2.98% $14.78 $46.59 $1.37 $64.75
- **Peer 33rd** 21,730 48.28 0.38 0.41 7.95% 3.71% $14.95 $49.16 $1.66 $65.02
- **Peer 50th** 22,411 48.47 0.38 0.42 8.35% 4.42% $15.28 $54.77 $2.14 $74.06

### Detail

- **144** 23,067 48.35 0.37 0.41 9.77% 0.69% $14.26 $49.18 $0.45 $63.89
- **98** 19,226 41.67 0.38 0.41 7.09% 5.10% $15.61 $46.81 $2.62 $65.03
- **7** 21,755 48.59 0.39 0.42 7.96% 3.74% $14.95 $49.16 $1.66 $65.02
- **140** 35,870 88.66 0.43 0.47 8.73% 7.41% $18.45 $60.36 $4.28 $83.09

### Regional

- **Regional 25th** 5,940 16.31 0.45 0.50 8.58% 2.18% $16.19 $47.78 $1.01 $66.71
- **Regional 33rd** 6,368 18.86 0.51 0.56 8.77% 2.19% $16.56 $52.23 $1.41 $68.26
- **Regional 50th** 7,641 22.53 0.52 0.57 9.55% 3.46% $18.07 $56.69 $2.04 $74.54

### National

- **National 25th** 3,934 10.04 0.36 0.41 8.08% 0.80% $12.75 $41.15 $0.94 $57.02
- **National 33rd** 5,177 12.67 0.38 0.42 8.71% 1.14% $13.93 $43.18 $1.42 $60.61
- **National 50th** 7,641 18.95 0.42 0.47 10.10% 1.79% $15.46 $50.15 $2.39 $67.63
Pharmacy Labor vs. Drug Expense

- Drug Expense
- Labor Expense
HFH, SPH Conversions 2006

- HFH: converted from “target drug” model
  - Added 3.2 total additional F.T.E.
  - Established 3 clinical services (200 beds)

- SPH: “unit based order entry” model
  - Centralized order review – Pyxis Connect®
  - Implemented operational efficiencies
    - Phone tree, tech check tech, triage RPh, etc.

- Documentation using clinical intervention software
Comparison of Documented Changes in Therapy by Pharmacist 9-06 vs 9-07

Number of interventions

Intervention
- Warfarin Education Done
- Warfarin Dosed by Pharmacist
- TPN Change
- Tikosyn Processed
- Therapeutic duplication avoided
- Sedation Protocol Change
- Renal Dose Change
- POM Processed
- PK evaluation-Vancomycin
- PK evaluation-Other
- PK evaluation-AG
- Pain Consult or Service Change in Tx
- Pain Consult Change in Tx
- Non-form Changed
- Lab Value Review/Change in Tx
- IV-to-PO Change
- IV to PO Change
- IV Drug compatibility Done
- Insulin Protocol Change
- Indication Clarified Leading to Change
- Education - Patient Completed
- Education - Group
- Duration of Therapy Changed
- Drug Tx Consultation Completed
- Drug Interaction Avoided
- Drug Information
- Dose Per Pharmacist Completed
- Dose Changed Adult

Counts of intervention by hospital and month/year:
- Holy Family: 09/06, 09/07
- St Patrick: 09/05, 09/06, 09/07

8/24/2009
Dollars Saved Per Patient Day
(combined cost avoidance and direct)

Prior to practice model
Period following practice model

Hospital / Year

HFH 9/05 9/06 9/07
SPH 9/05 9/06 9/07
# Cost Avoidance Calculations

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Number Increase Per Year</th>
<th>Clinical Impact Per Evidence</th>
<th>Cost Avoidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemo Dose Eval/Change</td>
<td>72</td>
<td>3.6 ADE prevented (1 per 20)</td>
<td>$7,920</td>
</tr>
<tr>
<td>Drug Therapy Consult</td>
<td>96</td>
<td>9% reduced LOS</td>
<td>$7,200</td>
</tr>
<tr>
<td>Warfarin Per Pharmacist</td>
<td>53</td>
<td>Cost benefit 11.4:1</td>
<td>$9,850</td>
</tr>
<tr>
<td>Warfarin Ed</td>
<td>48</td>
<td>17% decrease in readmit at 30 days</td>
<td>$9,984</td>
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<tr>
<td>Dose Per Pharmacist</td>
<td>660</td>
<td>20 ADE prevented (1 per 33)</td>
<td>$72,600</td>
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<tr>
<td>Total</td>
<td>833</td>
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<td>$107,554</td>
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</table>
Pharmaceutical Expense Trend

- Supply costs trended down for both hospitals beginning with the quarter the model was implemented.
- The pharmacy supply costs per case mix adjusted patient day have trended down each year for three years at each hospital.
- The total pharmacy expense is below the 25th percentile, despite labor expense above the 50th percentile.
Endorsements

“I fully support the implementation of the pharmacy clinical practice model as it delivers a significant return on investment both financially and on improving quality of care”

Tom Corley, President, HFH
Number of Interventions Documented Per Case-Mix Adjusted Admit June 2009

PSHMC  SPH  PSVMC  PPMC  PCH  PAMC  PHFH  PSJMC  PNH  PMEDH  PLCOMT  PLCOMSP  PSPH  SJHC  MCH  PHCMC  PHRMCM  PSMMC  PMILH  PSH
Examples of Pharmacy Interventions From Documentation Program at PH&S Hospitals

- Nitroprusside discontinued in a patient with compromised renal function (scr=6.1) avoiding a high risk of cyanide toxicity.
- Metformin discontinued in patients with poor renal function and/or receiving contrast avoiding risk of lactic acidosis.
- Patient admitted on warfarin with no INR ordered. INR ordered per pharmacy and held when level came back >6 therefore reducing the risk of bleeding.
- Heparin infusion stopped by pharmacist for an aPTT of 198 while also on warfarin which put the patient at a high risk of bleeding.
CONCLUSIONS

- Clinical pharmacist have a significant impact that can be measured
- Effective management of drug utilization results in decreased supply costs
- Pharmacy productivity benchmarking should include a metric for clinical pharmacist activity and combine labor with supply cost
- Return on investment is greater than the cost for clinical pharmacists
QUESTIONS?