Effectively Using Productivity Metrics to Improve Inpatient Pharmacy Services

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Disclosure

• Presenters have no relevant financial relationship with the companies mentioned throughout this presentation.

• Examples used throughout this presentation have not been obtained from real patient information.

Objectives

• Describe management principles that direct inpatient pharmacy to higher performance
• Explain how pharmacy departments can use internal and external benchmarking processes
• Discuss various reporting and data analysis tools that can help drive pharmacy services
• Identify pharmacy productivity metrics that can be used to develop a pharmacy department scorecard
Management Principles

Why We Must Maximize Efficiency

- Cost of care is increasing, while profit margins are shrinking.
- Control rising drug costs in an era of budget cuts.
- Generate profit
  - Staying the same is actually falling behind. We must continually improve operational performance and try to do more with less.

How the C-suite Views Pharmacy

- A high cost department that they do not understand
- Budget keeps expanding, has no hard cap
- Quality is not well understood, because it is hard to define our quality using quantitative metrics
- If physicians are prescribing and nurses are administering and the computer is checking for interactions, why do we need you again?
Challenges for Pharmacy Profession

• It is difficult to quantify pharmacy clinical services with productivity metrics; in particular with any single metric.
• Productivity targets by external benchmarking vendors tend to conflict with the department's goal of expanding clinical services and implementing best practices.
• The value obtained from an investment in pharmacy services does not have a validated definition or measurement guideline.

Management Principles

• Is division of labor among workers the best way to increase labor efficiency?
• Is standardization of every process the way to go?
• No matter what we decide to measure as a profession, no matter what staffing model we pursue to achieve greater productivity, the human factor will be the most critical element of our success.

Management Principles

• Can we increase productivity just by studying numbers and pushing data?
• As one mentor taught me, you have to “learn your business”.
• Start every change project with a clear and compelling statement of the goal you are trying to achieve.
Proper Influence

• Chances are your staff will not become more efficient or engaged because you start tracking a new metric. Leaders have to master the art of influence.

• Focus and measure – clearly articulate the goal you are trying to achieve.

• Find vital behaviors – focus on 2 or 3 vital actions that produce the greatest change.

• Employees will not only ask “Can I do what is required?”, they will ask themselves, “Is it worth it?”.

Principles for Success

• Quality and safety drive efficiency

• Clinical pharmacy services are a necessary investment

• Work to tie pharmacy performance with metrics that matter to the C-suite

• Use proper leadership methods to influence and motivate employees

Audience Question #1

The most important first step for any change a manager needs to make is:

A. Make sure the change is easy
B. Start with clear and compelling goals
C. Do your best to make sure change is not inconvenient
D. All of the above
Benchmarking

• Benchmarking was developed by Xerox in the 1970s.
• The comparison of one’s business processes and performance metrics with industry best practices.
• Used to maximize efficiency, reduce costs, identify successes and prospectively track progress and measure outcomes after change.


Benchmarking Issues

• Be careful in what you choose to benchmark.
• Elevating computerization to the level of a magic bullet may diminish what matters the most in any enterprise: educated, committed, creative and imaginative individuals working for organizations that place a greater emphasis on people’s creative capacity than on technologies.
• Time and resource consuming.

External Benchmarking Issues

- Selection of appropriate peer group.

- Vendors often ask yes/no questions to capture the work practices of health-system pharmacies. There is not much regard for the extent of these services.

- Highly reliant on patient acuity.


External Benchmarking Issues

- Vendors and consultants usually conflict with the pharmacy department’s goal of expanding clinical services and implementing best practices.

- There are major shortcomings in assessing clinical productivity of a pharmacy department.

- What are these people usually most interested in?
  - Orders processed
  - FTEs utilized
  - Per adjusted patient day
  - Per dose dispensed
  - Per dose billed


Examples of Frequently Used Pharmacy Productivity Ratios

<table>
<thead>
<tr>
<th>Labor productivity ratios</th>
<th>Cost-based productivity ratios</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hours worked per adjusted patient day</td>
<td>Drug cost per adjusted patient day</td>
</tr>
<tr>
<td>Hours worked per adjusted discharge</td>
<td>Labor cost per discharge</td>
</tr>
<tr>
<td>Hours worked per 100 orders processed</td>
<td>Total pharmacy cost per adjusted patient day</td>
</tr>
<tr>
<td>Hours paid per adjusted patient day</td>
<td>Drug cost per adjusted discharge</td>
</tr>
<tr>
<td>Hours paid per adjusted discharge</td>
<td>Total pharmacy cost per adjusted discharge</td>
</tr>
<tr>
<td>Hours paid per 100 orders processed</td>
<td>Total pharmacy cost per 100 orders processed</td>
</tr>
<tr>
<td>FTEs per dose billed</td>
<td>Labor Cost per 100 orders processed</td>
</tr>
<tr>
<td>FTEs per order processed</td>
<td>Total pharmacy cost per 100 orders processed</td>
</tr>
<tr>
<td>FTEs per occupied bed</td>
<td>Total pharmacy cost per adjusted patient day</td>
</tr>
</tbody>
</table>

PIS vs CMI

• Study which measure benefits your institution the most.

• Pharmacy Intensity Score developed by University of Wisconsin in early 2000s.

• If your institution performs high dollar medical procedures, chances are you will benefit from benchmarking with the pharmacy intensity score over CMI.

PIS vs CMI

<table>
<thead>
<tr>
<th>DRG</th>
<th>CMI</th>
<th>PIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>CABG</td>
<td>7.3</td>
<td>19.5</td>
</tr>
<tr>
<td>ACUTE LEUKEMIA</td>
<td>3.5</td>
<td>14.5</td>
</tr>
<tr>
<td>KIDNEY TRANSPLANT</td>
<td>3.2</td>
<td>27.5</td>
</tr>
<tr>
<td>HIP REPLACEMENT</td>
<td>3.2</td>
<td>17.8</td>
</tr>
</tbody>
</table>


Internal Benchmarking

• Find out what metrics are most important to your C-suite and find a way to connect them to pharmacy.

• Determine at least one opportunity to improve your overall labor efficiency and total cost performance.

• Understand the benefits of internal benchmarking vs external.
Internal Benchmarking

• Time-motion studies can be useful in order to determine the resources necessary to complete tasks and maintain the proper standard of care.
• Once a time standard is developed, then they can be automatically programmed into Epic i-vents for future automation.
  ➢ Code response
  ➢ Pharmacokinetics
  ➢ Multidisciplinary rounds
  ➢ Problem orders that need clarification vs orders that require no interventions
  ➢ Drug information


Internal Benchmarking

• As we improve and expand our profession clinically, this may actually reduce the number of interventions that are traditionally tracked as productivity metrics.

• Examples of metrics used in internal benchmarking include:
  ➢ ADC stock out rates
  ➢ Orders reviewed
  ➢ Interventions per discharge
  ➢ IV to PO changes
  ➢ Avoidance of allergies


Key Benchmarking Strategies

• Become knowledgeable of all labor productivity metrics.
• Select a meaningful peer group comparison.
• Understand and be able to explain clearly all the limitations of benchmarking to the C-suite
• Develop a department expert to whom you can delegate ongoing management of the benchmarking system. Market what you have learned.
Advice for Smaller Hospital Pharmacy Directors

- Separate cost of antimicrobial drugs from all others.
- Report drug cost per discharge/admission instead of drug cost per patient day if your facility does not discharge efficiently.
- If you do not have Epic© and must track interventions manually, I recommend keeping track of:
  a. Vanc/aminoglycoside dosing
  b. Coumadin dosing
  c. Aranesp interventions

Audience Question #2

Keys to effective internal benchmarking include:

A. Select the most meaningful key indicator metrics for comparing yourself to peers.
B. Determine at least one opportunity to improve your overall labor efficiency.
C. Develop a department expert whom you can delegate ongoing management of the benchmarking system.
D. All of the above.

Reporting & Data Analysis Tools
How do we get useful clinical information?

Data → Information → Knowledge

Considerations for Effective Reporting

Elements of Data Quality

<table>
<thead>
<tr>
<th>Element</th>
<th>Definition</th>
<th>Example of Elements NOT Followed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relationships</td>
<td>Data that correctly represents the relationship to other data.</td>
<td>Data that is presented in a way that does not reflect the real-world context.</td>
</tr>
<tr>
<td>Knowledge</td>
<td>Data that contains all expected values.</td>
<td>Data that contains all expected values that are not verified.</td>
</tr>
<tr>
<td>Access</td>
<td>Data that is available for a given task.</td>
<td>Data that is not available for a given task or in an accessible format.</td>
</tr>
<tr>
<td>Data Quality</td>
<td>Data that is useful for a given task.</td>
<td>Using the number of orders verified per day to measure the workload of the pharmacist on a pharmacy service.</td>
</tr>
</tbody>
</table>

Database Sources for Pharmacy Reports

- Hierarchical Databases
  - Cubes (e.g., Excel)
  - Information stores specific subjects for easy drill-down capabilities. Ability to create pivot tables and combine external information in Excel.

- Network Databases
  - Web Intelligence (e.g., Pharmacy Universe in SAP BI)
  - Enables self-service analytic reporting of transactions (metadata in data warehouse).

- Relational Databases
  - Operational Reports (e.g., Reporting Workbench)
  - Supports operational reporting and allows access of report modifications by end users.

- Data Warehouse
  - Managed by your pharmacy reporting team.
Medication Management & Analytics through Pharmacy Monitoring Systems

Components
- Patient identifiers
- Rule-based scores
- Review status
- Associated Reports

Customization
- Assist with institutional and department needs
- Individual preferences related to user interface and display configuration

Benefits
- Improved efficiency and productivity
- Prioritize patient care

Audience Question #3
What element of data quality best describes the ability to report correct narcotic counts from your pharmacy department’s CII safe?
A. Relevancy
B. Validity
C. Accuracy
D. Consistency
Pharmacy Department Scorecard

Pharmacy Service Drivers & Strategic Alignment

- Vision
- Design
- Values
- Strategic Goals
- Initiatives
- Performance Metrics
- Department Results

Medication Safety & Quality

- Primary Goal: Eliminate medication errors.
- Key Performance Metrics
  - Total reported medication errors
  - Number of pharmacy-attributed harm events
  - Number of pharmacy-attributed non-harm events
  - Pharmacy interventions
- Medication Safety Considerations
  - Storage
  - Ordering
  - Preparation/Dispense
  - Administration
  - Monitoring
Pharmacy Operations

- **Primary Goal:** Increase efficiency and productivity while maintaining or improving patient outcomes.

- **Key Performance Metrics**
  - STAT and routine verification time
  - ADC stock outages
  - Total outpatient doses dispensed and returned

- **Operational Considerations**
  - Internal vs. External Benchmarking
  - Tracking Frequency: weekly, monthly, quarterly, and yearly
  - System optimization and upgrades

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Financial Performance

- **Primary Goal:** Increase revenue and reduce pharmacy cost while maintaining or improving patient outcomes.

- **Key Performance Metrics**
  - Drug cost per intensity weighted (adjusted) discharge
  - Labor cost per intensity weighted (adjusted) discharge
  - Total cost of medications dispensed per case mix adjusted day
  - Cumulative cost reduction
  - Overtime expense

- **Drug Cost Considerations**
  - Drug shortages
  - Specialty pharmacy medications and biosimilars
  - Patient stay metrics: length of stay, admissions, discharges, doses dispensed per admission, etc.

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Education & Research

- **Primary Goal:** Improve pharmacy personnel clinical skills and empower pharmacists to practice at the top of their license.

- **Key Performance Metrics**
  - Number of Introductory Pharmacy Practice Experience student rotations precepted
  - Number of Advanced Pharmacy Practice Experience student rotations precepted
  - Number of ACPE approved continuing education lectures presented
  - Number of pharmacy department peer-reviewed publications

- **Educational Considerations**
  - Number of licensed pharmacist preceptors
  - Time dedicated to research and scholarship
  - Pharmacy department mentorship program
  - Competency assessments
  - Layered learning model
Steps to Implementing a Pharmacy Department Balanced Scorecard (BSC)

1. Develop pharmacy department strategic plan
2. Identify performance measures the BSC will evaluate and align with department strategic plan
3. Determine the frequency and style that the BSC will be shared
4. Promote pharmacy services with the BSC

Balanced Scorecard Example

References

- © 2015 Epic Systems Corporation
- Enwere EN, Keating EA, Webster SJ. Balanced Scorecards As a Tool For Developing Patient-Centered Pharmacy Services. Hosp Pharm 2014;49(6):579-584