Pharmacy Productivity: Review and Introduction of Innovative Models

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Objectives:
- Illustrate the need for workload monitoring
- Review pharmacy productivity literature
- Identify strengths and limitations of established models
- Introduce innovative pharmacy productivity metrics
- Discuss productivity model based flexible staffing

Workload monitoring
- Benchmarking
- Productivity monitoring (internal benchmarking)
- Other Metrics

What/Why Benchmarking and Productivity
- Defined, continuous process for measuring and comparing products, services, and practices
  - Toughest competitors, industry leaders
  - Ongoing evaluation of self vs. others
  - Find and implement best practices
  - Pressure for improved operational performance while keeping costs under control

Benchmarking
- Method for comparison to determine the value and effectiveness of pharmacy services
- Mechanism for leaders to compare the financial and operational data of target areas for cost control, performance improvement, and efficiency
  - Comparison to other “like” organizations
    - External benchmarking

External Benchmarking
- Hospitals submit “standardized” data to a vendor-managed database
  - Comparison to “peer” organizations
  - Departmental, operational, and financial performance
  - Process of measuring costs, services, practices to other organizations
  - Big picture information
  - A director must understand and be able to work with limitations
  - Caution in approach
External Benchmarking – Data elements

- Staffing
  - Paid FTEs
  - Overtime
- Facility
  - Admissions
  - Patient Days
  - Discharges
  - Clinic Visits

Operations
- Drug expenses
- Doses dispensed
- Orders processed
- Supply expense (non-drug)
- Worked hours

Limitations in external Benchmarking

- Potential limitations
  - Acuity
  - Quality
  - Standardized Drug Costs
  - Technology
  - Practice Model
  - Skill mix
  - Laws
  - Policies
  - Inpatient vs. Outpatient
    - Drug cost
    - Personnel mix

Benchmarking – Peer Group

- Understand the peer group
  - Size
  - Location
  - Technology
  - Practice model
    - Outpatient facilities?
    - Mission of the facility
      - Academic vs. Community
      - Non-Profit vs. For-Profit
  - May have multiple peer groups
    - Top academic medical centers
    - Top overall medical centers

Benchmarking

- Directors must understand external benchmarking systems and their limitations
  - What data you submit
  - What data others are submitting
  - Why you may look good/bad in a respective ratio
- Have other metrics to support department
  - Internal benchmarking (productivity) model
  - Other data metrics

Productivity Monitoring

- Comparison of self over time
  - Current department performance vs. historical department performance
- Metric (units of service) vs. Hours worked to produce the units of service
  - Makes the assumption that historical baseline is appropriate
  - Often used for justification of new/existing positions
  - Major departmental changes will require modification of the standard
Productivity

- "Productivity is individuals and work groups working in a coordinated action performing their work efficiently (with technical productivity) and effectively (with quality), forwarding the vision and commitment of the organization and their profession, while making a difference in their work environment"
- Measurement of the staffing level of a department

Productivity: Key Terms

- Driver
  - Metric that defines the variability of the model
  - Variable that correlates to workload
- Unit of service
  - Unit defined based on driver
  - Number of "units" produced over a period of time
- Fixed position
  - Workload does not change based on driver
  - Entire FTE is fixed
  - Managers, IT, drug information, med safety

Productivity: Key Terms

- Variable position
  - Generalist, specialist, technician
  - Workload increases/decreases as driver increases/decreases
- Variable activities
  - Workload that responds to the variable driver
  - Order verification, kinetics, TPNs, med rec
- Fixed activities

Fixed activities

- Workload that does not respond to the driver
- Required activities by the employer
  - Computer based learning modules, staff meetings, training
- Typically “head count” activities
  - Example:
    - Mandatory 1-hour pharmacist meeting each pay period
    - 28 pharmacists
    - 28 fixed hours of variable staff

Productivity Calculation Example

FTE breakdown in productivity calculation

Variable portion of Variable staff, 30
Variable portion of Variable staff, 5
Fixed portion of Variable staff, 10
Fixed Positions, 10
Variable Positions, 38

The calculation of the variable portion of variable staff drives department productivity

Productivity ratios

- Units of Service produced (Target Hours)
- Hours Worked
- Input
- Output
- No gold standard to define “Units of Service”
- Ratio calculated on defined intervals
- Usually following every pay period
Non-Pharmacy Calculation Example

- A company knows it takes, on average, 14 minutes for staff to make a canister
- The company produced 1700 canisters during the previous 2 week pay period
- Variable staff worked 400 variable hours during the period
- For simplicity:
  - No fixed activities of variable staff
  - No fixed (administration) positions

\[
\text{1650 canisters} \times \frac{14 \text{ min}}{\text{canister}} \times \frac{1 \text{ hour}}{60 \text{ min}} = 385 \text{ arg et hours}
\]

\[
\frac{385 \text{ arg et hours}}{400 \text{ worked hours}} \times 100 = 96.25\%
\]

\[
400 \text{ worked hours} - 385 \text{ arg et hours} = 15 \text{ hours}
\]

\[
\frac{15 \text{ hours}}{80 \text{ hours}} = -0.19 \text{ FTE}
\]

- 96.25% department productivity
- -0.19FTE variance

Pharmacy Calculation Example

<table>
<thead>
<tr>
<th>Department</th>
<th>Pay Period X</th>
</tr>
</thead>
<tbody>
<tr>
<td>UDS (hrs)</td>
<td>5453</td>
</tr>
<tr>
<td>Variable FTE</td>
<td>69.2</td>
</tr>
<tr>
<td>Fixed FTE</td>
<td>0.7</td>
</tr>
<tr>
<td>Fixed Admin. FTE</td>
<td>0.6</td>
</tr>
<tr>
<td>Other Fixed FTE</td>
<td>2.3</td>
</tr>
<tr>
<td>Total Fixed FTE</td>
<td>68.3</td>
</tr>
<tr>
<td>FTE Target</td>
<td>146.4</td>
</tr>
<tr>
<td>Actuel Worked FTE</td>
<td>146.1</td>
</tr>
<tr>
<td>Over/Under</td>
<td>2.3</td>
</tr>
</tbody>
</table>

Productivity 100%

Traditional Productivity Metrics (Drivers)

- Doses dispensed
- Admissions
- Patient Days
- Interventions
- Revenue
- Above metrics provide little to no granularity or detail
  - Only broad department level data

Selection of a Driver

- Analysis of individual job function to determine which activity (activities) correlates to increases or decreases in workload
  - Overall pharmacy department
    - Admissions
    - Patient days
    - Doses
    - Revenue
    - Cost per admission (patient day)

Admissions

- Correlation to department workload
  - Generally accepted as a better metric than patient day
  - Most drug expenses and pharmacist labor requirements are associated with the first half of a patients admission
- Limitations
  - Workload associated with non-admitted patients
  - Length of stay
  - Acuity of the admitted patients
Admissions – Limitation adjustments

- Inpatient/outpatient adjustment
  - Will the worked hours be included in the calculation? (ED pharmacists)
  - If yes – we need to adjust for it

\[
\text{Total Revenue} = \frac{\text{Inpatient Revenue}}{\text{Inpatient Revenue} + \text{Revenue associated with the emergency department}}
\]

- Total Revenue*
  - Inpatient revenue + revenue associated with the emergency department
  - Infusion pharmacy revenue is excluded as are the pharmacists that work there
  - Productivity calculated separately

\[
\text{Admissions} = \frac{\text{TotalRevenue}}{\text{Unadjusted Inpatient Revenue}} \times \text{PIS}
\]


Admissions – Limitations

- Unable to account for
  - Time of day
  - Day of the week
  - Staff mix
    - Pharmacists
    - Specialist Pharmacists
    - Technicians

Patient Days

- Associated with how well a hospital is managing its capacity
  - The majority of drug expenses and pharmacy labor are consumed in the first half of a patient’s stay
  - Decreased length of stay (LOS) is a goal
    - As LOS and patient days are decreased drug costs will likely not be proportionately reduced
  - How does your hospital classify observation patients? ED patients?

Revenue or Cost

- Low use – high cost medications
  - Factor products, antivenom, chemotherapy
  - Disproportionate-share contract participation
  - Manufacturer rebates
    - Are they applied to the department operating statement or to the top of hospital
  - Charge Description Master

Interventions

- Documentation of a pharmacist initiated clinical change that impacts a patient’s care
  - Often requires manual documentation
  - These activities may necessitate documentation in the patient chart
  - What clinical pharmacist activities are counted as “interventions” vs normal pharmacist care?
  - What is the organizations expectation of completing interventions? Documentation?
  - Be careful of quotas
Outpatient infusion productivity

- Driver
  - Dispense type
    - Bulk product, chemo syringe, IVPB, etc.
  - At our outpatient infusion sites a single dispense is best associated with the staff’s workload
    - Both pharmacists and technicians
  - Processes at each site were evaluated
    - Time standards for each step of the process by each dispense type were developed
    - Time standards for each dispense type were summed by job title

Verifications

- Recently developed model after EMR implementation
- Evaluation of the department’s medication use process and practice model
  - Verifications are the best indicator of our generalist pharmacists workload
- Driver: Weighted Verifications
  - Weighted by pharmaceutical class to account for variability in medication types
  - Incorporate generalist pharmacists and technician workload

Weighted Verifications

- Verifications weighted by pharmaceutical class
  - 96 classes
  - Weighted to account for the complexity of the medication
- Class weights obtained by
  - Time stamps from EMR (Epic®)
  - Staff observations
  - Staff feedback
  - Order set adjustment

Weighted Verifications

- Class weights assigned based on:
  - Pharmacist order verification time
  - Pharmacist check of product
  - Pharmacist verification of order discontinuation
  - Pharmacist communication with nurses/physicians, and problem order resolution
  - Technician product preparation time
  - Technician product delivery time
  - Technician communication with nurses and problem order resolution
- Weights are summed to calculate a verification multiplier (RVU)

Weighted Verifications

- Benefits
  - Granularity
    - Greater ability to staff to demand
  - Ability to adjust as practice model changes
    - Technology, law, etc.
    - More timely data
- Limitations
  - Effort required to develop and maintain
  - Limited direct translatability to other organizations
Weighted Verification: granularity

Ambulatory Pharmacist Productivity
- Driver: Clinic visits
  - Initial visit
  - Return visit
- Time standard associated with each visit type
  - Actual visit time
  - Pre-visit preparation
  - After visit follow-up

Other important metrics
- Quality
  - Missing doses
  - Levels out of range
  - Medication reconciliation
  - Counseling/education %
- Turn around time
- ADDC down time
- Stock outs
- Scan rates (when loading ADC)
- Inventory turns

Tips for Success
- Executive engagement early
  - Any successful model must have buy in from administration
- Collaboration with Management Engineering
  - Productivity monitoring experts of your organization
- Staff involvement
  - Collaboration during development will help with acceptance once implemented

Summary
- Metric understanding is extremely important
- Benchmarking
- Internal Productivity Monitoring
- Other Metrics
- Understanding of limitations