

Pharmacy Practice Advancement Committee

A primer on pharmacy benchmarking and productivity monitoring

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Pharmacy Benchmarking and Productivity Monitoring

The best metric (goal) to monitor pharmacy productivity is a combination of workload, labor, cost, and outcomes

Internal Benchmarking: Comparing to oneself



23%

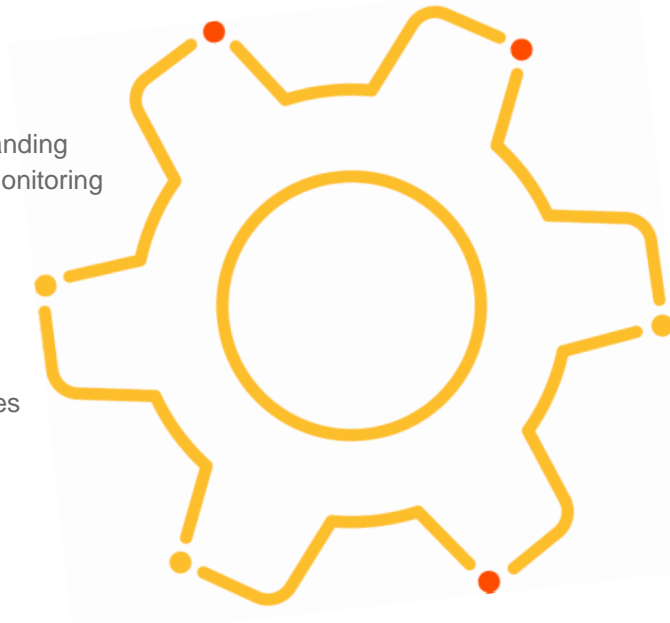
Individuals rate overall knowledge and understanding of internal productivity monitoring as very high

87%

Respondents reporting department currently uses an internal productivity monitoring process (n=101/116)

37%

Respondents indicate organization flexes staffing based upon productivity metrics



External Benchmarking: Comparing your institution to others over time

12%

Individuals rate overall knowledge and understanding of external productivity monitoring as very high

74%

Survey respondents held accountable to external productivity metrics in their organization's annual budgeting process (n=94/127)

59%

Most commonly used external productivity monitoring vendor: Truven/Action OI

Challenges



33%

Identifying an appropriate comparison group

22%

Organization/senior leadership understanding of metrics and buy-in

16%

No perfect metric to capture clinical services vs. dispensing activities

Pharmacy Intensity Score = resource-based relative value intensity (R-BRVI) grouping system that utilizes pharmaceutical resource consumption data to produce DRG-specific drug use requirements (weights)



Benchmarking 101^{1,2}

Benchmarking made its first appearance in the healthcare system in 1990, when standards and requirements were implemented by the Joint Commission on Accreditation of Healthcare Organizations (Joint Commission). The Joint Commission defined benchmarking as a measurement tool for monitoring the impact of governance, management, clinical, and logistical functions. Benchmarking has become an area of strategic focus over the past decade with three aims: to control healthcare costs; to mitigate risk and improve the quality of care; and improve patient satisfaction. Benchmarking allows a health care team or organization to understand how their performance compares to a similar group with a purpose of identifying and implementing the best practices of peer organizations to improve their performance. Metrics used in benchmarking come from many sources but may be used to understand performance on standards set by a regulatory body or agency.

While benchmarking is often thought of as simply comparing financial, productivity, and quality indicators between several organizations, it should rather be seen as part of a comprehensive continuous quality improvement (CQI) plan. There is no single metric that will adequately demonstrate the value a pharmacy department delivers. In order to be successful in using benchmarking tools, a focus should be placed on understanding when to use internal versus external benchmarking, carefully identifying key indicators, understanding the data that makes up each metric, involving staff in process improvement efforts, and communicating the benchmarking results with stakeholders.

Benchmarking can be completed by taking the following steps:

- Select the service or activity to be reviewed through benchmarking
- Determine whether internal or external benchmarking is most appropriate
- Identify key indicators to measure and set performance targets
- Collect and validate the data
- Measure performance
- Identify and address challenges with data and/or performance
- Implement changes to improve results
- Communicate results, including how to interpret performance

Operational and Process Measures

From an operational perspective benchmarking is a tool that can be utilized by pharmacy leaders to better understand the work that is being done and identify potential opportunities to improve efficiency and reach of services. These measures typically look at resource utilization to deliver care over time – either as labor (i.e., staff work effort), medications, or some combination.

Work effort measures identify a time standard and volume metric that can be measured over time. The mean time required to perform a task, or time standard, can be developed by direct observation, self-reporting, work sampling, or adopting a time standard from a similar organization. A volume indicator, or frequency of reported task, can be obtained from the pharmacy's inventory management system, the organization's electronic health record, or the organization's billing systems.

Once metrics are defined, the determined time standard (e.g., time required to enter a medication order) is multiplied by the volume indicator (e.g., number of medication orders) to generate the total staff time required for each specified activity over a period of time (e.g., total time required to enter medication orders per day), usually in total minutes or workload units (WLU). The measure is then tracked over time to look for trends and be able to anticipate workload fluctuations.

Suggested Pharmacy Operational Measures

- Labor-based:
 - Worked hours per unit of service
 - Labor expense per 1,000 doses billed
 - Pharmacist worked hours per dose
 - Labor cost per admission
 - Doses dispensed per admission
 - Pharmacist : Technician skill mix ratio
- Non-Labor based:
 - Drug cost per admission (can also be a clinical measure)
 - Inventory turns per year
- Combination:
 - Total cost per admission
 - Pharmacy costs as a percentage of total hospital costs

Clinical Measures³

Due to the variation in services provided by pharmacy departments across the country, clinical workload measures and metrics have not been well defined. While utilizing pharmacists to complete clinical activities may increase overall costs of the pharmacy department, these measures should illustrate the impact pharmacists have on judicious use of medications and optimal patient outcomes. Thus organizations should strive to tie clinical activities to patient and financial outcomes. A metric that is commonly used to measure pharmacist workload is number of clinical interventions. Examples of clinical interventions include I.V.-to-oral conversions, dosage adjustments for renal insufficiency, drug

information questions answered, pharmacokinetic services provided, avoidance of allergy and adverse drug reactions, order clarifications, and patient educations completed. However, this metric does not account for the various clinical functions performed by pharmacists and requires a significant amount of time to document. Furthermore, there is not a validated method to measure the economic impact of routine pharmacist clinical interventions and services. Incorporating quality-based measures into a department's balanced scorecard can better portray the overall value of a pharmacy department's clinical services to senior leaders rather than just focusing on drug expense and widgets. This can be challenging because the value of clinical interventions is not always clearly

defined in the literature, plus many organizations do not recognize the value of soft dollar "costs avoided". There are hard dollar quality outcomes that can be used which directly affect reimbursement such as readmission rates. However, organizations can have overlapping system interventions that target the same outcome, so it can be challenging to link a pharmacy service specifically to a quality outcome change. Thus, pharmacy leaders must be able to explain how pharmacy services impact quality measures in a way that is meaningful for the organization.

Internal Benchmarking

Internal benchmarking allows an organization, or department, to compare process and performance over time. Internal benchmarking requires an initial and ongoing internal comparison to establish and maintain a system of measures with goals.

Internal benchmarking assists pharmacy departments in determining what resources are necessary to provide optimal clinical and distributive services within the pharmacy department. A good internal productivity monitoring system will enable a pharmacy director to trend productivity and performance by monitoring workload and cost metrics in relation to a volume indicator. Internal benchmarking can also be used to provide objective data when implementing a new service or modifying an existing service. It can be especially useful when additional labor resources are needed as a result of volume expansion or service expansion. There is no gold standard method for internal productivity monitoring. The key is to identify metrics that are validated, accurate, and applied consistently over time to assess the pharmacy department's success.

Once the internal measures that will be tracked have been identified, the next step is to collect data to determine appropriate baselines. Identify the core activities that constitute most of the total staff workload (e.g., obtaining medication histories, providing medication counseling, checking medication doses and adjusting them as needed, documenting and avoiding drug allergies or interactions, participating in patient care rounds, and providing pharmacokinetic services). Departments can consider using a separate productivity monitoring system for the various services provided. These may include: sterile products area, repackaging area, purchasing activities, and decentralized clinical services.

Then, determine how workload will be measured for each task (e.g., utilize pharmacy learners, time studies, industrial engineering students, Delphi process, etc.) and how often the workload and volume will be reported and trended.

External Benchmarking

When should we compare apples to oranges? The answer to this rhetorical question is “never”, but when doing external benchmarking that is exactly what pharmacy leaders do. External benchmarking enables a department to compare their performance against other organizations. This comparison can bolster justification of existing services or growth of new services but there are several key factors to consider when using external benchmarking in order to appropriately select comparator organizations.

The key to success in this endeavor is to identify a pharmacy department or organization that is similar with respect to the patient populations served, pharmacy services provided (operational and clinical), and performance metrics used. For example, it would not make sense for a small, rural community hospital to attempt to benchmark against an urban, tertiary academic medical center. Patient population comparisons are also important with respect to geography (rural vs. urban), but even more importantly in terms of acuity level. Organizations that specialize in complex service lines will have higher expenses and potentially additional pharmacy department needs compared with those that do not. For example, organizations with transplant services not only have higher medical and pharmaceutical expenses they also often have interdisciplinary care teams that manage patients longitudinally both in the inpatient and ambulatory care settings. Or there may be other reasons necessitating unique peer groups such as safety net organizations who primarily provide care for underserved populations with more cultural, language and literacy barriers. These patients may not be as clinically complex but they often require more pharmacist time to provide medication management services that increase the cost of care.

For this reason, a cost metric of total pharmacy cost per patient day often does not accurately reflect the acuity of the patients being managed, especially in an acute care setting, and can underestimate the impact of clinical pharmacy services that are provided. Organizations must

attempt to adjust for this limitation by using an adjustment factor; however, the adjustment factor used is critical. For example, Case-Mix Index (CMI) is commonly used, but is based on overall “resource” consumption and medically complex patients are not always the same as pharmaceutically complex patients. A better acuity adjustment factor is the Pharmacy Intensity Score (PIS) which links together pharmaceutical resource consumption with Disease-Related Groups (DRGs) to adjust ratios and allow improved comparisons between pharmacy organizations regardless of patient mix. Key to remember is to always report a labor metric with a corresponding cost metric – these are highly dependent on each other and should both be reported to demonstrate the value of pharmacy labor to drive down drug expense.

When selecting external benchmarking metrics, it is also important to understand how these metrics are calculated. Doing so will help leaders understand their limitations. For example, a labor productivity metric of full-time-equivalents (FTEs) per dose dispensed does not factor in that the labor time required to dispense a unit-dose packaged tablet is very different compared with a sterile chemotherapy preparation. Another common issue, especially with growing ambulatory practice settings is when metrics combine inpatient and ambulatory practice settings together. There is no common denominator that can appropriately explain the performance of both inpatient and ambulatory services because the work is so different. In addition, there is significant variation among organizations regarding how clinic administered and infusion center medications are reported. For example, hospitals A and B both combine their inpatient and infusion center service lines when reporting data. However, hospital A purchases the medications for their infusion center directly while hospital B passes through the cost of those medications to the infusion center's budget. So, the total cost for hospital A is going to appear much larger than for hospital B despite the fact that they may actually have a lower cost ratio if hospital B's drug expense were included.

Bringing it All Together

Overall, pharmacy leaders need to select a combination of cost, labor, outcome and workload metrics that provide the most balanced view of their department's performance. Know the limitations of the metrics being used, and try to counterbalance those with additional metrics that tell a more complete picture when possible.

When selecting metrics and interpreting ongoing performance, pharmacy leaders must understand where data is coming from that is used to calculate metrics. Ideally metrics will have readily retrievable data inputs with minimal need for voluntary reporting to ensure consistent and reliable data from month to month. For example, do drug charges come directly from finance or from the pharmacy information system? Or, has it been validated that drug expense is split appropriately between inpatient, clinic and ambulatory retail settings? Have denominators used in ratio-based metrics been validated? Understanding the source and processing of data will ensure metrics are calculated correctly. It will allow leaders to appropriately explain their metrics, particularly to interpret changes in metrics (up or down) and whether changes could be the result of data integrity issues (e.g., systems upgrade).

When using external benchmarking to measure performance, the types of pharmacy services offered should also be evaluated when identifying peer organizations for comparison. For example, one organization may have a robust antimicrobial stewardship pharmacy program where pharmacists are integrally involved with antibiotic selection, dosing and de-escalation vs. another organization where this program does not exist. Metrics for cost, labor and outcomes could look very different between these two organizations despite the fact that they may have very similar patient populations. In addition to variation in operational and clinical pharmacy services, pharmacy leaders should consider what non-pharmacy departments do that may affect pharmacy metrics. For example, nurses complete home medication histories in some organizations whereas in other organizations this may be a pharmacy responsibility.

Conclusion

Pharmacy leaders are often asked to speak to their performance using internal and external benchmarking. Due to the lack of metrics that tie together the benefits of pharmacy clinical services with productivity, leaders should expect to spend a significant amount of time explaining why benchmarking metrics utilized do not accurately measure pharmacy performance.

Therefore, pharmacy leaders should understand the inherent limitations of the metrics utilized and communicate these limitations when reviewing with senior leadership. Pharmacy leaders should strive to develop more meaningful metrics, and advocate for these metrics in monitoring pharmacy performance. By communicating these inherent challenges and identifying solutions, pharmacy leaders will demonstrate to executive leaders they are partners in helping improve organizational success.

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2. Rough SS, Mcdaniel M, Rinehart JR. Effective use of workload and productivity monitoring tools in health-system pharmacy, part 1. *Am J Health Syst Pharm*. 2010;67(4):300-11.
3. Carmichael J, Jassar G, Nguyen PA. Healthcare metrics: Where do pharmacists add value? *Am J Health Syst Pharm*. 2016;73(19):1537-47.

The following references may be useful in gaining a deeper understanding on the usefulness of benchmarking in the Pharmacy Department:

Overview of Benchmarking

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 - Reviews historical pharmacy productivity models and their limitations
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Operational Benchmarking

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 - Describes an innovative model for measuring the operational productivity of medication order management in inpatient settings
3. Krogh P, Ernster J, Knoer S. Creating pharmacy staffing-to-demand models: predictive tools used at two institutions. *Am J Health Syst Pharm.* 2012;69(18):1574-80.
 - Reviews data-driven staffing to demand models utilized at two institutions
 - Explores financial savings associated with these successful models

Clinical Benchmarking

1. Carmichael J, Jassar G, Nguyen PA. Healthcare metrics: Where do pharmacists add value? *Am J Health Syst Pharm.* 2016;73(19):1537-47.
 - Describes how pharmacy services and pharmacists can show value to the healthcare system through the use of performance metrics
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 - Describes the development of an automated tool to quantify decentralized clinical pharmacists' productivity at a large metropolitan hospital
3. O'neal BC, Coudry RJ, Wilkinson ST, et al. Leveraging drug-utilization and external benchmarking data to drive change in prescribing behaviors. *Am J Health Syst Pharm.* 2012;69(21):1916-22.
 - Identified target areas of sub-optimal drug-utilization (based on Medicare Severity Diagnosis-Related Group) in the hospital
 - Development of a clinical resource manager template for generating customized reports comparing the hospital's performance on various drug-utilization metrics with that of top-performing peers.



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