

When Dispensing Speed and Service Volume Define Quality, What Becomes Invisible? Examining How Performance Indicators Redirect Attention and Effort in Pharmacy Practice

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Abstract

Pharmacy performance indicators are necessary for managing timeliness, productivity, safety, and service delivery, yet easily counted indicators can become practical definitions of quality when they dominate reporting, comparison, incentives, and managerial attention. This conceptual article examines how dispensing speed, service volume, and throughput can remain legitimate operational measures while providing only a partial view of pharmacy quality. It develops an assumption-challenging account linking selective visibility, attention and effort allocation, and feedback between measured performance and work organization. Underrepresented work can include safety control, counseling, continuity, equitable access, and adaptive activity that maintains reliable care under strain. Metric-induced redirection is presented as conditional: it is most plausible when salient measures are consequential, time and resources are constrained, and weakly measured quality functions lack organizational protection. Counter-metrics should therefore complement rather than simply replace throughput indicators. The contribution is a framework for asking what a metric makes decision-relevant, what it leaves weakly visible, and when that visibility can alter the work being assessed.

Keywords: Pharmacy quality indicators, Dispensing workload, Performance measurement, Invisible work, Patient safety, Equity

Introduction

Pharmacy quality is represented through indicators that select particular processes, outcomes, and service characteristics for recording and comparison. Community-pharmacy quality-indicator research shows heterogeneous measures across multiple domains rather than one settled definition of quality [1]. The relevant problem is therefore not whether pharmacies should

measure performance, but what happens when a subset of measurable activities becomes the dominant basis for judging it.

Stakeholders do not necessarily attach the same meaning to pharmacy quality. Qualitative evidence shows that judgments of community-pharmacy service quality extend beyond a narrow operational dimension [2]. More generally, health-care indicators become useful only when sufficiently fit for their decision purpose and context [3]. A technically sound measure can therefore provide an incomplete decision frame when it is asked to stand in for a broader construct than it captures.

The concern becomes stronger when measures organize attention, comparison, accountability, or reward. Health-care performance research documents measure fixation, tunnel vision, gaming, and administrative burden under some incentive and governance arrangements [4]. These

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effects are not inevitable, and their existence does not make operational measurement illegitimate. This article instead asks when valid indicators of speed, volume, or throughput become de facto definitions of pharmacy quality and whether that changes which forms of work are noticed, protected, or sacrificed.

The analysis distinguishes metric validity from metric dominance and treats invisible work as a measurement relationship, not as a claim that every unmeasured activity is inherently valuable. It also preserves a critical rival explanation: workload, staffing, technology, reimbursement, and workflow constraints may redirect work even without any metric effect. A defensible account must distinguish pressure created by work itself from pressure created by how organizations choose to see and judge that work.

How performance measures become operational definitions of quality

Performance measurement can support management. Health-care organizations use performance systems diagnostically, interactively, and strategically, and managers may find them useful for understanding processes and coordinating improvement [5]. The key distinction is between measurement as information and measurement as an operational definition of success. A measure assumes the latter role when decisions repeatedly treat improvement in that measure as sufficient evidence that the underlying quality construct has improved.

Organizational attention is selective. The attention-based view argues that what decision-makers notice and act on is shaped by structures, rules, resources, and situated demands [6]. A performance indicator can enter this attention system as a recurring signal because it is reported, discussed, compared, or tied to accountability. It then helps determine which aspects of work become repeatedly consequential.

Context is part of indicator quality. A modified Delphi study of health-system performance measurement showed that indicator selection should reflect local priorities and determinants rather than assume a generic set is equally meaningful everywhere [7]. A dispensing-time measure can be operationally important where long waits threaten access, yet it does not automatically capture counseling quality, medication-risk detection, continuity, or work needed for patients facing additional barriers.

Health-care performance is also multidimensional. A systematic review identified multiple non-equivalent dimensions used in performance frameworks [8]. Evidence on pay-for-performance similarly indicates that incentives can affect processes of care while broader outcome effects are less consistent and context dependent [9]. These findings support a bounded inference: indicators can be useful while becoming misleading when one dimension carries more interpretive weight than it can justify.

Here, metric dominance means that an indicator or small indicator set becomes disproportionately influential in operational judgments relative to what it actually measures. Dominance can arise through incentives, dashboards, staffing decisions, target escalation, or repeated managerial questioning. The issue is not whether the metric is valid; it is whether its visible domain is treated as though it exhausts the quality problem.

Dispensing speed, volume and throughput

Speed, volume, and throughput are attractive because they are observable and operationally actionable. They can identify congestion, delayed service, or mismatches between demand and staffing. Community-pharmacy research shows that workload and service organization affect time available for patient interaction [10]. Hospital-pharmacy evidence also links pharmacist workload with aspects of service performance, although associations are not uniform across outcomes or periods [11]. Throughput therefore describes something real: the capacity of a service system to process work.

Its limitation appears when operational performance is treated as overall quality. Time-and-motion research shows that pharmacists distribute effort across dispensing, patient-facing interaction, indirect patient care, administration, and other tasks [12]. A high-throughput system may complete transactions efficiently while leaving uncertain how much attention is devoted to medication understanding, risk detection, coordination, or follow-up. Conversely, a slower encounter may indicate inefficiency, but it may also contain necessary clinical or relational work.

Waiting time can thus be a valid timeliness indicator without being a comprehensive quality indicator. Volume can represent demand without revealing case complexity. Productivity can guide capacity decisions without showing how counseling, interruptions, problem solving, or coordination are distributed within the

counted unit. The measurement problem begins when the counted unit becomes the assumed unit of value.

Forms of pharmacy work that standard indicators underrepresent

Underrepresented work consists of activities or quality functions that contribute to safe, continuous, equitable, or clinically appropriate care but are weakly represented by common operational counts. One category is disruption and safety management. Direct observation shows recurrent interruptions in community pharmacies [13], while occupational-fatigue research identifies distinguishable mental and physical fatigue dimensions among pharmacists [14]. Neither is captured well by a prescription count, although both shape the conditions under which safe work occurs.

Dispensing also contains preventive safety work. Failure mode and effects analysis identifies multiple process points at which risk must be anticipated, detected, or controlled [15]. The absence of an error is therefore not evidence that no safety work occurred. Work-sampling research further shows that community pharmacists balance cognitive pharmaceutical services with management, logistics, and other activities, so increased time in one category reduces time available for others within a finite working day [16]. Opportunity cost is thus central to quality measurement even when no explicit instruction tells staff to abandon another activity.

A second category concerns relational, continuity, and equity functions. Pharmacist-led services for minoritized populations are often tailored to population needs, although effectiveness evidence remains limited [17]. Geographic studies likewise show that pharmacy access is patterned by place and social conditions [18–20]. These studies do not equate proximity with quality, but they demonstrate why service volume alone cannot answer an equity question.

Pharmacists may also engage with social determinants of health at patient, practice, and community levels [21]. Such activity should not be presumed effective merely because it is socially desirable, yet it illustrates work that disappears from a quality system defined only by dispensing productivity. Continuity poses a similar problem: community pharmacy remains incompletely integrated into primary-care structures in many systems, making coordination and coherent medication management important organizational challenges [22].

A useful summary is therefore to distinguish what common operational indicators legitimately reveal from what they leave weakly observed. The relationship is analytical rather than moral: underrepresented work may be important, unnecessary, duplicative, or poorly executed in a particular case. The problem is that a metric system cannot adjudicate those possibilities if the work is not sufficiently visible to enter the decision.

Table 1. Selective visibility of pharmacy quality when speed, volume and throughput dominate operational measurement

Pharmacy work or quality function	What speed/volume measures can reveal	What remains weakly visible	How dominance could redirect effort	Claim limit
Routine dispensing flow	Demand, queue pressure, completion and timeliness	Complexity of checking, ambiguity resolution, near-error recovery	Effort may shift toward rapid completion of countable units	Faster completion is not assumed to reduce safety
Counseling and medication understanding	Encounter or service counts	Depth of explanation, comprehension, trust, tailored communication	Interaction may be compressed when time is scarce	Longer encounters are not automatically better
Safety checking and risk interception	Completed prescriptions and recorded errors	Preventive work that stops errors before events occur	Preventive checking may lose salience if only output is rewarded	No causal effect is established
Interruption recovery and cognitive reset	Little beyond final task completion	Reorientation, repeated checking, reprioritization, fatigue	Recovery work may be absorbed informally	Interruption burden can exist without metric pressure
Cognitive/clinical services	Counts when separately coded	Case complexity, problem solving, coordination, opportunity cost	Staff may favor more consistently measured activities	Unmeasured work is not presumed superior

Continuity and cross-setting coordination	Contact or referral counts	Medication-history reconstruction, reconciliation, follow-through	Coordination may be deferred when weakly represented	Integration does not guarantee better outcomes
Equity-oriented access and service tailoring	Aggregate volume and geographic reach	Differential barriers, adaptation needs, distribution of access	High-volume populations may receive more attention than harder-to-serve groups	Equity cannot be inferred from volume alone
Adaptive work under pressure	Output maintained during disruption	Workarounds, anticipation, informal coordination, adjustment	Successful adaptation may remain invisible and unsupported	Adaptation can also create risk

Note: “Could redirect effort” denotes a proposed mechanism requiring empirical testing and does not indicate an established causal effect for any individual metric.

Mechanisms of attention and effort redirection

The existence of underrepresented work does not establish redirection; a mechanism is required. Three linked mechanisms are plausible: selective attention, constrained effort allocation, and adaptive response to demands and resources.

Pharmacy roles already contain multiple sources of stress and strain. A systematic review of community-pharmacist instruments identified heterogeneous measures of psychological strain, social strain, and role stress [23]. A salient target therefore enters an environment in which attention is already contested. It need not consume all attention to matter; it can alter priority when competing demands cannot all be satisfied. Effort allocation also depends on the balance between job demands and resources. Qualitative research using the job demands-resources model found that pharmacists' burnout experiences reflected practical and emotional demands alongside organizational, interpersonal, and personal resources [24]. The pandemic context limits direct transfer, but the distinction is useful: the same performance expectation may be manageable with adequate staffing, time, autonomy, and support yet distortive under scarcity.

Pharmacies also rely on adaptive work when conditions depart from formal expectations. Community pharmacists reported substantial adaptation during the COVID-19 pandemic [25], and resilience research found that staff responded, monitored, anticipated, and learned in ways that helped maintain safety under pressure [26]. Such activity can become visible mainly when it fails. If formal systems reward stable output while overlooking the work required to sustain it, organizations may underinvest in the capacity that makes measured performance possible.

Redirection therefore need not involve deliberate gaming. Staff may respond rationally to queues, dashboards, staffing models, or supervisory expectations

by prioritizing work that is both urgent and visible. Repeatedly visible work can acquire procedural priority while weakly measured work becomes discretionary or dependent on individual professional commitment. This is a subtler process than falsifying data: legitimate measures can shape the practical hierarchy of tasks.

When measurement alters the work being measured

Measurement becomes theoretically consequential when it changes the conditions under which the measured work is performed. Performance research shows that monitoring and incentive systems can generate unintended behavioral responses [4]. Attention theory explains why recurrently salient issues can capture organizational focus [6]. Pay-for-performance evidence shows that measured processes can change under incentive programs even when broader outcome effects are inconsistent [9]. None alone demonstrates a pharmacy-specific throughput effect, but together they identify conditions under which one is plausible.

The first condition is salience. A metric must matter enough to enter recurrent operational decisions. An indicator displayed but rarely discussed is unlikely to redirect much effort. One used in staffing reviews, target setting, evaluation, or escalation has a different status because employees can anticipate consequences attached to it.

The second condition is constraint. Redirection requires a trade-off. If pharmacists have enough time, staffing, information, and authority to meet throughput expectations while also performing counseling, clinical, coordination, and safety work, the metric need not displace anything. Concern rises when fatigue, interruption, competing service categories, and role demands make simultaneous completion difficult [14]. Work-sampling evidence supports the basic resource logic that more time committed to one activity leaves less for others [16]. Role-strain evidence [23], job demands-

resources findings [24], and resilience research [26] further show why the surrounding capacity environment cannot be ignored.

The third condition is asymmetry of protection. Work with its own regulatory requirement, staffing allocation, or independently monitored quality indicator is less vulnerable to displacement than work whose value is acknowledged only rhetorically. Counter-metrics matter because they can make neglected quality functions sufficiently visible to compete for organizational attention, not because more measurement is inherently better.

These conditions also preserve the strongest rival explanation. Counseling, coordination, or preventive work may decline because demand is high, staffing is insufficient, technology is poorly designed, or workflows are fragmented. In that case, capacity rather than measurement is the primary cause. A convincing test of metric-induced redirection must therefore ask whether effort changes when indicator salience or consequences change while workload and other constraints are held as constant as practicable, or whether workload effects become stronger when narrow indicators are tied to accountability.

The theoretical claim is consequently conditional. Dispensing speed, service volume, and throughput do not become harmful simply because they are measured. They alter the work being measured when they are treated as consequential proxies for quality in settings where attention and effort are scarce and alternative quality functions are weakly protected. Under those conditions, an organization may improve what it can easily see while losing visibility over work that sustains safety, continuity, relational care, and equity.

An assumption-challenging framework for pharmacy quality

The argument can be stated through linked distinctions. A performance indicator creates selective visibility: some property of work becomes routinely countable and comparable while other properties remain less visible. Visibility becomes consequential when it influences attention, staffing, supervision, incentives, escalation, or judgments of success. Consequences then depend on capacity. Where time and resources are sufficient, increased attention to one measured activity need not reduce another; under constraint, attention and effort become rivalrous.

Three questions should therefore remain separate. Is an indicator valid for the construct it claims to measure? Is that construct broad enough to justify the decisions attached to it? Does organizational use of the indicator alter work in ways that change other quality dimensions? A dispensing-time metric can validly measure timeliness yet become misleading if treated as overall quality. It can also create unintended effects if target pressure changes effort allocation. Conversely, the same measure may remain benign when used diagnostically within a broader portfolio.

Work can also be visible without being protected. An activity may be recorded but carry little weight in staffing or managerial decisions, while regulation or professional safeguards may protect some weakly measured activities. Redirection is therefore most plausible where important work is resource-intensive, weakly visible, and weakly protected.

The proposed integration is a feedback problem: selected indicators shape recurrent organizational attention; attention influences effort; resulting work patterns affect outcomes and operational data; and those data can reinforce the original indicator set unless governance reviews what remains outside it. **Figure 1** represents this logic while distinguishing evidence-supported component relationships from the proposed pharmacy-specific integration.

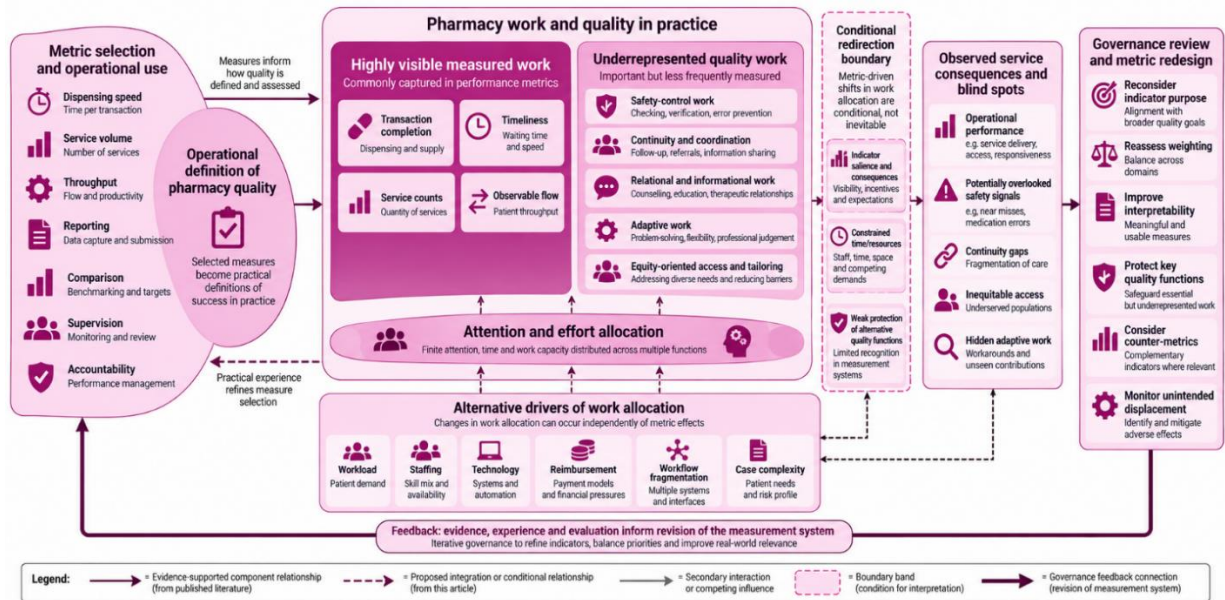


Figure 1. Selective quality visibility and the feedback conditions that can redirect pharmacy work

Designing counter-metrics for safety, continuity and equity

Counter-metrics are not an instruction to measure every neglected activity. Measure proliferation can increase burden and create new gaming opportunities. The design problem is to identify quality functions that would otherwise be systematically underweighted and make them sufficiently visible for consequential decisions. Research on outcome selection for pharmacy-led clinical services supports the premise that meaningful outcomes extend beyond activity volume alone [27].

Three principles follow. Each counter-metric should have a declared protective purpose: what decision changes if it deteriorates? It should match the level at which action can occur; patient experience, continuity, and area-level access answer different questions and should not be collapsed into one score. Finally, candidate

metrics should be tested for their own displacement effects. A measure intended to protect equity can itself distort work if easily documented proxies become the target.

A counter-metric should also remain interpretable alongside the operational measure it is meant to balance. A safety signal that cannot be connected to staffing, workflow, supervision, or service design may add reporting burden without changing decisions. The portfolio should therefore privilege a small number of decision-linked measures over a dense dashboard whose individual signals compete for attention.

The aim is a portfolio in which throughput remains visible without monopolizing interpretation. **Table 2** translates this logic into measurement-design problems rather than validated indicator prescriptions.

Table 2. Counter-metric design problems for protecting quality functions that throughput measures do not fully represent

Protected quality function	Measurement purpose	Possible indicator form	What the indicator must not be assumed to prove	Gaming or displacement risk	Governance safeguard
Patient safety	Keep preventive detection and risk-control work visible	Process reliability, intercepted-risk, or safety-review measures	Absence of recorded harm does not prove absence of risk	Under-reporting; avoidance of complex cases	Independent safety review plus qualitative incident learning
Continuity	Detect whether medication-related work remains	Follow-up, reconciliation, handoff, or	Contact completion does not prove continuity	Administrative closure without resolution	Audit unresolved cases and cross-

	coherent across settings	unresolved-problem measures			setting follow-through
Relational and informational quality	Protect understanding and tailored communication	Patient-reported or structured communication measures	Longer encounters do not necessarily mean better communication	Scripted behavior; selection of easier respondents	Combine patient report with targeted qualitative review
Equity and access	Reveal who is systematically less able to obtain or use services	Distributional access, unmet-need, or service-tailoring measures	Proximity or service count does not establish equitable use	Improving averages while disparities persist	Stratify results and review high-barrier populations
Adaptive safety work	Preserve learning from workarounds and local adjustments	Learning signals, near-miss review, or resilience-oriented indicators	Adaptation is not automatically safe	Normalizing unsafe workarounds	Require escalation and work redesign
Workforce capacity	Identify conditions under which quality work becomes unsustainable	Workload, interruption, fatigue, or resource-adequacy measures	Staff strain alone does not establish patient harm	Treating resilience as unlimited	Link signals to staffing/work redesign

Note: The indicator forms are proposed design categories, not validated universal measures or thresholds.

Governance implications

Counter-metrics will not correct metric dominance if one operational indicator remains the decisive signal. Governance must specify who selects indicators, who can challenge them, how conflicting signals are interpreted, and when a metric should be revised or retired. Indicator actionability depends on context and use [3], while performance systems can support learning when they are not used solely for control [5].

Consequences attached to narrow KPIs require particular scrutiny because performance programs can change behavior without consistently improving downstream outcomes [9]. Review should ask whether staff respond by compressing, deferring, or relabeling other work. Frontline pharmacists should contribute because integration problems and adaptive work may appear in practice before formal dashboards [22]. The aim is to prevent ease of counting from silently becoming the definition of quality.

Research agenda

First, studies should distinguish ordinary workload effects from metric-induced redirection. Multi-site longitudinal designs could examine time allocation before and after changes in KPI salience, reporting, supervisory use, or incentives while accounting for demand, staffing, technology, and case mix. The key test is whether effort changes when the consequence structure around a measure changes.

Second, candidate counter-metrics require prospective assessment of reliability, feasibility, interpretability,

sensitivity to meaningful change, and unintended behavioral effects. Equity measures should be tested for distributional validity rather than improvement in averages alone; workforce indicators should be evaluated as possible leading signals without assuming direct patient harm.

Third, research should test the proposed configuration. Redirection should be stronger when indicator salience, resource constraint, and weak protection of alternative quality functions coincide. Evidence that throughput salience rises without changes in underrepresented work would weaken the mechanism; evidence that comparable workloads produce different allocations under different metric regimes would strengthen it.

Conclusion

Dispensing speed, service volume, and throughput can be legitimate measures of pharmacy operations. The problem begins when their visibility is mistaken for completeness and consequential use turns them into practical definitions of quality. Safety control, continuity, relational care, equity-oriented activity, and adaptation may be weakly represented by transaction counts, but their loss cannot be attributed to metrics without testing workload and other rival explanations.

The strongest claim is conditional: narrow indicators are most likely to redirect attention and effort when they are consequential, resources are constrained, and alternative quality functions are weakly protected. Counter-metrics should protect those functions without replacing one

dominant target with another. Pharmacy quality measurement is strongest when operational efficiency remains visible while the system can also notice what efficient counting leaves out.

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