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**REPRESENTATIONAL MEASUREMENT FAILURE IN
HEALTH TECHNOLOGY ASSESSMENT**

**UNITED STATES: ABANDONING
REPRESENTATIONAL MEASUREMENT ABANDONS
DUTY OF CARE IN PHARMACY JOURNALS**

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INTRODUCTION

From the perspective of health-system management, the contribution of the leading pharmacy journals examined here is not merely inadequate; it is negative. Health systems require quantitative claims that are measurable, testable, and corrigible. What these journals provide instead is numerical confidence without measurement validity and evaluative closure without falsification. The result is not decision support, but decision insulation.

In none of the journals reviewed do the axioms of representational measurement operate as binding constraints. Unidimensionality is optional, arithmetic is applied without regard to scale type, and latent traits are treated as measurable without Rasch transformation. Claims cannot be shown to be wrong because the quantities on which they rely cannot fail. This is not a scientific weakness; it is a structural one.

When such claims are used to justify pharmacy interventions, institutional policies, or access restrictions, the consequences extend beyond academic error. Health-system managers are exposed to risk they cannot see while clinicians are constrained by numbers that lack meaning, and patients are affected by decisions grounded in artifacts rather than evidence. In this context, the role of these journals is not neutral. By normalizing false measurement, they actively degrade the epistemic foundations of health-system management.

1. WHY HEALTH-SYSTEM MANAGEMENT REQUIRES MEASUREMENT, NOT BELIEF

Health-system management is, at its core, an exercise in accountable decision making under uncertainty. Decisions about formulary inclusion, therapeutic substitution, coverage restriction, and service design must be justified by claims that are not merely plausible or persuasive, but empirically defensible. This requires more than numbers. It requires measurement. Representational measurement provides the only framework within which numerical claims can legitimately stand for attributes of the world, support lawful arithmetic, and be exposed to falsification. Without it, quantitative evaluation collapses into belief.

Measurement is not an optional refinement to analysis; it is the prior condition for meaningful quantification. Unidimensionality, scale-type discipline, admissible transformations, and invariance are not philosophical niceties but operational requirements. If a quantity does not possess these properties, it cannot support claims of magnitude, comparison, or change. Arithmetic applied to such quantities is not approximate measurement; it is category error. For health-system managers, this distinction matters because decisions must be capable of being wrong. Learning depends on failure. A framework that cannot fail cannot inform management.

Yet much of what passes for quantitative evaluation in contemporary pharmacy and health technology assessment substitutes numerical form for measurement substance. Composite scores, preference-weighted indices, and modeled ratios are treated as if their numerical appearance conferred evidentiary authority. In practice, these constructs evade falsification. When outcomes disappoint, the response is not rejection but recalibration. Error is absorbed into assumptions.

Uncertainty is managed procedurally rather than empirically. What emerges is not a science of decision support but a system of stabilized belief.

For health-system management, this is not merely a methodological weakness; it is a governance failure. Decisions grounded in non-measures expose institutions to unmanaged risk, constrain clinicians with indefensible rules, and affect patients based on claims that cannot be empirically adjudicated. Measurement is therefore not a technical preference but an ethical requirement. Without commitment to representational measurement and falsification, quantitative evaluation ceases to support management and instead legitimizes decisions already taken.

2. PHARMACY JOURNALS AS DECISION INFRASTRUCTURE, NOT ACADEMIC BYPRODUCTS

Pharmacy journals do not merely report research; they function as decision infrastructure within modern health systems. The claims they publish are routinely translated into practice standards, formulary recommendations, coverage criteria, and utilization controls. In this sense, journals such as the *Journal of the American Pharmacists Association*, the *American Journal of Health-System Pharmacy*, and the *Journal of Managed Care & Specialty Pharmacy* are not passive venues for scholarly exchange. They are upstream determinants of how evidence is defined, interpreted, and operationalized in real-world decision making.

This infrastructural role carries obligations that extend beyond conventional academic norms. When numerical claims are published in these journals, they acquire legitimacy not because they have been empirically validated, but because they have passed through editorial and peer-review processes. Health-system managers, clinicians, and policymakers are entitled to assume that published quantitative outcomes satisfy the minimum conditions required for measurement and evaluation. That assumption is reasonable but it is precisely what makes the failure to enforce measurement axioms so consequential.

The defense that journals merely reflect prevailing methods is therefore untenable. Editorial choices actively shape what counts as acceptable evidence. By normalizing composite scores, preference-weighted indices, cost-effectiveness ratios, and simulation outputs without requiring representational measurement or falsifiability, these journals stabilize an evaluative framework that substitutes numerical authority for empirical accountability. Once embedded, this framework becomes self-reinforcing: reviewers expect it, authors reproduce it, and alternatives are filtered out before they reach print.

In this way, pharmacy journals participate directly in the governance or mis-governance of health systems. They define the epistemic boundaries within which decisions are made. When those boundaries exclude measurement-valid claims and privilege non-falsifiable constructs, the result is not methodological pluralism but institutionalized error. The harm is amplified precisely because these journals are trusted. Their authority converts false measurement into operational reality, embedding belief systems where measurement should reside.

3. EPISTEMIC DILUTION AT THE POINT OF CARE: *THE JOURNAL OF THE AMERICAN PHARMACISTS' ASSOCIATION*

The **Journal of the American Pharmacists' Association** occupies a uniquely sensitive position in the pharmacy literature. It is the journal closest to direct patient interaction, professional identity, and the everyday exercise of clinical judgment by pharmacists. From a duty-of-care perspective, this proximity magnifies responsibility. If false measurement is normalized here, it is not merely an academic defect; it directly shapes how pharmacists understand evidence, justify interventions, and communicate benefit to patients.

Yet the canonical assessment shows that JAPhA systematically permits numerical claims that lack the properties required for measurement. Central outcomes in pharmacy practice research, adherence, beliefs about medicines, satisfaction, self-efficacy, perceived barriers, quality of life are overwhelmingly latent traits. Rather than treating these as requiring rigorous transformation to linear measures, the journal routinely accepts summated ordinal scores and composite indices as if they were quantities. These scores are then used to support claims of improvement, comparative effectiveness, and intervention impact. The problem is not subtle: without unidimensionality, invariant units, and Rasch transformation, such claims have no lawful interpretation.

This practice produces epistemic dilution at the point of care. Pharmacists are encouraged to believe that interventions “work” because numbers move, not because a measurable attribute has changed. Statistical significance substitutes for measurement validity. Confidence intervals are reported around quantities that do not possess units. Regression coefficients are interpreted as effects on constructs that have never been shown to exist as measures. The numerical form reassures, but it does not inform.

The embarrassment here lies in the mismatch between professional responsibility and evidentiary rigor. Pharmacy practice rightly emphasizes patient-centered care, individualized counseling, and outcomes that matter to patients. Yet the journal's quantitative standards undermine these goals by conflating description with measurement. A change in a score is presented as a change in a patient attribute, even though the score may reflect shifting response patterns rather than a real change in magnitude. The patient-facing language of improvement is thus backed by numerically expressed belief, not evidence.

From a health-system management perspective, this failure propagates downstream. Practice-level claims published in JAPhA are frequently cited to justify expanded pharmacy services, reimbursement models, and scope-of-practice arguments. When those claims are grounded in non-measures, the resulting policies rest on fragile foundations. The risk is not that pharmacy practice will be undervalued, but that it will be defended with indefensible evidence.

JAPhA's failure is therefore foundational. By not enforcing representational measurement at the point closest to patient care, it sets a permissive standard that normalizes false measurement as professional evidence. This does not merely weaken pharmacy's scientific standing; it compromises its ethical claim to act in the patient's best interest. In a discipline that rightly demands accountability, numbers that cannot be wrong should never be allowed to speak for patient benefit.

4. INSTITUTIONALIZING NON-MEASURES IN HOSPITAL GOVERNANCE: *THE AMERICAN JOURNAL OF HEALTH-SYSTEM PHARMACY*

The **American Journal of Health-System Pharmacy** occupies a critical institutional position between evidence production and health-system governance. Its readership includes pharmacists who shape formularies, design antimicrobial stewardship programs, recommend therapeutic substitutions, and implement policies that directly constrain or enable clinical practice. At this level, quantitative claims do not merely inform professional reflection; they authorize rules. From a duty-of-care perspective, this elevates the stakes substantially.

The canonical assessment shows that AJHP systematically fails to enforce the axioms of representational measurement, while presenting its analyses in a language of operational rigor. The journal routinely combines manifest ratio measures, counts, time, events, with non-measures such as composite scores, utility-adjusted outcomes, and cost-effectiveness arguments. This combination is epistemically incoherent. The presence of one lawful variable does not rescue an unlawful construct. Yet AJHP treats these hybrids as if they were valid quantitative evidence suitable for institutional decision making.

Unidimensionality does not function as a gatekeeping requirement. Constructs such as stewardship “effectiveness,” medication appropriateness, service value, and quality improvement outcomes are operationalized as composites of heterogeneous elements. These are reported numerically and compared across settings without any demonstration that they admit a single underlying dimension. Numerical differences are interpreted as differences in magnitude when they are, at best, differences in configuration. For a journal that influences governance, this is not a minor lapse; it is a category error embedded in policy justification.

Scale-type discipline is similarly absent. Ordinal survey responses and bounded indices are treated as if they were interval or ratio measures, enabling arithmetic operations that have no lawful meaning. The principle that measurement must precede arithmetic does not constrain publication decisions. Instead, statistical sophistication substitutes for measurement validity. Regression models, confidence intervals, and sensitivity analyses are applied to quantities that lack units. The result is an illusion of rigor that masks the absence of measurement.

The ethical embarrassment of AJHP lies in its role as an institutional legitimizer. Hospital administrators and P&T committees rely on the journal to support defensible decisions. When AJHP publishes claims that cannot be falsified because the quantities cannot fail, it deprives institutions of the capacity to learn from error. When policies justified by such claims produce unintended consequences, there is no evidentiary mechanism for rejection; only revision, recalibration, or expansion of assumptions.

This failure exposes health systems to unmanaged risk. Decisions affecting access to therapies, antimicrobial use, and standards of care are justified by numbers that cannot be empirically adjudicated. Clinicians are constrained by policies grounded in artifacts rather than measures. Patients are affected by rules whose evidentiary basis cannot be defended beyond procedural compliance. The standards of normal science are simply ignored.

AJHP's proximity to governance makes its measurement failure more consequential than that of practice-oriented journals. By institutionalizing non-measures as evidence, it converts epistemic weakness into operational authority. For a journal that shapes hospital policy, this is not simply poor science. It is a failure of stewardship: of evidence, of institutions, and ultimately of patient care.

5. WEAPONIZING FALSE MEASUREMENT TO CONTROL ACCESS: *THE JOURNAL OF MANAGED CARE & SPECIALTY PHARMACY*

The **Journal of Managed Care & Specialty Pharmacy** represents the most consequential and the most indefensible failure of quantitative evaluation in the pharmacy literature. Unlike practice or hospital journals, JMCP operates at the point where numbers become instruments of control. Claims published in its pages are translated directly into coverage determinations, utilization restrictions, prior authorization criteria, and access barriers. At this level, false measurement is no longer an epistemic weakness. It is a mechanism of mis-applied power.

The canonical assessment leaves no ambiguity. JMCP exhibits near-total non-possession of the axioms of representational measurement. Unidimensionality, admissible arithmetic, ratio scale requirements, Rasch transformation for latent traits, and falsifiability collapse to floor logit values. In contrast, false propositions required to sustain QALYs, cost-effectiveness ratios, and reference-case simulations are strongly endorsed. This pattern is not accidental. It is structural. The journal's evaluative framework depends on violating measurement axioms because enforcing them would dissolve the very constructs on which access control is based.

JMCP routinely publishes cost-per-QALY analyses and simulation-based claims that purport to quantify value. Yet neither component of these ratios satisfies the conditions for ratio measurement. Utilities are bounded, ordinal, multiattribute scores masquerading as quantities; costs are composites of heterogeneous resource elements; and the ratio itself lacks dimensional homogeneity. Even if the components were measures which they are not the resulting ratio would still be meaningless. Nonetheless, these outputs are treated as decisive evidence. Coverage is granted or denied, therapies are tiered or excluded, and patients are constrained by numbers that cannot, in principle, be wrong. The endorsement of numerical storytelling is complete.

This is not evaluation. It is authorization theater. The numerical form confers legitimacy precisely because it insulates decisions from challenge. When modeled claims fail to align with observed outcomes, the response is never rejection. It is recalibration. Assumptions are adjusted, horizons extended, scenarios multiplied. Error is absorbed into the model. Learning is redefined as refinement. The framework cannot fail because failure is not an admissible outcome.

The ethical exposure here is acute. JMCP does not merely report analyses; it legitimizes denial. Patients are delayed, diverted, or excluded from therapies based on claims that cannot be empirically adjudicated. Physicians are constrained by coverage rules justified by artifacts. Health systems are led to believe they are acting rationally when they are conforming to a closed belief system stabilized by publication norms. This is a direct breach of duty of care.

The embarrassment for JMCP is not that it uses models which can be useful when tethered to measurable claims, but that it refuses to require the conditions under which its outputs could be falsified. A journal that exercises this degree of influence has an absolute obligation to ensure that its quantitative claims meet the minimum standards of science. JMCP does not. It enforces methodological conformity, not measurement validity.

In effect, JMCP weaponizes false measurement. It converts epistemic incoherence into policy authority and numerical artifacts into access control. Among the pharmacy journals reviewed, it stands alone in the scale of harm its practices enable. This is not a matter for incremental reform or improved reporting. A framework that cannot be wrong cannot be repaired. Until representational measurement and falsification are enforced as non-negotiable requirements, JMCP's contribution to health-system management will remain not merely inadequate, but actively destructive.

6. RISK, EXPOSURE, AND DUTY OF CARE: WHY THIS IS NO LONGER TOLERABLE

Taken together, the three pharmacy journals examined do not represent isolated methodological lapses or editorial blind spots. They form a coherent evaluative pipeline through which false measurement is normalized, institutionalized, and ultimately weaponized. From practice narratives to hospital governance to managed care access control, numerical claims that lack representational meaning are treated as authoritative evidence. For health-system management, this constitutes a systemic risk that can no longer be ignored.

The first exposure is managerial. Health-system leaders rely on published quantitative evidence to justify policies that affect formularies, resource allocation, and standards of care. When that evidence is built on non-measures, composite scores, preference-weighted indices, simulation outputs that cannot be falsified, decisions lose their empirical anchor. Managers may believe they are acting rationally and defensibly, but in real terms they are conforming to a false belief system stabilized by publication norms. This creates a false sense of due diligence while masking the absence of evaluable claims.

The second exposure is clinical. Physicians and pharmacists are increasingly constrained by protocols, coverage rules, and utilization criteria justified by numbers they did not generate and are not equipped and cannot challenge. When those numbers lack lawful meaning, clinical judgment is subordinated not to evidence, but to artifacts. This erodes professional autonomy and undermines the clinician–patient relationship. Care decisions become compliance exercises rather than empirically grounded judgments.

The third exposure is ethical. Patients are affected directly by access restrictions, delays, and therapeutic substitutions grounded in claims that cannot be wrong. When denial or limitation of care is justified by non-falsifiable simulations or incoherent ratios, the duty of care is breached. The ethical obligation to justify decisions with defensible evidence is replaced by procedural legitimacy: the decision is “evidence-based” because it follows accepted false measurement frameworks, not because the evidence measures anything real.

The fourth exposure is legal and reputational. As scrutiny of health-system decision making increases, organizations will be asked to defend not just outcomes, but the evidentiary basis for decisions. A cost-per-QALY threshold or modeled value claim offers no defense once it is shown that the underlying quantities are not measures and the outputs are not falsifiable. What has been treated as methodological orthodoxy may come to be seen as institutional negligence and the embrace of numerical storytelling.

At every level, the same pattern recurs: numerical authority substitutes for measurement validity; model coherence substitutes for empirical testing; and refinement substitutes for rejection. This is not a learning system. It is a closed evaluative loop in which error cannot lead to abandonment, only to recalibration.

From a duty-of-care perspective, continuation is indefensible. Health-system management requires claims that can fail, be corrected, or be withdrawn. That requires representational measurement and falsification as non-negotiable conditions. Journals that refuse to enforce these conditions do not merely fail to support decision making. They actively expose health systems, clinicians, and patients to avoidable harm. They should retire.

CONCLUSION

This review has shown that the failure of leading pharmacy journals to enforce representational measurement is not accidental, localized, or remediable through incremental reform. It is systemic. Across practice, hospital, and managed care contexts, quantitative claims are routinely advanced without unidimensionality, without lawful arithmetic, without invariant units, and without exposure to falsification. What is presented as evidence is, in fact, a numerically articulated belief system.

The implications for health-system management are profound. Decisions about formularies, access, coverage, and clinical protocols are justified by quantities that cannot be wrong. Error cannot lead to rejection because the evaluative framework is designed to absorb failure through recalibration and refinement. This is not learning; it is accommodation. When numbers function as shields rather than tests, management ceases to be evidence-based and becomes procedurally rationalized belief.

The gradient observed across journals is one of consequence, not rigor. Practice journals dilute evidentiary standards at the point of care; hospital journals institutionalize non-measures as policy justification; managed care journals convert false measurement into access control. In none of these settings do the axioms of measurement operate as binding constraints. In none is falsification treated as a non-negotiable requirement. This convergence is not coincidental. It reflects the consolidation of a memplex in which numerical form substitutes for scientific accountability.

From a duty-of-care perspective, continuation is indefensible. Patients are affected by decisions grounded in artifacts. Clinicians are constrained by rules justified by claims that lack empirical meaning. Health-system leaders are exposed to ethical, managerial, and legal risk by relying on evidence that cannot be defended once its measurement foundations are examined.

The conclusion is therefore not a recommendation but a boundary. Quantitative evaluation in pharmacy must be rebuilt around single-attribute, evaluable claims: linear ratio measures for manifest outcomes and Rasch logit ratio measures for latent traits. Claims that do not meet these standards should not be refined, accommodated, or normalized. They should be rejected. Anything less forfeits the right to call the resulting decisions scientific.

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