Evidence-Based Medicine needs clinical practice: reflections on its use in Brazilian Primary Health Care

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Evidence-Based Medicine needs clinical practice: reflections on its use in Brazilian Primary Health Care

A Medicina Baseada em Evidências precisa da clínica: reflexões sobre seu uso na Atenção Primária à Saúde brasileira

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ABSTRACT

The Choosing Wisely campaign, launched in 2012, aimed to reduce low-value medical interventions through the dissemination of evidence. However, studies have shown reductions of less than 2% in unnecessary testing, raising questions about the foundational assumptions of evidence-based medicine. This essay argues that this limited impact stems from a conceptual misunderstanding: the belief that scientific evidence can substitute for clinical reasoning, when it actually depends on such reasoning to acquire meaning and applicability. We contend that evidence-based medicine requires clinical practice as an epistemological foundation, and that the progressive erosion of traditional clinical skills—history-taking, physical examination, and probabilistic reasoning—undermines the possibility of genuinely evidence-based practice. This reflection is particularly relevant in Brazilian Primary Health Care, where essential care attributes depend on clinical competencies that are not reducible to the mechanical application of protocols. The essay discusses the implementation paradox, the disuse of fundamental clinical skills, diagnostic cascades, and the Brazilian context of high professional turnover and cultural heterogeneity. Conceptual frameworks such as quaternary prevention, tolerance of uncertainty, and patient-centered care offer pathways for reorientation. We conclude that efficient and equitable health systems depend on professionals capable of exercising sound clinical judgment, and that evidence-based medicine requires clinical practice as much as clinical practice involves evidence.

Keywords: Evidence-Based Medicine; Clinical Competence; Primary Health Care; Quaternary Prevention; Medical Overuse.

INTRODUCTION

In 2012, the Choosing Wisely campaign was launched in the United States to reduce unnecessary medical interventions by inviting specialty societies to identify low-value clinical procedures.[1] In Brazil, the Brazilian Society of Family and Community Medicine formally joined the initiative in 2017, publishing recommendations adapted to the national context.[2] At the time, the underlying premise appeared irrefutable: providing clear evidence on what to avoid would lead physicians and patients to make more rational decisions, thereby improving clinical efficiency and resource allocation within health systems.

The observed results, however, did not meet initial expectations. In the United States, a study involving nearly seven million health plan beneficiaries found reductions of less than 2% in imaging orders for low back pain and headache, despite widespread dissemination of recommended clinical protocols for these conditions.[3] Similar findings were reported in Canada and Australia, indicating the persistence of low-value practices notwithstanding the availability of evidence and clear guidelines.[4-5] While such results may not surprise health implementation researchers, they raise important questions regarding the foundational assumptions of evidence-based medicine.

If scientific knowledge is widely available, why does its incorporation into clinical practice remain so limited? This essay contends that part of the answer lies in a recurring conceptual misunderstanding: the assumption that scientific evidence can substitute for clinical reasoning,

when in fact it depends on such reasoning to acquire meaning and applicability. It is argued here that evidence-based medicine not only requires clinical practice as an epistemological foundation, but that the progressive erosion of traditional clinical skills undermines the very possibility of genuinely evidence-based practice.

This reflection is particularly relevant in the context of Brazilian Primary Health Care, where essential attributes of care—longitudinality, care coordination, comprehensiveness, and community orientation—depend on clinical competencies that cannot be reduced to the purely mechanical application of protocols. By neglecting the central role of clinical judgment and evidence contextualization, initiatives aimed at reducing unnecessary interventions risk producing limited effects while reinforcing a normative practice disconnected from the actual needs of individuals and communities.

The implementation paradox

The classical definition of evidence-based medicine, formulated by Sackett and colleagues in 1996, establishes three interdependent components: the best available scientific evidence, clinician expertise, and patient values and preferences.[6] Although this triad is widely cited in institutional documents and guidelines, its operationalization in clinical practice has been progressively simplified, with near-exclusive emphasis on the first component. Over time, clinical protocols and decision algorithms came to be regarded as synonymous with evidence-based medicine itself, thereby obscuring the central role of clinical judgment in integrating evidence, context, and values.

Djulbegovic and Guyatt addressed this distortion explicitly in a 2014 reflection published in JAMA, emphasizing that evidence-based medicine was never intended to standardize care or eliminate legitimate clinical variability.[7] On the contrary, its epistemological foundation recognizes that population-level evidence requires interpretation and contextualization for individual patients. This task demands specific clinical competencies—estimating pre-test probabilities, critically appraising semiological findings, weighing risks and benefits in light of particular circumstances, and considering sociocultural context alongside patient values.

The rigid application of clinical protocols in isolation from this interpretive exercise yields paradoxical consequences. When clinicians follow algorithms without understanding their probabilistic underpinnings, they become susceptible to both overuse and underuse of diagnostic and therapeutic resources. The absence of a sound prior clinical evaluation transforms ancillary testing into indiscriminate screening, thereby triggering diagnostic cascades that frequently cause more harm than benefit.[8] At the same time, uncritical reliance on protocols may obscure atypical presentations or contexts not addressed by guidelines, leading to underdiagnosis and inappropriate interventions. A typical example involves elderly patients with dyspnea who undergo extensive cardiological investigation. At the same time, more prevalent and clinically detectable conditions—such as iron deficiency anemia, identifiable through careful history-taking and physical examination—remain overlooked.

The disuse of fundamental clinical skills

Abraham Verghese and colleagues have called attention to a troubling trend in contemporary medical education: the progressive erosion of history-taking and physical examination skills, increasingly supplanted by early reliance on diagnostic testing.[9] Observational evidence suggests

that as many as 63% of diagnostic errors could be avoided if physical examination were conducted with appropriate rigor.[10] Although the literature acknowledges limitations in the isolated accuracy of individual semiological signs, the value of clinical evaluation resides less in the sensitivity of discrete findings than in the capacity to synthesize multiple sources of information, thereby estimating pre-test probabilities and rationally informing the selection of diagnostic tests.

The inversion of this logical sequence of clinical reasoning—in which testing precedes and frequently supplants semiological evaluation—transcends considerations of diagnostic efficiency and constitutes an epistemological transformation of medical practice itself. By displacing clinical decision-making from the physician-patient encounter to technologically mediated processes, this shift fundamentally alters how uncertainty is managed and how clinical knowledge is produced and applied in everyday health services.

Richard Deyo characterized these consequences as diagnostic cascades.[8] When tests are ordered in the absence of adequate pre-test probability estimation, incidental findings frequently trigger additional investigations, invasive procedures, and unnecessary treatments. Individuals who were initially healthy may emerge from the healthcare system bearing iatrogenic diagnoses, adverse effects from interventions, and chronic anxiety stemming from findings of uncertain clinical significance.[11]

In Brazil, these cascades acquire particular dimensions. The judicialization of health—a phenomenon characterized by increasing recourse to litigation for access to healthcare—often entails demands for tests of questionable clinical indication.[12-13] This inversion of diagnostic reasoning fuels unrealistic expectations regarding the power of medical technology, reinforcing the perception that defensive test ordering constitutes superior care. The phenomenon intersects with what Moynihan and colleagues have termed *disease mongering*: the expansion of pathological boundaries and the medicalization of everyday life experiences, often driven by the commercial interests of the pharmaceutical and medical device industries.[14]

The Brazilian Primary Health Care context

Primary Health Care (PHC) in Brazil faces structural challenges that intensify the tensions previously described. Studies examining professional turnover in PHC reveal annual rates exceeding 30% across numerous municipalities, with average physician retention of less than 15 months.[15-18] Such instability compromises not only continuity of care but also the development of contextualized clinical expertise. This kind emerges through longitudinal follow-up of individuals, families, and communities, a cornerstone of primary care.

The particularities of Brazilian territory introduce additional layers of complexity. In regions where access to diagnostic testing is limited, clinical competence assumes an even more critical role in decision-making. The country's profound cultural heterogeneity, characterized by the coexistence of diverse belief systems and care practices, demands relational, communicative, and interpretive capacities that extend well beyond the application of standardized protocols. In indigenous, *quilombola* (Afro-Brazilian maroon), and riverine communities, clinical encounters involve negotiation among distinct medical rationalities. This task proves unfeasible without clinical and cultural competencies that no algorithm can replicate. In such contexts, shared

decision-making transcends its status as an abstract ethical principle to become a practical condition for treatment adherence and the sustenance of longitudinal care.

The *Right Care* series, published in *The Lancet* in 2017, provides a particularly illuminating conceptual framework for understanding these dynamics.[19,20] Its authors demonstrate that overuse and underuse of health services do not constitute antagonistic problems but rather frequently coexist within the same systems and even within the same clinical encounters. A single patient may undergo unnecessary testing for self-limited complaints while simultaneously failing to receive adequate follow-up for chronic conditions. This paradoxical coexistence largely reflects a disconnect between fragmented protocols and clinical reasoning that can integrate evidence, context, and individual circumstances.

Brazil has witnessed significant expansion in medical education over recent decades.[21] However, curricula have not consistently prioritized the development of semiological competencies, clinical reasoning, and the management of uncertainty within authentic primary care settings.[22] The result is a numerically expanded workforce that is not uniformly prepared to practice primary care medicine in its full clinical, social, and contextual complexity.

Quaternary prevention and tolerance of uncertainty as foundations for rational practice

Norman and Tesser introduced the concept of quaternary prevention to the Brazilian debate, building on the framework proposed initially by Marc Jamoulle.[23,24] Quaternary prevention involves identifying patients at risk of excessive medicalization and protecting them from unnecessary interventions. More than an additional category within preventive taxonomy, it represents an acknowledgment that the iatrogenic potential of contemporary medicine is commensurate with its therapeutic power, and that ethical practice requires sustained awareness of this ambivalence.

In a 2016 essay published in the *New England Journal of Medicine*, Simpkin and Schwartzstein proposed that tolerance of uncertainty be recognized as a fundamental clinical competency.[25] They contend that traditional medical education, with its emphasis on definitive diagnoses and therapeutic certainty, produces professionals inadequately prepared for the inherent ambiguities of clinical practice. Maladaptive responses to uncertainty may manifest as either decisional paralysis or excessive diagnostic and therapeutic intervention.

The patient-centered clinical method, systematized by Stewart and colleagues, has been associated with improved health outcomes, including enhanced therapeutic adherence, better chronic disease management, and greater patient satisfaction.[26] The method proposes joint exploration of both disease and the illness experience—that is, the biomedical condition and the patient's lived experience of it—alongside understanding of the whole person, negotiation of common ground, and the deepening of the therapeutic relationship over time.

The integration of these conceptual frameworks points toward a reorientation of clinical practice in primary care. This reorientation entails not the rejection of scientific evidence or diagnostic technologies, but rather their repositioning within a hierarchy that accords centrality to contextualized clinical judgment. Population-level evidence informs but does not determine individual clinical decisions; diagnostic tests serve to confirm or refute clinical hypotheses, not to supplant them.

Proposals for practice and education

Translating these reflections into clinical and educational practice requires sensitivity to the institutional, organizational, and cultural particularities of Brazil's Unified Health System (SUS). Rather than importing external models, it is necessary to construct locally situated arrangements that engage meaningfully with the concrete conditions of care delivery and professional training.

The introduction of dedicated fields within SUS electronic health records for the explicit documentation of pre-test probability estimates, coupled with metrics assessing the coherence between clinical judgment and diagnostic test ordering, represents one promising approach. Such data could inform continuing education strategies grounded in the analysis of care patterns and the identification of training gaps, while avoiding punitive frameworks.

Strengthening the teaching of semiology and clinical reasoning across the whole arc of medical education—from undergraduate training through residency programs in all specialties, not solely Family and Community Medicine—constitutes a structural priority. Pedagogical approaches that emphasize reflective supervision and in-depth case discussion, incorporating clinical, social, and cultural dimensions, are conducive to the development of professionals who are equipped to navigate uncertainty and to attend to the singularity of each patient encounter.

The development of quality indicators that encompass not only actions performed but also those deliberately foregone in a clinically justified manner represents a significant conceptual shift. The decision to withhold intervention, when grounded in sound clinical judgment, is of equal value to prescribing treatment or ordering diagnostic tests. Metrics assessing appropriate imaging use in acute low back pain, for instance, could formally recognize teams that successfully avoid unnecessary interventions, thereby shifting the evaluative focus from volume to appropriateness of care.

The systematic adoption of shared decision-making practices both reaffirms patient autonomy and serves as a safeguard against unwarranted medical interventionism.[27,28] Evidence suggests that patients who are adequately informed tend to opt for less invasive approaches when they clearly understand the associated risks, benefits, and uncertainties.

Finally, fostering implementation research to transform entrenched clinical practices is essential. The persistent gap between available scientific knowledge and its uptake in everyday clinical practice—as evidenced by the modest impact of the Choosing Wisely campaign—calls for deeper investigation into the behavioral, organizational, and systemic determinants that shape medical decision-making.

FINAL CONSIDERATIONS

Evidence-based medicine, properly understood, has never dispensed with clinical competence; it has always presupposed it. The contemporary impasse resides not in the absence of scientific knowledge, but in the paradoxical coexistence of an unprecedented accumulation of evidence alongside the progressive erosion of the skills required for its judicious application. Reducing evidence to mechanically applied protocols drains clinical practice of its meaning and undermines the capacity to integrate scientific information, clinical context, and patient values.

Within Primary Health Care, this dissociation assumes particular significance. Longitudinality, care coordination, and comprehensiveness are attributes that depend on clinical competencies

that no algorithm can replicate. Clinical practice, understood as a situated, probabilistic, and interpretive endeavor, remains the necessary condition for evidence to be translated into care that is effective, safe, and socially responsible.

The problems of overuse and underuse—frequently observed in tandem—cannot be remedied by greater standardization alone; they require strengthening clinical judgment, tolerance for uncertainty, and reflective capacity among practitioners. The erosion of semiological acumen and probabilistic reasoning not only compromises care efficiency but also amplifies iatrogenic risk and perpetuates unnecessary medicalization.

In the Brazilian context, marked by profound territorial inequalities, high professional turnover, and persistent structural challenges in Primary Health Care, this reflection assumes particular urgency. Quantitative expansion of the medical workforce alone cannot ensure quality of care without corresponding investment in fundamental clinical competencies. Conceptual frameworks such as quaternary prevention, the patient-centered clinical method, and shared decision-making offer pathways for reorientation. However, their operationalization remains a task requiring collective, institutional, and pedagogical effort.

To defend the centrality of clinical practice is not to indulge in nostalgia for a pre-technological medicine, but rather to recognize that contemporary technologies—from the simplest to the most sophisticated—acquire value only when integrated into clinical reasoning that precedes and guides their use. Efficient and equitable health systems ultimately depend on professionals capable of exercising qualified clinical judgment. Evidence-based medicine needs clinical practice as much as clinical practice needs evidence.

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Danielle Satie Kassada: Conceptualization, Supervision, Writing – review & editing.

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