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The Gap Between Clinical Guidelines and Routine Practice: Barriers and Facilitators Across Healthcare Professions

Guideline–Practice Gap Across Healthcare Professions

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ABSTRACT:

Background. Clinical practice guidelines are the principal vehicle for translating research into care, yet across health systems only around 60% of care is consistent with evidence- or consensus-based recommendations. The gap between what guidelines recommend and what patients receive results in avoidable harm, low-value care and inequity. Although guidelines are increasingly interprofessional, most implementation research has focused on physicians.

Objective. To synthesize evidence on the magnitude and consequences of the guideline–practice gap; to identify barriers and facilitators at the levels of the guideline, the professional, the team, the organization and the wider system, with attention to differences between professions; to appraise the effectiveness of implementation strategies; and to propose an integrated, theory-informed framework.

Methods. Narrative review informed by the SANRA criteria, drawing on MEDLINE, CINAHL, Embase and the Cochrane Library, and on established implementation frameworks including the Consolidated Framework for Implementation Research (CFIR), the Theoretical Domains Framework (TDF), the COM-B model and i-PARIHS.

Results. Barriers are multilevel and interacting: guideline characteristics (complexity, poor applicability, conflicting recommendations), professional factors (knowledge, skills, beliefs about consequences, professional role and autonomy), team factors (hierarchy and role ambiguity), organizational factors (time, staffing, leadership, information systems) and system factors (incentives, regulation, patient preferences). Physicians more often cite

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autonomy and applicability to individual patients; nurses and allied professionals more often cite authority to act, workload and organizational support. Single strategies produce small improvements: audit and feedback yields a median absolute improvement of about 3%, and computerized decision support about 6%. Tailored, multifaceted strategies addressing identified barriers, delivered with facilitation and leadership, are more effective.

Conclusions. Closing the guideline–practice gap requires moving from dissemination to implementation: diagnosing barriers profession by profession, selecting matched strategies and embedding guidelines into workflows and systems. The proposed CLOSE framework (Contextualize, Lead and engage, Optimize systems, Support capability, Evaluate and embed) provides a practical pathway, with particular relevance to health systems undergoing transformation, such as Saudi Arabia under Vision 2030.

Key Points

- Only about 60% of care across health systems aligns with evidence- or consensus-based guidelines; the gap persists across conditions, professions and countries.
- Barriers operate at five interacting levels—guideline, professional, team, organization and system—and differ meaningfully between professions.
- Single implementation strategies yield modest gains; tailored, multifaceted approaches with facilitation and leadership perform better.
- The CLOSE framework links barrier diagnosis to matched strategies and embeds guidelines in everyday interprofessional workflows.

1. INTRODUCTION

Evidence-based practice rests on a simple premise: that patients should receive care informed by the best available research, integrated with clinical expertise and patient values. Clinical practice guidelines, defined as statements that include recommendations intended to optimize patient care, informed by a systematic review of evidence and an assessment of the benefits and harms of alternative options, are the primary instrument for achieving this (Institute of Medicine [IOM], 2011). Hundreds of guidelines are published every year by professional societies, national agencies and international organizations.

Yet guidelines do not implement themselves. In a landmark study of adults in twelve metropolitan areas of the United States, participants received about 55% of recommended care across a wide range of conditions (McGlynn et al., 2003). A comparable study in Australia, CareTrack, found that 57% of encounters were in line with evidence- or consensus-based guidelines (Runciman et al., 2012). Synthesizing such studies, Braithwaite et al. (2020) proposed the "60-30-10 challenge": around 60% of care is consistent with guidelines, about 30% is wasteful or of low value, and about 10% causes harm. The time taken for research evidence to reach routine practice has been estimated at an average of 17 years (Morris et al., 2011).

This gap has consequences. Under-use of effective interventions, such as secondary prevention after myocardial infarction or venous thromboembolism prophylaxis, causes avoidable morbidity and mortality. Over-use of low-value interventions, such as unnecessary imaging or antibiotics, exposes patients to harm and consumes resources. Mis-use, through errors in executing recommended care, compromizes safety. Variation in adherence between providers and regions also creates inequity.

Early research on the gap focused on physicians. Cabana et al. (1999) classified barriers to physician adherence into knowledge, attitudes and behavior, a framework that remains influential. However, contemporary care is delivered by interprofessional teams, and guidelines for conditions such as sepsis, stroke, diabetes, pressure injury, falls, infection prevention and medication safety require coordinated action by nurses, pharmacists, allied health professionals and physicians. The barriers each profession faces, and the levers that influence them, differ in important ways.

This review therefore addresses four questions: (1) What is the nature and extent of the guideline–practice gap? (2) What barriers and facilitators operate across levels of the health system, and how do they differ between professions? (3) Which

implementation strategies are effective, and under what conditions? (4) How can these insights be integrated into a practical framework for organizations and health systems?

2. REVIEW METHODOLOGY

This structured narrative review followed the Scale for the Assessment of Narrative Review Articles (SANRA). MEDLINE/PubMed, CINAHL, Embase and the Cochrane Library were searched from January 1995 to September 2026 using terms for guidelines ("practice guideline", "clinical guideline", "protocol"), the gap ("adherence", "compliance", "evidence–practice gap", "knowledge translation", "implementation"), determinants ("barrier", "facilitator", "determinant") and professions ("physician", "nurse", "pharmacist", "allied health", "midwife", "paramedic"). Reference lists of key reviews and implementation science frameworks were hand-searched.

Priority was given to systematic reviews and overviews of reviews, Cochrane reviews of implementation strategies, large multicenter studies of adherence, and foundational implementation frameworks. Primary studies were included where they illuminated profession-specific determinants or contexts underrepresented in reviews, including the Gulf region. Findings were synthesized thematically, structured by the levels of the CFIR (Damschroder et al., 2009, 2022) and mapped to the behavioral determinants of the TDF (Cane et al., 2012).

3. THEORETICAL FOUNDATIONS

Implementation science provides a vocabulary and set of tools for understanding why evidence is or is not used. Nilsen (2015) categorized implementation theories, models and frameworks into those that describe the process of translating research into practice, those that explain determinants of implementation outcomes, and those that guide evaluation. Four frameworks are particularly relevant to the guideline–practice gap.

3.1 The Knowledge-to-Action Framework

The Knowledge-to-Action (KTA) framework describes a cycle in which knowledge is adapted to the local context, barriers are assessed, interventions are selected and tailored, implementation is monitored, outcomes are evaluated and use is sustained (Graham et al., 2006). Its central contribution is the recognition that implementation is an active, iterative process, not a single act of dissemination.

3.2 The Consolidated Framework for Implementation Research

The CFIR organizes determinants of implementation into domains: characteristics of the innovation (here, the guideline), the outer setting, the inner setting, the individuals involved and the implementation process (Damschroder et al., 2009). The updated CFIR emphasizes the roles and characteristics of individuals, including implementation leaders, and the alignment between the innovation and the needs of its recipients (Damschroder et al., 2022).

3.3 Behavioral Frameworks: COM-B and the Theoretical Domains Framework

Adhering to a guideline is, ultimately, a behavior. The COM-B model proposes that behavior results from the interaction of capability, opportunity and motivation, and is embedded in the Behaviour Change Wheel, which links these sources of behavior to intervention functions and policy categories (Michie et al., 2011). The Theoretical Domains Framework elaborates these sources into 14 domains, including knowledge, skills, professional role and identity, beliefs about capabilities, beliefs about consequences, environmental context and resources, social influences and emotion (Cane et al., 2012). These frameworks allow barriers to be diagnosed precisely and matched to intervention techniques.

3.4 i-PARIHS

The integrated Promoting Action on Research Implementation in Health Services (i-PARIHS) framework proposes that successful implementation results from facilitation that enables recipients to adopt an innovation within their context (Harvey & Kitson, 2016). Its emphasis on facilitation, the active role of a person or team in supporting change, is especially relevant to nursing and allied health, where implementation frequently depends on clinical educators and practice facilitators.

Table 1. Implementation frameworks and their application to the guideline–practice gap

Framework	Type	Core contribution	Application in this review
Knowledge-to-Action (Graham et al., 2006)	Process model	Iterative cycle from adaptation to sustainment	Structures the implementation pathway
CFIR (Damschroder et al., 2009, 2022)	Determinant framework	Multilevel domains of influence	Organizes barriers by level
COM-B / Behaviour Change Wheel (Michie et al., 2011)	Behavioral theory	Capability, opportunity, motivation	Links barriers to intervention functions
Theoretical Domains Framework (Cane et al., 2012)	Determinant framework	14 behavioral domains	Diagnoses profession-specific barriers
i-PARIHS (Harvey & Kitson, 2016)	Determinant/process	Facilitation of innovation in context	Guides facilitation strategies
Proctor outcomes (Proctor et al., 2011)	Evaluation framework	Acceptability, adoption, fidelity, sustainability	Defines implementation outcomes

4. THE NATURE AND CONSEQUENCES OF THE GAP

4.1 Forms of the Gap

The gap takes three principal forms. Under-use refers to failure to provide care that is likely to benefit, such as appropriate statin therapy, timely thrombolysis, smoking cessation advice or pressure-injury prevention. Over-use refers to provision of care whose harms or costs outweigh benefits, such as imaging for uncomplicated low back pain, antibiotics for viral respiratory infections or routine preoperative testing in low-risk patients. Initiatives such as Choosing Wisely have sought to engage professional societies in identifying and reducing low-value care (Cassel & Guest, 2012). Mis-use refers to errors in the execution of appropriate care, such as incorrect dosing.

4.2 The Gap Across Professions

Studies of nursing practice reveal gaps comparable to those in medicine, for example in hand hygiene, pain assessment, falls prevention and early warning score observation. Pharmacist-led medication reviews and antimicrobial stewardship guidelines are inconsistently applied, often owing to limited authority to change prescriptions. Allied health professionals such as physiotherapists and occupational therapists face gaps in delivering recommended rehabilitation intensity, frequently because of staffing constraints. Thus, while the magnitude of the gap is broadly similar across professions, its causes differ.

4.3 Is All Non-Adherence a Problem?

Not all deviation from guidelines is inappropriate. Guidelines are developed for typical patients and may not apply to those with multimorbidity, frailty or particular preferences. Boyd et al. (2005) demonstrated that applying multiple single-disease guidelines to an older patient with several chronic conditions would produce a complex, potentially harmful and burdensome regimen. Concerns have also been raised that rigid guideline adherence may undermine individualized, patient-centered care (Greenhalgh et al., 2014). The goal of implementation is therefore not maximal compliance but appropriate, informed and justified practice, in which deviation is a deliberate clinical decision rather than an unrecognized failure.

4.4 Illustrative Examples Across Professions

The gap is visible in everyday practices that span professions. Table 2 presents illustrative examples, chosen because they are common, supported by strong guidance and dependent on more than one profession. In each case, the recommended practice is well established, yet adherence is incomplete and the reasons are predominantly organizational and behavioral rather than a lack of evidence.

Table 2. Illustrative guideline–practice gaps and their predominant barriers

Recommended practice	Professions involved	Common gap	Predominant barriers
Hand hygiene at the five moments	All clinical staff	Missed opportunities, especially under workload	Time pressure; habit; access to products; social norms
Venous thromboembolism risk assessment and prophylaxis	Physicians; nurses; pharmacists	Assessment not done or prophylaxis omitted	No default order set; unclear responsibility
Sepsis recognition and timely antimicrobials	Nurses; physicians; laboratory; pharmacists	Delayed recognition and treatment	Escalation culture; process hand-offs
Avoiding antibiotics for viral respiratory infections	Physicians; pharmacists	Over-prescribing	Patient expectations; diagnostic uncertainty
No routine imaging for uncomplicated low back pain	Physicians; physiotherapists	Over-use of imaging	Patient demand; defensive practice; time
Falls risk assessment and prevention	Nurses; physiotherapists; pharmacists	Incomplete assessment and interventions	Staffing; fragmented roles
Structured pain assessment	Nurses; physicians	Inconsistent assessment and reassessment	Workload; documentation burden

◆ **KEY MESSAGE**

The guideline–practice gap is large, persistent and found in every profession. The aim is not blind compliance but reliable delivery of recommended care to the patients for whom it is appropriate, with justified and documented deviation when it is not.

5. BARRIERS TO GUIDELINE IMPLEMENTATION

A meta-review of systematic reviews identified factors influencing guideline implementation at the levels of the guideline, the professional, the patient and the environment (Francke et al., 2008). Flottorp et al. (2013) consolidated determinants into a checklist covering guideline factors, individual health professional factors, patient factors, professional interactions, incentives and resources, capacity for organizational change, and social, political and legal factors. The following synthesis uses five levels, summarized in Table 3.

5.1 Guideline-Level Barriers

The characteristics of guidelines themselves strongly influence their use. Barriers include length and complexity; ambiguous or non-actionable recommendations; low perceived credibility, particularly where conflicts of interest are suspected; conflicting

recommendations from different organizations; lack of applicability to local populations or resources; and infrequent updating. The IOM (2011) standards for trustworthy guidelines, including transparency, management of conflicts, systematic evidence review, explicit rating of evidence and multidisciplinary development, address several of these issues. Guidelines developed by and for a single profession may neglect the contributions of others, leaving roles unclear.

5.2 Professional-Level Barriers

At the individual level, barriers map closely to TDF domains. Lack of awareness and familiarity with guidelines remains common, particularly for infrequently encountered conditions. Disagreement with recommendations, reflecting beliefs about consequences, skepticism about the evidence or perception that guidelines are "cookbook medicine", reduces motivation (Cabana et al., 1999). Low self-efficacy for skills such as motivational counseling or complex procedures, and habit and inertia of previous practice, also play a role.

Professional role and identity differ markedly between professions. Physicians frequently emphasize clinical autonomy and the need to individualize care. Nurses, pharmacists and allied professionals more often report that they know and support a recommendation but lack the authority to act on it, for example to initiate venous thromboembolism prophylaxis, adjust a dose, change an antibiotic or alter a rehabilitation plan without a physician order. These differences mean that the same guideline may face primarily motivational barriers among one profession and primarily opportunity barriers among another.

5.3 Team-Level Barriers

Many guidelines require coordinated action by several professions. Barriers at this level include unclear allocation of responsibility, hierarchical relationships that discourage nurses and allied professionals from questioning physician decisions, poor communication at handover and in multidisciplinary meetings, and lack of shared goals. Where interprofessional relationships are weak, each profession may assume that another is responsible for a guideline element, so that it falls between them.

5.4 Organizational Barriers

Organizational barriers are among the most frequently reported across professions. They include lack of time and heavy workload; inadequate staffing; limited access to equipment, medications or diagnostic services; absence of leadership support and protected time for training; and information systems that do not support recommended care, such as electronic records without order sets, reminders or easy access to guidance. Inner-setting factors in the CFIR, including implementation climate, readiness for change and leadership engagement, consistently predict implementation success (Damschroder et al., 2022).

5.5 System-Level Barriers

Beyond the organization, financial incentives that reward volume rather than value, regulatory frameworks that restrict scopes of practice, medicolegal concerns that encourage defensive practice, and limited availability or affordability of recommended treatments shape practice. Patient-level factors, such as preferences, health literacy, cost and access, also influence whether recommended care is delivered and accepted.

Table 3. Multilevel barriers to guideline implementation and their behavioral mechanisms

Level	Example barriers	COM-B source	Typical professions most affected
Guideline	Complexity; ambiguity; conflicting guidance; poor local applicability; outdated	Capability; motivation	All
Professional	Unawareness; disagreement; low self-efficacy; habit; professional autonomy	Capability; motivation	Physicians (autonomy); all (knowledge)
Team	Unclear roles; hierarchy; poor communication; no shared goals	Opportunity (social)	Nurses; pharmacists; allied health

Level	Example barriers	COM-B source	Typical professions most affected
Organization	Time; staffing; equipment; leadership; IT systems	Opportunity (physical)	Nurses; allied health; junior doctors
System	Incentives; scope-of-practice rules; medicolegal fear; patient factors	Opportunity; motivation	All, varying by jurisdiction

6. PROFESSION-SPECIFIC PERSPECTIVES

6.1 Physicians

For physicians, the most prominent barriers relate to knowledge and attitudes: the volume of guidance, skepticism about recommendations perceived as industry-influenced or not applicable to their patients, and concern about loss of autonomy (Cabana et al., 1999). Facilitators include credible, concise, locally endorsed guidelines; involvement of respected peers and opinion leaders; decision support integrated into prescribing; and feedback comparing performance with peers.

6.2 Nurses and Midwives

Nurses form the largest professional group and are responsible for implementing many guidelines on safety and fundamental care. Commonly reported barriers include insufficient time, staffing shortages, limited authority to change practice, lack of access to research and limited confidence in appraizing evidence. Facilitators include supportive nurse managers, clinical nurse educators and specialists acting as facilitators and champions, nurse-initiated protocols that confer authority to act, and inclusion of nurses in guideline development and local adaptation. The i-PARIHS emphasis on facilitation is strongly supported in nursing implementation research (Harvey & Kitson, 2016).

6.3 Pharmacists

Pharmacists apply guidelines on medication selection, dosing, interactions, anticoagulation and antimicrobial stewardship. Their principal barrier is often the need to persuade prescribers, which depends on relationships, perceived credibility and access to clinical information. Facilitators include collaborative practice agreements and protocols permitting pharmacist-initiated changes, presence on ward rounds, access to full electronic records and stewardship programs with executive support.

6.4 Allied Health Professionals

Physiotherapists, occupational therapists, dietitians, respiratory therapists, speech and language therapists, and laboratory and radiology professionals each implement profession-specific and interprofessional guidelines. Shared barriers include small team sizes, limited protected time for professional development, guidelines developed predominantly by other professions, and dependence on referrals. Laboratory and radiology professionals face particular challenges in implementing appropriate-use criteria for tests they do not order. Facilitators include professional networks, embedded researchers, and decision support at the point of ordering.

6.5 Prehospital Professionals

Paramedics implement clinical practice guidelines in uncontrolled environments, often alone or in pairs and with limited real-time access to senior support. Protocols are usually mandatory, which favors adherence, but barriers include infrequent exposure to rare conditions, skill decay, equipment variation and lack of feedback on patient outcomes after handover. Facilitators include regular simulation, clinical decision support applications, telemedicine consultation and outcome feedback from receiving hospitals.

Table 4. Profession-specific barriers and facilitators

Profession	Characteristic barriers	Effective facilitators
Physicians	Autonomy concerns; disagreement; guideline overload; perceived poor applicability	Credible concise guidance; opinion leaders; peer-comparison feedback; integrated decision support
Nurses and midwives	Time and staffing; limited authority; limited evidence appraisal skills	Nurse-initiated protocols; facilitators and educators; supportive managers; involvement in adaptation
Pharmacists	Need to persuade prescribers; limited access to clinical data	Collaborative practice agreements; ward presence; stewardship programs
Allied health	Small teams; guidelines written by others; dependence on referrals	Professional networks; protected development time; ordering-point decision support
Paramedics	Rare conditions; skill decay; no outcome feedback	Simulation; mobile decision support; telemedicine; feedback from hospitals

7. FACILITATORS AND IMPLEMENTATION STRATEGIES

The Expert Recommendations for Implementing Change (ERIC) project compiled 73 discrete implementation strategies, ranging from educational meetings and audit and feedback to changing record systems and creating new clinical teams (Powell et al., 2015). Evidence on the effectiveness of the most widely used strategies is summarized below and in Table 5.

7.1 Educational Strategies

Passive dissemination, such as distributing printed guidelines, has little effect on practice. Educational meetings, particularly interactive workshops, produce small to moderate improvements (Forsetlund et al., 2009). Educational outreach visits, in which a trained person meets professionals in their practice setting, yield modest but consistent improvements, especially for prescribing (O'Brien et al., 2007). Education is most useful where knowledge or skill is the primary barrier and least useful where barriers lie in the organization or system.

7.2 Audit and Feedback

Audit and feedback, the provision of a summary of clinical performance over a period, is among the most studied strategies. The most recent Cochrane update, including 292 studies, found a median absolute improvement in desired practice of 2.7%, with wide variation; effects were larger when feedback compared performance with top peers or benchmarks, targeted individual practice, was delivered interactively by a respected local person, was accompanied by action plans, and focused on areas with substantial room for improvement (Ivers et al., 2026).

7.3 Clinical Decision Support and Systems Change

Computerized clinical decision support, including reminders, order sets and alerts embedded in electronic records, makes recommended care the default. A meta-analysis of 108 controlled studies found that such systems produced a median absolute improvement of about 6% in targeted processes of care, with considerable heterogeneity and small effects on clinical endpoints (Kwan et al., 2020). Effectiveness depends on integration into workflow, specificity of advice, and avoidance of alert fatigue. Broader systems changes, such as standardized order sets, checklists, care pathways and redesign of roles, address opportunity barriers that education cannot.

7.4 Opinion Leaders, Champions and Facilitation

Local opinion leaders and clinical champions influence colleagues through credibility and social modeling. Facilitation, whether by internal or external facilitators, supports teams to assess barriers, plan and test changes and sustain improvement. These relational strategies are particularly effective where social influences, professional identity and team dynamics are key barriers.

7.5 Tailored and Multifaceted Strategies

Because barriers vary between settings and professions, strategies tailored to identified determinants are more effective than generic ones. Grol and Grimshaw (2003) argued that implementation should begin with a diagnostic analysis of barriers and use a combination of strategies at different levels. Multifaceted strategies are not automatically superior to single strategies; their value depends on whether each component addresses a relevant barrier.

7.6 Patient-Mediated Strategies and Shared Decision-Making

Patients are not merely recipients of guideline-based care; they can act as agents of implementation. Patient-mediated strategies include information materials, reminders, self-management support and decision aids that explain recommended options and their trade-offs. Shared decision-making aligns guideline recommendations with patient values, and is particularly important where recommendations are conditional or where multimorbidity complicates the balance of benefits and harms (Boyd et al., 2005). Patient-mediated approaches also help counter over-use, for example by addressing expectations for antibiotics or imaging, a key aim of the Choosing Wisely campaign (Cassel & Guest, 2012). In culturally diverse settings, including the Gulf region, materials should be available in appropriate languages and should recognize the role of families in decision-making.

7.7 De-implementation of Low-Value Practices

Closing the gap involves stopping practices as well as starting them. De-implementation, the reduction or removal of low-value or harmful practices, faces distinctive barriers: practices may be habitual, reinforced by patient expectations, financially rewarded or perceived as harmless. Professionals may experience abandoning a familiar practice as a loss of control or as exposure to medicolegal risk. Effective de-implementation typically combines clear, credible evidence of low value; changes to defaults in order sets and electronic records; audit and feedback; communication tools for discussing with patients why a test or treatment is not needed; and leadership that frames de-implementation as a quality and safety initiative rather than as rationing. Because the estimated 30% of care that is wasteful represents a substantial opportunity, de-implementation deserves equal attention to the adoption of new evidence (Braithwaite et al., 2020).

Table 5. Effectiveness of common implementation strategies

Strategy	Barrier addressed	Typical effect	Key conditions for success
Passive dissemination	Awareness only	Minimal	Rarely sufficient alone
Interactive educational meetings	Knowledge; skills	Small–moderate	Interactive; skill practice
Educational outreach	Knowledge; motivation	Modest, consistent	Trained outreach worker; tailored messages
Audit and feedback	Motivation; awareness of performance	Median ~3% absolute improvement	Benchmarks; action plans; local champion
Clinical decision support	Memory; opportunity	Median ~6% absolute improvement	Workflow integration; low alert burden

Strategy	Barrier addressed	Typical effect	Key conditions for success
Opinion leaders / champions	Social influence; beliefs	Variable, often positive	Credible, respected peers
Facilitation	Team and organizational context	Positive in complex settings	Skilled facilitators; time
Tailored multifaceted	Multiple identified barriers	Larger than generic	Robust barrier diagnosis

8. INTERPROFESSIONAL IMPLEMENTATION

Most high-impact guidelines are interprofessional by nature. Effective implementation of a sepsis bundle, for example, requires nurses to recognize and escalate, laboratory staff to process lactate and cultures promptly, pharmacists to make antimicrobials available, and physicians to prescribe and review. Implementation planning that targets only physicians, or only nurses, will leave critical steps unaddressed.

Three principles support interprofessional implementation. First, guideline recommendations should be translated into explicit role allocations, specifying which profession is responsible for each action, with protocols that confer the necessary authority. Second, implementation teams should include representatives of every profession involved, so that barriers are identified from each perspective and solutions are owned collectively. Third, measurement should track the whole care process across professional boundaries, with feedback delivered to the interprofessional team rather than to individual professions in isolation. Team-training approaches such as TeamSTEPPS, which develop shared mental models and mutual support, strengthen these principles (Agency for Healthcare Research and Quality [AHRQ], 2023).

"A guideline is not implemented when it is published, or even when it is read. It is implemented when the team, together, delivers it reliably to the right patient at the right time."

9. THE CLOSE FRAMEWORK

Integrating the evidence and frameworks reviewed, we propose the CLOSE framework for closing the guideline–practice gap across healthcare professions. It operationalizes the Knowledge-to-Action cycle, uses the CFIR and TDF for diagnosis, draws on COM-B for strategy selection and incorporates i-PARIHS facilitation.

Table 6. The CLOSE framework: components, actions and indicators

Component	Core actions	Indicators
C – Contextualize	Select trustworthy guidelines; adapt to local resources and populations; translate recommendations into role-specific, actionable steps; diagnose barriers by profession using TDF/CFIR	Local adaptation completed; barrier assessment documented
L – Lead and engage	Executive sponsorship; interprofessional implementation team; clinical champions from each profession; patient involvement	Champion network in place; leadership review cycle
O – Optimize systems	Order sets, reminders and decision support; nurse- and pharmacist-initiated protocols; checklists; workflow and role redesign	% recommendations embedded in EHR; protocols approved

Component	Core actions	Indicators
S – Support capability	Interactive and simulation-based education; educational outreach; facilitation; time and resources	Training coverage; staff confidence and knowledge
E – Evaluate and embed	Audit and feedback with benchmarks and action plans; implementation and clinical outcome measurement; sustainment planning; guideline updating	Adherence rates; patient outcomes; sustainability at 12–24 months

The framework is cyclical: evaluation results inform recontextualization, and guidelines are updated as evidence evolves. It applies at multiple levels. A ward can use it to implement a falls-prevention guideline; a hospital to implement antimicrobial stewardship; and a national authority to roll out a national guideline across a health system.

9.1 Measuring Implementation

Evaluation should distinguish implementation outcomes from clinical outcomes. Proctor et al. (2011) proposed implementation outcomes including acceptability, adoption, appropriateness, feasibility, fidelity, implementation cost, penetration and sustainability. Measuring these allows teams to determine whether a lack of clinical improvement reflects an ineffective guideline or an ineffective implementation. Process indicators should be specific, measurable and attributable to the professions responsible, while outcome indicators should reflect patient benefit.

9.2 Phased Implementation

Table 7. Phased roadmap for applying the CLOSE framework

Phase	Indicative timing	Key activities	Milestone
1. Preparation	0–3 months	Select guideline; form interprofessional team; baseline audit; barrier diagnosis	Implementation plan approved
2. Adaptation	3–6 months	Local adaptation; role allocation; protocols for nurse/pharmacist initiation	Local guideline and protocols endorsed
3. Implementation	6–12 months	Education; decision support build; champions; PDSA cycles	Adoption across pilot units
4. Evaluation	12–18 months	Audit and feedback; implementation and clinical outcomes	Targets met or plan revised
5. Sustainment	Ongoing	Embed in policy, accreditation and EHR; update guideline	Sustained adherence at 24 months

10. IMPLICATIONS FOR SAUDI ARABIA AND VISION 2030

The Saudi health system presents both distinctive challenges and opportunities for closing the guideline–practice gap. The Health Sector Transformation Program under Vision 2030 emphasizes quality, value, digital health and workforce development, and the reorganization of Ministry of Health services into regional health clusters creates new governance structures for standardizing care (Saudi Vision 2030, 2021).

Several context-specific factors are relevant. First, Saudi clinicians frequently rely on international guidelines from North America and Europe, which may conflict with each other and may not reflect local epidemiology, resources or cultural considerations. A national survey of physicians managing dyslipidemia found high self-reported guideline use but variation in which guidelines were followed, with barriers including unfamiliarity, patient non-adherence, cost and limited follow-up and educational tools (Almigbal et al., 2023). National adaptation of international guidelines, through bodies such as the National Center for Evidence-Based Medicine under the Saudi Health Council, can reduce this variation.

Second, the Saudi healthcare workforce is highly diverse, with many professionals trained in different countries and educational traditions. This diversity is a strength but also produces variation in practice norms, guideline familiarity and expectations of professional roles. Standardized orientation, interprofessional training and clear role-specific protocols are particularly valuable in this context. Third, scopes of practice for nurses, pharmacists and allied professionals continue to evolve; extending protocol-based authority, such as pharmacist-led anticoagulation or nurse-initiated sepsis screening, would address the opportunity barriers identified in this review.

Fourth, the national investment in unified electronic health records and virtual care offers a powerful platform for embedding guideline-based order sets, decision support and automated audit across clusters. Fifth, accreditation by the Saudi Central Board for Accreditation of Healthcare Institutions (CBAHI) and continuing professional development regulated by the Saudi Commission for Health Specialties (SCFHS) can incorporate guideline implementation indicators and implementation-science competencies. Finally, building local implementation research capacity, through academic centers and national research funding, would allow evidence on what works in the Saudi context to inform policy.

11. DISCUSSION

This review confirms that the guideline–practice gap is substantial, persistent and multidetermined, and that no single strategy will close it. Three insights stand out. First, the gap is not primarily a problem of knowledge. While unawareness persists, the dominant barriers in many settings concern opportunity, including time, staffing, systems and authority to act, and motivation, including beliefs about consequences and professional identity. Strategies focused solely on education therefore produce limited gains.

Second, barriers differ between professions in ways that matter for strategy selection. Physicians' concerns about autonomy and applicability call for credible, flexible guidance, peer influence and decision support that informs rather than dictates. Nurses', pharmacists' and allied professionals' concerns about authority and organizational support call for protocols, role redesign and leadership. Uniform, profession-blind implementation plans miss these distinctions.

Third, implementation is a team and organizational endeavor. The most reliable approaches embed recommended care in systems so that doing the right thing is the easiest thing, and engage every profession in adaptation, delivery and evaluation. The modest average effects of individual strategies should not be interpreted as futility: small improvements across many patients produce large population benefits, and tailored combinations can achieve more.

Finally, the goal must be appropriate rather than maximal adherence. Guidelines should support, not replace, clinical judgment, and implementation systems should make it easy to document and learn from justified deviations, particularly for patients with multimorbidity or distinct preferences.

12. RESEARCH GAPS AND FUTURE DIRECTIONS

- **Profession-specific evidence:** implementation trials have focused disproportionately on physicians; research on nurses, pharmacists, allied health and paramedics is needed.
- **Interprofessional strategies:** evaluation of implementation approaches that target whole teams rather than individual professions.
- **Mechanisms:** studies testing how strategies work, using behavioral theory to explain effects and inform tailoring.
- **Sustainability and de-implementation:** long-term maintenance of adherence and removal of low-value practices are under-studied.
- **Digital and AI-enabled support:** rigorous evaluation of electronic decision support and learning health systems, including effects on alert burden and equity.

- **Regional evidence:** implementation research in Saudi Arabia and the Gulf, including evaluation of nationally adapted guidelines and expanded scopes of practice.

13. LIMITATIONS

As a narrative review, this work is subject to selection and interpretive bias, mitigated by a structured search and reliance on systematic reviews where available. The evidence base is dominated by high-income countries and by studies of physicians, limiting generalizability to other professions and settings. Heterogeneity in definitions of adherence and in outcome measures precludes quantitative synthesis. The CLOSE framework is a synthesis intended to guide practice and requires prospective evaluation.

14. CONCLUSIONS

The gap between clinical guidelines and routine practice is one of the most important and tractable problems in healthcare quality. It arizes from interacting barriers at the levels of the guideline, the professional, the team, the organization and the wider system, and these barriers differ in important ways between physicians, nurses, pharmacists, allied health professionals and paramedics. Closing the gap requires a shift from dissemination to implementation: diagnosing barriers, selecting matched strategies, embedding recommendations in systems and roles, and measuring and sustaining change. The CLOSE framework offers a structured and adaptable approach, and health systems in transformation, including Saudi Arabia under Vision 2030, have a timely opportunity to build implementation capability into their foundations.

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Author contributions. [To be completed according to the CRediT taxonomy before submission.]

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