Reprint from The Review of DIABETIC STUDIES

The Review Of
DIABETIC
STUDIES OPEN ACCESS

Interprofessional Collaboration As A Driver Of Patient Safety And Quality Of Care In Saudi Healthcare Settings

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Workplaces /national guard health affairs

1. Introduction

Modern healthcare is delivered by teams. A single hospital admission may involve a physician who diagnoses, a nurse who monitors, a pharmacist who reconciles medications, a laboratory specialist who confirms a result, a radiographer who images, a respiratory therapist who supports breathing, a health information specialist who secures the record, and an administrator who makes the bed, staff, and equipment available. Each professional brings distinct expertise, yet the patient experiences their care as one continuous journey. Where the hand-offs between these professionals are seamless, care is safer and more effective; where they are fragmented, risk accumulates silently until harm occurs.

The landmark report To Err Is Human (Kohn et al., 2000) shifted the global conversation about patient safety from individual blame to system design, emphasising that most errors arise from faulty processes and poor coordination rather than incompetent individuals. The follow-up report Crossing the Quality Chasm (Institute of Medicine, 2001) went further, identifying effective teamwork and cooperation among clinicians as a core design principle of a high-quality health system. Two decades later, the World Health Organization's Global Patient Safety Action Plan 2021–2030 continues to identify team communication and a culture of safety as global priorities (WHO, 2021).

The World Health Organization defines collaborative practice as occurring when multiple health workers from different professional backgrounds work together with patients, families, carers, and communities to deliver the highest quality of care (WHO, 2010). This definition is notable for two features: it is explicitly multiprofessional, and it places the patient and family inside the team rather than outside it.

In the Kingdom of Saudi Arabia, the importance of interprofessional collaboration (IPC) has been amplified by the scale and ambition of health reform. Vision 2030 and its Health Sector Transformation Program (HSTP) aim to improve access, quality, and efficiency, to strengthen prevention, and to reorganise service delivery into integrated health clusters (Health Sector Transformation Program, 2021). These reforms depend on professionals working across traditional disciplinary and organisational boundaries — between primary and hospital care, between clinical and support services, and between public and private providers.

> "No single profession can guarantee patient safety. Safety is an emergent property of how well professionals work together."

1.1 Problem Statement

Despite wide recognition of its importance, IPC in many healthcare organisations remains informal, inconsistent, and dependent on individual goodwill rather than structured systems. Professionals are still largely educated in separate silos, assessed against profession-specific standards, and managed through vertical departmental structures. In Saudi hospitals, these general challenges intersect with context-specific factors such as a highly diverse multinational workforce, linguistic variation, strong professional hierarchies, rapid organisational change, and high workload in tertiary centres (Al-Hanawi et al., 2019).

1.2 Objectives of the Paper

- To clarify the concept of interprofessional collaboration and its core competencies.
- To analyse the mechanisms through which IPC influences patient safety and quality of care, drawing on established theoretical models.
- To review international and regional evidence linking collaborative interventions with clinical outcomes.
- To examine the Saudi healthcare context, including enabling policies and persistent barriers.
- To propose an original, practical framework (UNITE) with measurement indicators and an implementation roadmap suited to Saudi healthcare settings.

1.3 Methodological Approach

This paper adopts a narrative, integrative review approach. Peer-reviewed literature on interprofessional collaboration, teamwork, and patient safety was synthesised alongside policy and regulatory documents from Saudi bodies including the Ministry of Health (MOH), the Saudi Commission for Health Specialties (SCFHS), the Saudi Central Board for Accreditation of Healthcare Institutions (CBAHI), and the Saudi Patient Safety Center (SPSC). The aim is conceptual integration and practical guidance rather than a statistical meta-analysis; findings should therefore be read as an evidence-informed synthesis.

2. Conceptual Foundations of Interprofessional Collaboration

2.1 Defining the Key Terms

Several related terms are often used interchangeably, but they describe different levels of integration. Multidisciplinary practice involves professionals working in parallel, each contributing from their own discipline with limited interaction. Interdisciplinary or interprofessional practice involves professionals actively interacting, sharing information, and making joint decisions. Transdisciplinary practice involves partial blurring of professional boundaries, with team members sharing roles and skills around a common plan. Interprofessional collaboration sits at the centre of this continuum: it preserves professional expertise while requiring genuine joint working.

D'Amour and colleagues (2005), in a widely cited review, identified five core concepts that recur across definitions of collaboration: sharing (of responsibilities, decisions, values, and data), partnership (collegial, authentic relationships), interdependency (recognition that each member needs the others to achieve the goal), power (shared and based on knowledge and expertise rather than title), and process (collaboration as a dynamic, evolving activity). These concepts are useful for diagnosing why collaboration succeeds or fails in a given unit.

2.2 The IPEC Core Competencies

The Interprofessional Education Collaborative (IPEC) has developed the most widely adopted competency framework for collaborative practice, first published in 2011 and updated in 2016 and 2023 (Schmitt et al., 2011; IPEC, 2023). The framework organises collaboration into four domains that apply equally to all health professions.

Table 1. IPEC core competency domains and their safety relevance

Domain	Core Meaning	Relevance to Patient Safety
Values and Ethics	Working with others in a climate of mutual respect and shared values, centred on the patient and population.	Respect enables speaking up about hazards; patient-centred values align goals across professions.
Roles and Responsibilities	Using knowledge of one's own role and the roles of others to meet patient needs.	Prevents gaps ("someone else will do it") and duplication; clarifies accountability for each safety task.

Domain	Core Meaning	Relevance to Patient Safety
Communication	Communicating with patients, families, and team members in a responsive and responsible manner.	Standardised, closed-loop communication reduces misunderstanding at handoffs and in emergencies.
Teams and Teamwork	Applying relationship-building values and team dynamics to plan, deliver, and evaluate care.	Shared mental models, mutual monitoring, and back-up behaviour catch errors before they reach the patient.

2.3 Collaboration as a Spectrum, Not a Switch

Collaboration is not simply present or absent. A unit may collaborate effectively during scheduled ward rounds but poorly during night shifts; a team may share information well but still make decisions hierarchically. Viewing IPC as a spectrum helps leaders identify the specific interactions — admission, rounds, medication orders, discharge, critical results reporting, deterioration response — where improvement will have the greatest safety impact.

3. Theoretical Lenses Linking Collaboration to Safety and Quality

Four complementary theoretical models explain why collaboration matters for outcomes. Together they move the discussion from intuition to mechanism.

3.1 Donabedian's Structure–Process–Outcome Model

Donabedian (1988) proposed that the quality of care can be evaluated through three linked dimensions: structure (the settings, resources, staffing, and organisational arrangements in which care occurs), process (what is actually done in giving and receiving care), and outcome (the effects of care on patients and populations). IPC can be located in all three dimensions. Structural enablers include team composition, shared electronic records, co-location, and protected time for joint meetings. Collaborative processes include interdisciplinary rounds, joint care planning, and structured handoffs. Outcomes include reduced errors, shorter length of stay, fewer readmissions, and higher patient satisfaction. The model reminds leaders that collaborative outcomes cannot be demanded without investing in collaborative structures and processes.

3.2 Reason's Swiss Cheese Model

Reason (2000) described organisational defences as layers of Swiss cheese: each layer — a policy, a check, a professional — has holes caused by active failures and latent conditions. Harm occurs when the holes in several layers momentarily align, allowing a hazard to pass through. In this model, each profession is a defensive layer. A prescribing error made by a physician may be intercepted by the pharmacist during verification, by the nurse at administration, or by the patient who has been educated about their medicines. Collaboration increases the number and independence of these layers; poor collaboration — for example, a nurse who hesitates to question an order — effectively removes a layer and lets the holes align.

> Every professional on the team is a layer of defence. Collaboration is what keeps those layers active rather than silent.

3.3 TeamSTEPPS and the Science of Teamwork

TeamSTEPPS (Team Strategies and Tools to Enhance Performance and Patient Safety) was developed by the US Agency for Healthcare Research and Quality and the Department of Defense as an evidence-based teamwork system for healthcare (King et al., 2008). It builds on teamwork research, including Salas et al.'s (2005) "Big Five" of teamwork, and teaches four trainable skills — communication, leadership, situation monitoring, and mutual support — that together produce knowledge (a shared mental model), attitudes (mutual trust and team orientation), and performance (adaptability, accuracy, productivity, efficiency, and safety). Its practical tools are widely used in Saudi hospitals and are summarised in Table 2.

Table 2. Selected TeamSTEPPS tools applicable across all health disciplines

Tool	Description	Example Application
SBAR	Situation, Background, Assessment, Recommendation — a structured format for concise communication.	Nurse reporting patient deterioration to the on-call physician; lab reporting a critical value.
Call-out & Check-back	Critical information is stated aloud and the receiver repeats it to confirm (closed-loop communication).	Verbal medication orders during resuscitation; confirming blood product details.
Briefs, Huddles, Debriefs	Short planning meetings at the start of a shift, ad-hoc problem-solving, and post-event reflection.	Pre-operative team brief; mid-shift bed-flow huddle; debrief after a code blue.
CUS / Two-Challenge Rule	"I am Concerned, I am Uncomfortable, this is a Safety issue"; a concern is voiced at least twice if not acknowledged.	A pharmacist or junior nurse escalating a high-risk order despite hierarchy.
I-PASS / Handoff	Illness severity, Patient summary, Action list, Situation awareness, Synthesis by receiver.	Shift change, transfer from ICU to ward, transfer from ambulance to emergency department.

3.4 Psychological Safety and the Job Demands–Resources Model

Edmondson (1999) showed that teams learn and improve when members believe it is safe to take interpersonal risks — to ask questions, admit mistakes, and challenge decisions. Psychological safety is the cultural condition that allows the TeamSTEPPS tools to work; without it, a CUS statement is never voiced. In parallel, the Job Demands–Resources (JD-R) model (Bakker & Demerouti, 2007) explains that high job demands lead to exhaustion while job resources — including supportive colleagues and effective teamwork — buffer stress and promote engagement. Collaboration is therefore not only a safety mechanism but also a workforce resource that protects staff against burnout, which is itself a recognised risk factor for errors.

4. Interprofessional Collaboration and Patient Safety: The Evidence

Communication failure is one of the most consistently identified root causes of serious adverse events. Leonard, Graham, and Bonacum (2004) argued that differences in communication style between professions — for example, the narrative style often used by nurses versus the "headline" style often expected by physicians — combined with hierarchy and fatigue, create predictable vulnerabilities. The Joint Commission (2017) similarly identified inadequate hand-off communication as a major contributor to sentinel events and called for standardised hand-off processes. The following subsections summarise key domains in which collaborative interventions have demonstrated measurable safety benefits.

4.1 Surgical and Procedural Safety

The WHO Surgical Safety Checklist is in essence a structured interprofessional conversation among surgeons, anaesthetists, and nurses at three critical moments: before induction, before incision, and before the patient leaves the operating room. In an eight-country study, Haynes et al. (2009) reported that implementation of the checklist was associated with a reduction in the inpatient death rate from 1.5% to 0.8% and in complications from 11.0% to 7.0%. Importantly, the checklist works not because it contains new medical knowledge but because it gives every team member — including the most junior — a sanctioned opportunity to speak.

Similarly, the US Veterans Health Administration's Medical Team Training programme, which combined teamwork training with briefings and debriefings, was associated with an 18% reduction in

annual surgical mortality in participating facilities, compared with a 7% reduction in non-participating facilities (Neily et al., 2010).

4.2 Handoffs and Transitions of Care

Transitions — shift changes, transfers between units, and discharge — are moments when responsibility and information pass between professionals and are therefore high-risk. In a multicentre study of paediatric residents, implementation of the I-PASS handoff bundle was associated with a 23% reduction in medical errors and a 30% reduction in preventable adverse events, without increasing the time spent on handoffs (Starmer et al., 2014). Although this study focused on physicians, the same principles are increasingly applied to nurse-to-nurse, paramedic-to-emergency department, and ICU-to-ward transfers.

4.3 Medication Safety

Medication errors are among the most common preventable harms in hospitals, and they occur across the prescribing, transcribing, dispensing, administering, and monitoring stages — each owned by a different profession. Collaborative models therefore yield some of the clearest benefits. Leape et al. (1999) found that the participation of a senior pharmacist on physician rounds in an intensive care unit reduced preventable adverse drug events attributable to ordering by about two-thirds. Kucukarslan et al. (2003) reported a comparable reduction in preventable adverse drug events when pharmacists joined rounding teams on general medicine units. Medication reconciliation at admission and discharge — a task that requires physicians, pharmacists, nurses, and patients to share information — is now a standard expectation of accreditation bodies, including CBAHI.

4.4 Diagnostic Safety

Diagnosis is increasingly a team activity. Laboratory and radiology professionals contribute not only results but interpretation, and their timely communication of critical findings is a recognised safety goal. Diagnostic errors often stem from failures in follow-up — an abnormal result that is never communicated or never acted upon. Closed-loop communication of critical values, multidisciplinary tumour boards, and radiology–clinician discussions are collaborative structures that reduce the risk that important information falls between professional boundaries.

4.5 Recognition of and Response to Deterioration

Rapid response and medical emergency teams rely on nurses recognising early warning signs, communicating them with confidence, and receiving a timely response from medical, respiratory therapy, and critical care colleagues. Their effectiveness depends heavily on whether nurses feel empowered to activate the team without fear of criticism — an expression of psychological safety and flattened hierarchy.

Table 3. Summary of key evidence linking collaborative interventions to safety outcomes

Study / Source	Collaborative Intervention	Reported Outcome
Haynes et al. (2009), NEJM	WHO Surgical Safety Checklist in eight countries	Inpatient deaths fell from 1.5% to 0.8%; complications from 11.0% to 7.0%.
Neily et al. (2010), JAMA	Medical Team Training with briefings and debriefings	18% reduction in annual surgical mortality vs. 7% in comparison sites.
Starmer et al. (2014), NEJM	I-PASS standardised handoff bundle	23% fewer medical errors; 30% fewer preventable adverse events.
Leape et al. (1999), JAMA	Pharmacist participation in ICU rounds	About two-thirds reduction in preventable ordering-related adverse drug events.
Kucukarslan et al. (2003), Arch Intern Med	Pharmacists on general medicine rounding teams	Substantial reduction in preventable adverse drug events.

Study / Source	Collaborative Intervention	Reported Outcome
Reeves et al. (2017), Cochrane Review	Practice-based IPC interventions (rounds, meetings, audits)	Low-certainty evidence of modest improvements in functional status, adherence, and resource use.

The Cochrane review by Reeves et al. (2017) provides an important note of caution: when interventions are pooled across heterogeneous settings, the certainty of evidence is often low and effect sizes modest. This does not indicate that collaboration is ineffective; rather, it suggests that how collaboration is implemented — its structure, fidelity, leadership support, and sustainability — determines whether benefits materialise. This insight informs the framework proposed later in this paper.

5. Interprofessional Collaboration and Quality of Care

Patient safety is one dimension of quality. The Institute of Medicine (2001) defined six aims for high-quality care: safe, effective, patient-centred, timely, efficient, and equitable. Collaboration contributes to each of these aims, as summarised in Table 4.

Table 4. Contribution of interprofessional collaboration to the six dimensions of quality

Quality Dimension	How Collaboration Contributes
Safe	Multiple professional checks intercept errors; structured communication prevents information loss at transitions.
Effective	Combining clinical, pharmaceutical, rehabilitative, nutritional, and diagnostic expertise produces more evidence-based, comprehensive care plans.
Patient-centred	Patients and families participate in team discussions; consistent messages from all professionals improve understanding and trust.
Timely	Joint discharge planning and coordinated diagnostics reduce delays, waiting times, and avoidable bed-days.
Efficient	Clear roles reduce duplication of tests and documentation; shared records reduce repeated history-taking.
Equitable	Team-based outreach, including community health workers and health educators, extends services to underserved populations.

5.1 Chronic Disease Management

Chronic conditions such as diabetes, hypertension, and obesity are major public health priorities in Saudi Arabia. Their management requires sustained collaboration among physicians, nurses, diabetes educators, dietitians, pharmacists, and laboratory services. Team-based chronic care models, in which responsibilities for monitoring, education, and medication adjustment are shared under clear protocols, are consistent with the MOH Model of Care's emphasis on prevention and primary care.

5.2 Patient Experience and Engagement

Patients notice when professionals do not communicate with each other — when they receive conflicting advice, are asked the same questions repeatedly, or experience delays because of unclear responsibility. Conversely, bedside interdisciplinary rounds and coordinated discharge education improve patients' understanding of their care and their confidence in the team. In a culture where family members play a central role in care decisions, as in Saudi society, including families in team communication is especially important.

5.3 Workforce Outcomes as a Quality Mediator

Quality is also shaped by the wellbeing of those who deliver care. Effective collaboration improves job satisfaction, reduces moral distress, and strengthens retention, while dysfunctional teams increase stress

and turnover. Because turnover disrupts team stability and institutional knowledge, workforce outcomes act as a mediator between collaboration and long-term quality.

6. The Saudi Healthcare Context

6.1 Vision 2030 and the Health Sector Transformation Program

Saudi Arabia's health system has historically been dominated by the Ministry of Health as both regulator and main provider, alongside other government providers and a growing private sector (Almalki et al., 2011). Vision 2030 initiated a fundamental restructuring. The Health Sector Transformation Program aims to expand access, improve quality and efficiency, promote prevention, and separate the roles of regulator, purchaser, and provider (Health Sector Transformation Program, 2021). Service delivery is being reorganised into regional health clusters, each responsible for the health of a defined population across primary, secondary, and tertiary levels, under the oversight of the Health Holding Company.

This model is inherently collaborative. Population health management, integrated care pathways, and smooth patient journeys across facilities cannot be achieved by isolated departments. The new Model of Care places strong emphasis on keeping people well, managing chronic conditions in the community, and coordinating urgent and planned care — all of which require teams that span professions and settings.

6.2 Regulatory and Institutional Enablers

- **Saudi Commission for Health Specialties (SCFHS):** classifies and registers health practitioners, accredits training programmes, and oversees continuing professional development (CPD), creating opportunities to embed interprofessional competencies in training and licensing requirements.
- **Saudi Central Board for Accreditation of Healthcare Institutions (CBAHI):** its national standards address patient safety, communication of critical results, medication management, infection control, and handover, which implicitly require multidisciplinary processes and are assessed through institutional surveys.
- **Saudi Patient Safety Center (SPSC):** established to lead the national patient safety agenda, promote a just culture, support incident learning, and disseminate safety practices across the system.
- **Saudi Food and Drug Authority (SFDA):** pharmacovigilance and medical device vigilance programmes depend on reporting from all clinical professions.
- **Digital health infrastructure:** unified electronic health records, the Seha Virtual Hospital, the Nphies health insurance exchange, and national licensing platforms such as Mumaris+ support information sharing and workforce governance.

6.3 Characteristics of the Saudi Health Workforce

The Saudi health workforce has expanded rapidly and is undergoing localisation (Saudisation) in line with national goals, while still relying on a substantial expatriate workforce, particularly in nursing and some allied health fields (Al-Hanawi et al., 2019). This diversity is a strength — bringing varied training traditions and experience — but it also introduces differences in language, communication norms, professional role expectations, and attitudes toward hierarchy. In any single unit, team members may have been educated in a dozen different countries, each with its own model of how physicians, nurses, and pharmacists should relate. Building a shared team culture therefore requires deliberate effort.

> Diversity of training is a resource for safety only when teams share a common language of communication and a common commitment to the patient.

7. Barriers to Effective Collaboration in Saudi Healthcare Settings

Barriers to IPC are well documented internationally and are broadly applicable to Saudi settings, although their relative weight varies across organisations. Hall (2005) highlighted that each profession develops its own culture — values, language, problem-solving approaches — during education, and these professional cultures can act as barriers to collaboration. Table 5 groups the main barriers by level.

Table 5. Barriers to interprofessional collaboration by level

Level	Barrier	Impact on Safety and Quality
Individual	Limited understanding of other professions' scope; lack of confidence in speaking up; language proficiency differences.	Missed contributions; unvoiced safety concerns; misunderstanding of orders or reports.
Team	Steep hierarchy; unclear roles; absence of shared goals; high staff turnover and rotation.	Concerns suppressed; tasks duplicated or omitted; unstable shared mental models.
Organisational	Departmental silos; separate reporting lines; heavy workload; lack of protected time for team meetings; blame-oriented incident handling.	Collaboration seen as extra work; under-reporting of incidents; limited learning from errors.
Educational	Predominantly uniprofessional education; limited interprofessional simulation.	Graduates unprepared for team-based practice; stereotypes persist.
Systemic	Fragmented information systems in some facilities; performance indicators focused on individual departments.	Information gaps at transitions; incentives misaligned with team outcomes.

7.1 Hierarchy and the Authority Gradient

A steep authority gradient — a large perceived difference in status between team members — discourages junior staff and non-physician professionals from questioning decisions. Respect for seniority is a valued social norm in Saudi and many other cultures, and it can be compatible with safety when combined with explicit organisational permission to speak up. Leaders can maintain respect while flattening the gradient for safety-critical communication by openly inviting challenge, thanking staff who raise concerns, and modelling the CUS and two-challenge tools.

7.2 Workload and Time Pressure

In high-volume tertiary hospitals and emergency departments, staff often report that collaboration is the first activity to be sacrificed under pressure. Paradoxically, this is when collaboration matters most, because fatigue and pressure increase error rates. Brief, structured tools — two-minute huddles, SBAR calls, checklist pauses — are designed precisely to fit within busy workflows.

7.3 Role Ambiguity in Expanding Professions

As Saudi Arabia develops advanced roles — clinical pharmacists, nurse specialists, paramedics in pre-hospital care, health information specialists, and health educators — the boundaries between professions are shifting. Without clear scope-of-practice definitions and mutual understanding, these changes can generate tension instead of synergy. Clear credentialing by SCFHS and clear local privileges and job descriptions are therefore enablers of collaboration.

8. Enablers and Evidence-Informed Strategies

8.1 Interprofessional Education (IPE)

WHO (2010) describes interprofessional education as occurring when students from two or more professions learn about, from, and with each other to enable effective collaboration. IPE is most effective when it involves authentic tasks, such as simulated emergencies, case-based learning, and joint clinical placements. Saudi health colleges and university hospitals are well positioned to expand shared courses on communication, ethics, quality, and patient safety, and SCFHS-accredited CPD activities can extend this learning into practice.

8.2 Simulation-Based Team Training

High-fidelity and in-situ simulation allow teams to rehearse rare, high-risk events — obstetric haemorrhage, anaphylaxis, mass casualty incidents, cardiac arrest — in a safe environment. Debriefing after simulation develops reflective practice and exposes latent system hazards, such as missing equipment or unclear roles, before they cause harm.

8.3 Structured Communication and Standardised Processes

- Adopt SBAR as the organisation-wide standard for escalation and critical-result reporting.
- Implement a single, standardised handoff tool (such as I-PASS or an SBAR-based variant) across nursing, medical, and transfer handoffs.
- Conduct daily interdisciplinary rounds with defined participants: physician, nurse, pharmacist, and, where relevant, dietitian, physiotherapist, social worker, and case manager.
- Use pre-procedure briefs and post-procedure debriefs in operating theatres, catheterisation labs, and endoscopy units.
- Integrate checklists into the electronic health record so that collaborative steps are visible and auditable.

8.4 Leadership and Just Culture

Leaders shape collaboration more than any policy. Clinical and administrative leaders who participate in safety huddles, conduct leadership walk-rounds, respond constructively to incident reports, and recognise team achievements send a clear signal that collaboration is valued. A just culture — one that distinguishes between human error, at-risk behaviour, and reckless behaviour — encourages reporting and learning rather than concealment.

8.5 Digital Health as a Collaboration Platform

Shared electronic health records, secure messaging, clinical decision support, telemedicine, and virtual multidisciplinary meetings allow professionals to collaborate across time and distance. The Seha Virtual Hospital, for example, enables specialists to support teams in remote facilities. Digital tools must, however, be designed to support rather than replace conversation; alert fatigue and poorly designed interfaces can themselves fragment communication.

9. The UNITE Framework for Interprofessional Collaboration

Building on the theoretical lenses and evidence reviewed above, this paper proposes the **UNITE Framework** as a practical model to guide Saudi healthcare organisations in strengthening collaboration for safety and quality. The framework consists of five interdependent pillars. It is designed to be discipline-neutral, applicable to all health specialties, and compatible with existing CBAHI standards and TeamSTEPPS tools.

Table 6. The UNITE Framework: pillars, key practices, and theoretical anchors

Pillar	Key Practices	Theoretical Anchor
U — Understand Roles	Role-orientation sessions for new staff; shadowing across professions; clear scope-of-practice documents; team charters that list who is responsible for each safety task.	IPEC Roles & Responsibilities; D'Amour's interdependency
N — Navigate Communication	SBAR, closed-loop communication, standardised handoffs, critical-result escalation pathways, language and health-literacy support.	TeamSTEPPS communication; Leonard et al. (2004)
I — Integrate Care Pathways	Interdisciplinary rounds, joint care plans, shared EHR documentation, integrated discharge planning, cluster-level pathways linking primary and hospital care.	Donabedian process; Vision 2030 Model of Care

Pillar	Key Practices	Theoretical Anchor
T — Trust & Shared Leadership	Psychological safety, CUS and two-challenge rule, leadership walk-rounds, just culture, recognition of team achievements, rotating huddle leadership.	Edmondson (1999); Reason (2000); JD-R model
E — Evaluate Outcomes	Team-level safety and quality indicators; collaboration surveys; incident trend analysis; debriefs and learning reviews; feedback loops to staff.	Donabedian outcome; continuous quality improvement

9.1 How the Pillars Interact

The pillars are sequential in logic but simultaneous in practice. Understanding roles (U) is a prerequisite for meaningful communication (N), because one cannot communicate effectively with a colleague whose contribution is unknown. Communication enables integration of care (I). Trust and shared leadership (T) form the cultural foundation that makes all three function under pressure; without trust, communication tools become rituals performed without genuine engagement. Finally, evaluation (E) closes the loop, providing evidence that sustains commitment and directs improvement. In Donabedian's terms, U and T are largely structural and cultural, N and I are processes, and E connects them to outcomes.

9.2 Applying UNITE Across Care Settings

- **Emergency departments:** paramedic-to-ED handoff using a standard format (N); triage nurse empowerment to activate resuscitation teams (T); time-to-treatment indicators reviewed jointly (E).
- **Operating theatres:** surgical safety checklist and team briefs (N, I); post-list debriefs (E); clearly defined roles of surgeon, anaesthetist, scrub and circulating nurse, and anaesthesia technician (U).
- **Inpatient wards:** daily interdisciplinary rounds with pharmacist participation (I); bedside handoff involving the patient and family (N); unit-level safety huddles (T).
- **Intensive care units:** goals-of-care discussions with families (I); closed-loop communication during critical procedures (N); infection-control bundles monitored by the whole team (E).
- **Primary care and health clusters:** team-based chronic disease clinics (I); shared population registries (E); referral and feedback loops between primary and hospital teams (N).

10. The Contribution of Each Health Discipline

A defining feature of interprofessional collaboration is that every profession is both a contributor and a safeguard. Table 7 outlines how each major discipline contributes to patient safety and quality within a collaborative model. The list is illustrative rather than exhaustive.

Table 7. Collaborative contributions of health disciplines to safety and quality

Discipline	Core Collaborative Contribution	Safety Safeguard Role
Physicians	Diagnosis, treatment planning, leadership of clinical decision-making, inviting team input.	Clear orders; responsiveness to escalation; modelling of speaking-up culture.
Nursing	Continuous bedside assessment, care coordination, patient education, family communication.	Early detection of deterioration; final check before medication administration.
Pharmacy	Medication review, reconciliation, dosing advice, antimicrobial stewardship.	Interception of prescribing errors, interactions, and allergies.

Discipline	Core Collaborative Contribution	Safety Safeguard Role
Medical Laboratory	Accurate, timely testing; interpretation support; critical value reporting.	Specimen identification; closed-loop communication of critical results.
Radiology & Imaging	Diagnostic imaging, interpretation, contrast and radiation safety.	Communication of urgent findings; patient identification and radiation protection.
Paramedics & EMS	Pre-hospital assessment and treatment; transport; field triage.	Structured handoff to ED; early activation of stroke, trauma, and STEMI pathways.
Respiratory Therapy, Physiotherapy & Rehabilitation	Airway and ventilation support; mobility; functional recovery.	Prevention of ventilator complications, falls, and immobility harms.
Clinical Nutrition	Nutritional assessment and therapy.	Prevention of malnutrition and feeding-related complications.
Health Information Management	Accurate, complete, accessible records; coding; data quality.	Reliable information at transitions; data for safety surveillance.
Infection Prevention & Control	Surveillance, policy, education, outbreak management.	Reduction of healthcare-associated infections across all units.
Healthcare Administration	Staffing, resources, policies, performance management, culture.	Creating structures and time for collaboration; just culture; removing system barriers.

The table highlights a key message: the safety contribution of each profession is frequently realised at the interface with another profession — when the pharmacist communicates with the prescriber, the laboratory with the nurse, or the paramedic with the emergency physician. Safety lives in these interfaces, and collaboration is the discipline of managing them well.

11. Measuring Collaboration and Its Outcomes

What is not measured is rarely managed. Organisations implementing UNITE should combine validated measures of collaboration and safety culture with clinical process and outcome indicators. Table 8 presents a recommended measurement set.

Table 8. Recommended measurement set for collaboration, safety, and quality

Measure Category	Instrument / Indicator	Purpose
Collaboration	Assessment of Interprofessional Team Collaboration Scale (AITCS-II) (Orchard et al., 2018)	Assess partnership, cooperation, and coordination within teams.
Teamwork perceptions	TeamSTEPPS Teamwork Perceptions Questionnaire	Track change in teamwork skills before and after training.
Safety culture	Safety Attitudes Questionnaire (Sexton et al., 2006); AHRQ Hospital Survey on Patient Safety Culture	Benchmark teamwork climate, safety climate, and reporting culture.

Measure Category	Instrument / Indicator	Purpose
Process	Checklist compliance; handoff tool use; interdisciplinary round attendance; medication reconciliation completion; critical-result notification time	Monitor fidelity of collaborative processes.
Outcome — safety	Adverse drug events; falls; pressure injuries; healthcare-associated infections; unplanned ICU transfers; incident reports per 1,000 patient-days	Detect impact on harm (rising reporting may initially reflect better culture).
Outcome — quality	Length of stay; 30-day readmissions; patient experience scores; time to treatment	Assess effectiveness, timeliness, and patient-centredness.
Workforce	Staff engagement, burnout indicators, turnover and retention	Capture collaboration as a workforce resource.

Two cautions apply. First, incident reporting rates often increase after a successful collaboration and safety-culture initiative, because staff feel safer to report; this should be interpreted as a sign of improved transparency rather than deterioration. Second, outcomes should be analysed at the team or pathway level rather than by individual department, so that measurement reinforces shared accountability.

12. A Phased Implementation Roadmap

Organisational change in healthcare succeeds when it is staged, led, and measured. The roadmap below translates the UNITE Framework into four phases suitable for a Saudi hospital or health cluster over approximately 24 months.

Table 9. Phased implementation roadmap for the UNITE Framework

Phase	Timeframe	Key Activities	Deliverables
1. Assess & Commit	Months 0–3	Executive sponsorship; form an interprofessional steering committee; baseline safety culture and collaboration surveys; review incident data for communication-related themes.	Baseline report; priority units; charter.
2. Design & Train	Months 3–9	Select standard tools (SBAR, handoff, huddles); TeamSTEPPS master-trainer programme; interprofessional simulation; develop role clarity documents.	Trained champions in every discipline; standard operating procedures.
3. Implement & Integrate	Months 9–18	Pilot in high-risk units (ED, ICU, OR, medical wards); embed tools in EHR; start interdisciplinary rounds; leadership walk-rounds; just-culture incident review.	Pilot results; refined tools; scale-up plan.

Phase	Timeframe	Key Activities	Deliverables
4. Evaluate & Sustain	Months 18–24+	Repeat surveys; analyse process and outcome indicators; share results; integrate IPC into appraisal, orientation, and CPD; prepare for CBAHI survey.	Evaluation report; sustainability plan; recognition programme.

12.1 Critical Success Factors

- Visible, sustained support from executive and medical leadership.
- Champions from **every** discipline, not only medicine and nursing.
- Integration with existing quality and accreditation work rather than a separate project.
- Protected time for training and team meetings, recognised in workload planning.
- Rapid, visible feedback to staff about improvements resulting from their reports and suggestions.

13. Recommendations

13.1 For Policymakers and Regulators

- Embed interprofessional competencies explicitly in SCFHS training curricula, licensing examinations, and CPD requirements for all health professions.
- Strengthen CBAHI standards to include explicit, measurable requirements for interdisciplinary rounds, standardised handoffs, and team training.
- Expand national patient safety reporting and learning systems led by the Saudi Patient Safety Center, with feedback to frontline teams.
- Include team-level collaboration and safety-culture indicators in health cluster performance frameworks.

13.2 For Healthcare Organisations and Leaders

- Adopt a structured collaboration model such as UNITE and integrate it into strategic and quality plans.
- Invest in TeamSTEPPS or equivalent team training and in-situ simulation for all clinical units.
- Establish just-culture policies and visibly protect staff who raise safety concerns.
- Provide language and communication support for a multinational workforce, including orientation to local communication norms.

13.3 For Educational Institutions

- Introduce shared interprofessional modules on communication, ethics, quality, and patient safety for students of medicine, nursing, pharmacy, and allied health.
- Develop interprofessional simulation centres and joint clinical placements.
- Prepare faculty to teach and assess collaborative competencies.

13.4 For Individual Practitioners

- Learn the roles and expertise of colleagues from other professions.
- Use structured communication tools consistently, especially under pressure.
- Speak up for safety respectfully and listen openly when others do.
- Involve patients and families as active members of the care team.

14. Limitations and Directions for Future Research

This paper is a narrative synthesis rather than a systematic review, and its conclusions should be interpreted accordingly. Much of the strongest intervention evidence comes from North American and European settings, and its transferability to Saudi hospitals, with their distinct workforce composition and organisational structures, requires local validation. The UNITE Framework is proposed as a conceptual and practical model and has not yet been empirically tested.

Future research should (1) evaluate the UNITE Framework in pilot Saudi hospitals using mixed methods; (2) validate collaboration measurement instruments in Arabic and in multinational teams; (3) examine the effect of interprofessional education in Saudi health colleges on later practice behaviour; (4) study collaboration across health cluster boundaries, including primary–hospital transitions and

virtual care; and (5) estimate the economic return of collaborative interventions, building on international analyses showing that a considerable share of hospital expenditure is consumed by treating preventable harm (Slawomirski et al., 2017).

15. Conclusion

Interprofessional collaboration is not a supplementary skill or an optional courtesy among professionals; it is a core mechanism through which healthcare systems achieve safety and quality. Theory explains why: each profession forms a defensive layer against error, and collaboration keeps those layers active and aligned. Evidence confirms it: structured collaborative practices such as surgical checklists, standardised handoffs, pharmacist participation in rounds, and team training are associated with fewer errors, lower mortality, and better patient experience.

For Saudi Arabia, the moment is especially opportune. Vision 2030, the Health Sector Transformation Program, the health cluster model, and strong national regulators provide a policy architecture that both requires and supports collaboration. The remaining challenges — hierarchy, workload, uniprofessional education, and the complexity of a diverse workforce — are significant but addressable through deliberate leadership, education, and system design.

The UNITE Framework — Understand roles, Navigate communication, Integrate care pathways, Trust and shared leadership, and Evaluate outcomes — offers a practical, discipline-neutral path forward. When every professional understands the others, communicates clearly, plans care together, trusts enough to speak up, and learns from results, the team becomes greater than the sum of its members, and the patient becomes the true beneficiary.

> Safe care is team care. Investing in collaboration is investing in every patient the system serves.

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