



Enhancing Healthcare Quality Through Interdisciplinary Integration among Medical Specialties

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Abstract

Modern healthcare is increasingly delivered to patients with complex needs, multimorbidity, and heightened expectations for safety, responsiveness, and continuity. As diagnostic and therapeutic options expand, no single profession can independently manage the clinical, psychosocial, and operational demands of care. Interdisciplinary integration—deliberate collaboration among physicians, nurses, pharmacists, laboratory and imaging professionals, therapists, and administrators—has therefore become a practical requirement for high-quality services. This paper synthesizes evidence and implementation approaches linking interdisciplinary practice to improved patient safety, clinical effectiveness, patient experience, efficiency, equity, and workforce well-being. Key mechanisms include structured communication, shared mental models, role clarity, standardized routines for high-risk processes, and integrated information systems that support follow-up and accountability. Persistent barriers include hierarchical culture, fragmented documentation, time constraints, and misaligned incentives. Practical strategies are presented across interprofessional education, leadership and governance, workflow redesign, and measurement for sustainability. The review concludes that interdisciplinary integration is a core clinical



competency and an organizational capability that can be developed through intentional design, continuous learning, and supportive policy.

Keywords: interdisciplinary collaboration; integrated care; healthcare quality; patient safety; teamwork; communication; stewardship

1. Introduction

Healthcare quality is shaped by the combined performance of multiple specialties operating in environments where time pressure, uncertainty, and risk are routine. A single patient encounter may involve triage, diagnostic testing, medication management, procedures, infection prevention measures, nursing surveillance, rehabilitation planning, and coordination with community services. Each step can be technically correct in isolation and still fail overall if information is not shared, tasks are duplicated, or responsibilities are unclear. In this sense, quality is an emergent property of teamwork as much as it is a result of individual clinical competence.

Historically, health professions have been educated and organized in silos. Physicians, nurses, pharmacists, laboratory scientists, radiology teams, and allied health professionals often develop discipline-specific language and documentation patterns, and they may be measured by local performance targets that do not fully reflect system outcomes. Fragmentation can inadvertently increase harm: a medication change may be entered into an electronic record but not reconciled at discharge; a critical laboratory value may be reported but not acknowledged promptly; an imaging report may recommend follow-up that is not assigned to an accountable owner; or early signs of deterioration may be noticed at the bedside but not escalated due to communication barriers or hierarchy.

Interdisciplinary integration refers to structured collaboration in which professionals from different specialties jointly plan, execute, and evaluate care to achieve shared, patient-centered goals. Integration is more than multiple disciplines being “involved.” It requires mechanisms that support mutual understanding of roles, shared decision-making, reliable communication, and coordinated workflow. When integration is strong, teams develop shared mental models, align priorities, allocate tasks efficiently, and close the loop on follow-up responsibilities.

This paper examines how interdisciplinary integration enhances healthcare quality. It outlines conceptual foundations, summarizes evidence across key domains (safety, effectiveness, patient experience, efficiency, equity, and workforce outcomes), discusses barriers, and provides practical strategies for implementation and sustainability in hospital and broader health system settings.



2. Conceptual Foundations of Interdisciplinary Care

Quality frameworks commonly emphasize safety, effectiveness, patient-centeredness, timeliness, efficiency, and equity. Interdisciplinary integration influences each dimension by improving information flow and creating shared accountability for outcomes. A core distinction exists between multidisciplinary and interdisciplinary practice. Multidisciplinary care may involve several professionals contributing in parallel, but often without a jointly owned plan; interdisciplinary care requires deliberate collaboration, negotiation of priorities, coordinated sequencing of interventions, and shared evaluation of progress.

From a safety science perspective, healthcare is a complex adaptive system in which information is distributed across people, artifacts, and technologies. Clinicians observe different aspects of the same patient: nurses monitor continuous bedside changes, pharmacists focus on medication safety and optimization, laboratorians ensure analytical validity and interpretive context, and imaging professionals identify anatomical and functional clues. Interdisciplinary integration supports distributed cognition by enabling the team to combine these fragments into a coherent picture of the patient's evolving risk profile and care trajectory. Shared mental models reduce misunderstandings and improve anticipation, helping teams respond coherently during deterioration, transitions, and unexpected complications.

Integration also strengthens resilience, defined as the ability of a system to anticipate, monitor, respond, and learn. Teams that communicate routinely and respectfully are better able to detect weak signals of harm, adapt plans in real time, and convert near misses into learning rather than blame. At the organizational level, resilience depends on enabling conditions such as adequate staffing, protected time for communication, clear governance, and information systems that support follow-up and accountability.

Interprofessional competency frameworks emphasize practical skills that make integration reliable: structured communication, conflict management, role clarification, shared decision-making, and the ability to escalate concerns. These competencies are not optional "soft skills." They function as safety controls in high-risk environments, analogous to checklists, alarms, and clinical protocols.

3. Approach and Scope of the Review

This paper synthesizes evidence from patient safety, quality improvement, interprofessional education, and health services research. Because interdisciplinary interventions vary widely—from daily interdisciplinary rounds to pharmacist-led medication review, diagnostic stewardship programs, rapid response teams, and structured discharge planning—the review focuses on consistent mechanisms and implementation lessons rather than a single pooled effect size.



The scope includes inpatient hospital care as well as transitions across settings. Many adverse events occur at handoffs between the emergency department, wards, intensive care units, and post-acute or community care. Therefore, interdisciplinary integration is discussed as a continuum that spans admission, inpatient management, discharge, and follow-up, acknowledging that effective collaboration must extend beyond a single unit.

4. Interdisciplinary Integration and Patient Safety

Patient safety improves when teams reliably identify hazards, communicate critical information, and coordinate actions across professional boundaries. Communication failures remain a frequent contributor to adverse events and near misses. Common failure modes include incomplete handoffs, ambiguous responsibility for follow-up, delayed escalation of deterioration, and inconsistent documentation of decisions. Interdisciplinary integration addresses these vulnerabilities by making communication routine, structured, and accountable.

Structured communication tools reduce ambiguity. SBAR (Situation–Background–Assessment–Recommendation), check-backs, and closed-loop communication are particularly valuable during emergencies and time-sensitive care. Closed-loop communication requires the receiver to repeat back the message and the sender to confirm understanding. In practice, this prevents mismatched actions under stress, reduces delays in task execution, and supports shared situational awareness in rapidly evolving clinical scenarios such as sepsis, hemorrhage, airway compromise, or acute coronary syndromes.

Medication safety is a prominent area where interdisciplinary integration can yield measurable benefits. Medication errors can occur at prescribing, dispensing, administration, or monitoring. Pharmacists add value by identifying drug–drug interactions, dosing errors, duplications, contraindications, and opportunities for deprescribing, especially for high-alert medications such as anticoagulants, insulin, opioids, and chemotherapy. When pharmacists are integrated into rounds and discharge planning, medication reconciliation becomes more reliable and patient education becomes clearer and more consistent across providers.

Diagnostic safety also depends on integration. Diagnostic errors may arise from inappropriate test selection, pre-analytical issues such as specimen collection or labeling, delayed reporting, failure to acknowledge results, or misinterpretation. Laboratory and imaging professionals contribute by ensuring analytical quality and by supporting diagnostic stewardship: ordering the right test for the right patient at the right time, avoiding unnecessary testing that can create false positives and downstream harm, and ensuring that abnormal or critical findings are acknowledged and acted upon. Multidisciplinary discussions of discordant laboratory and imaging findings can prevent missed diagnoses and reduce repeated testing.



Early recognition of deterioration is another safety-critical domain. Nurses often detect subtle changes first due to continuous bedside surveillance. Rapid response teams and early warning scores work best when escalation pathways are trusted, roles are clear, and team culture supports speaking up. Psychological safety—the belief that one can raise concerns without fear of humiliation or retaliation—enables earlier escalation and reduces “failure to rescue.” It also strengthens learning, because near misses are more likely to be reported and analyzed constructively.

5. Interdisciplinary Integration and Clinical Effectiveness

Clinical effectiveness improves when care plans incorporate diverse expertise and are coordinated across time. Complex patients frequently have interacting problems—pain, infection risk, mobility limitations, nutrition deficits, delirium risk, and psychosocial stressors—that cannot be addressed optimally by a single specialty. Interdisciplinary integration increases the likelihood that these interactions are recognized and that interventions are sequenced to maximize benefit and minimize harm.

Chronic disease management illustrates the importance of coordination. Heart failure, diabetes, chronic kidney disease, COPD, and multimorbidity require careful medication optimization, monitoring plans, education, and follow-up. Integrated programs typically involve physicians, nurses, pharmacists, dietitians, respiratory therapists, and social workers. Coordination reduces contradictory advice, improves adherence, supports early detection of decompensation, and can reduce avoidable readmissions. Importantly, effectiveness also improves when teams align treatment intensity with patient goals and functional priorities rather than pursuing isolated biomedical targets.

Perioperative care provides another example of integration. Enhanced Recovery After Surgery (ERAS) pathways standardize evidence-based steps across preoperative, intraoperative, and postoperative phases, including multimodal analgesia, appropriate fluid management, early mobilization, early nutrition, and discharge readiness criteria. Integration is essential because each step requires different disciplines to act at the right time. When roles are clear and the pathway is jointly owned, variation decreases and outcomes can improve. When a step fails—such as delayed mobilization due to unclear responsibility—length of stay and complications may rise.

Infection prevention and control is inherently interdisciplinary. Effective programs integrate infection prevention specialists, nursing leadership, physicians, environmental services, microbiology laboratories, and antimicrobial stewardship teams. Timely microbiology reporting supports isolation decisions and appropriate therapy, while stewardship programs optimize antibiotic selection and duration to reduce resistance and adverse effects. Sustainable reduction of healthcare-associated infections depends on shared accountability



across the unit, because adherence to hand hygiene, device care bundles, and isolation precautions requires consistent execution by all staff.

6. Patient-Centeredness, Experience, and Equity

Patients experience quality through both technical outcomes and the coherence of communication. Confusion arises when different clinicians provide inconsistent explanations, when care plans change without clear rationale, or when discharge instructions are fragmented. Interdisciplinary rounds that include patients and families when appropriate create a shared narrative of goals, expected milestones, and discharge needs. This improves trust, supports informed consent, and reduces anxiety by making the care plan understandable and consistent.

Interdisciplinary integration also supports equity. Fragmented systems often rely on informal workarounds that can disadvantage patients with limited health literacy, language barriers, disability-related needs, or fewer social resources. Standardized discharge education with teach-back, reliable interpreter access, structured follow-up, and collaboration with social work and community partners reduce variability and improve continuity. Addressing social determinants of health—such as transportation barriers, housing instability, and food insecurity—requires interdisciplinary coordination, because these factors influence adherence, recovery, and readmission risk.

7. Efficiency, Timeliness, and System Performance

Interdisciplinary integration can improve efficiency by reducing duplication and rework. When teams coordinate diagnostic testing and treatment decisions, unnecessary investigations decrease and results are acted upon more quickly. Early discharge planning reduces delays caused by late consultations, missing equipment, or incomplete education. Integrated pathways can shorten length of stay when they reduce avoidable variation and anticipate barriers.

Efficiency gains are not automatic. Poorly designed meetings can consume time without improving care. Effective integration is time-boxed, agenda-driven, and focused on decisions and task ownership. Successful teams make the plan visible, clarify who will do what and by when, and revisit unresolved items systematically. Digital task lists and dashboards can support reliability when they fit workflow and reduce cognitive load, but poorly designed alerts and documentation requirements can create new burdens.

Timeliness improves when escalation and consultation processes are coordinated. Protocol-driven care such as sepsis management requires rapid laboratory testing, prompt antibiotic administration, and frequent reassessment. Delays may occur if roles are unclear or if communication is inconsistent. Interdisciplinary integration creates reliable routines for



activation, handoffs, and reassessment, improving outcomes and potentially reducing ICU transfers.

At the system level, integration can reduce costs by preventing complications and avoidable readmissions. However, collaboration should not be framed only as cost reduction. Sustainable integration balances efficiency with safety, patient experience, and workforce well-being to avoid disengagement and unintended consequences such as premature discharge or inadequate education.

8. Workforce Outcomes: Well-Being, Engagement, and Retention

Healthcare quality depends on workforce well-being. Burnout and moral distress can undermine attention, empathy, and willingness to speak up about safety concerns. Administrative burden and fragmented workflows increase stress by requiring repeated documentation and repeated coordination to compensate for unreliable systems. When teams are poorly integrated, clinicians may experience coordination fatigue, spending time chasing information and negotiating responsibilities rather than delivering care.

Interdisciplinary integration can protect staff by distributing cognitive load and clarifying responsibilities. When team members understand each other's roles and coordinate decisions, individuals are less likely to feel isolated or blamed for system failures. Psychological safety improves when leaders invite input, respond respectfully, and treat near misses as learning opportunities. In such environments, speaking up becomes normal, and teams correct course earlier, reducing both patient harm and moral distress.

Integration supports professional growth. Interprofessional learning exposes clinicians to different perspectives and strengthens systems thinking. Regular debriefs and multidisciplinary morbidity and mortality reviews create shared learning and reduce the sense that errors belong to one individual or profession. Improved teamwork can enhance job satisfaction and retention, which are themselves important for quality because stable teams develop trust and shared routines that support reliability.

9. Barriers and Risks to Interdisciplinary Integration

Despite strong rationale, interdisciplinary integration faces persistent barriers. Hierarchy and professional culture may silence nurses, allied health professionals, or junior clinicians, reducing the likelihood that concerns are voiced. Different disciplines may prioritize different goals, interpret risk differently, or use different terminology, leading to conflict or delayed decisions. Without deliberate cultural work, collaboration can become performative rather than meaningful.

Role ambiguity undermines reliability. If "everyone" owns medication reconciliation, follow-up of pending tests, or discharge coordination, no one may complete these tasks consistently.



Teams require explicit ownership for high-risk steps, coupled with shared visibility so others can support completion and escalation if barriers arise. Clear ownership does not eliminate collaboration; it makes collaboration actionable.

Information fragmentation hinders integration. Separate systems for laboratory results, imaging, medication ordering, and documentation create an incomplete picture. Even within a single electronic record, usability issues and unstructured notes can make key information hard to find. Overreliance on verbal messages increases risk because memory is fallible and interruptions are frequent. Reducing fragmentation requires both technical integration and documentation standards that highlight key decisions, pending tasks, and contingency plans.

Time constraints and meeting overload can make collaboration feel like an additional burden. If interdisciplinary rounds lack a clear agenda or do not produce decisions, attendance declines. Misaligned incentives and organizational silos can discourage collaboration when departments are rewarded for local throughput rather than shared patient outcomes. Sustainable integration therefore requires aligning measurement and incentives with safety, continuity, and patient experience.

10. Practical Implementation in Hospital Settings

Implementation requires translating principles into routines that fit clinical reality. Many organizations start with interdisciplinary rounds, but rounds succeed only when they generate decisions, task ownership, and follow-up. A practical design is a daily, time-boxed round led by a clinical leader with attendance from nursing, physicians, pharmacy, case management, and relevant therapists. The agenda should cover safety risks, clinical priorities, diagnostic and therapeutic plans, discharge readiness, and patient/family concerns. A visible task list—digital or physical—helps ensure that decisions become actions.

High-risk processes benefit from interdisciplinary standardization. Medication reconciliation should follow a defined workflow with cross-checks. Critical laboratory values require a standardized notification policy specifying who is notified, how acknowledgment is documented, and the expected timeframe. Imaging follow-up improves when responsibility for reviewing and acting on reports is explicit, including incidental findings requiring outpatient follow-up. Escalation pathways should specify triggers, contact hierarchy, and documentation requirements.

Integration is strengthened when teams share performance data. Unit dashboards can include outcomes (falls, infections, pressure injuries, readmissions) and process measures (hand hygiene compliance, time to antibiotics for sepsis, percentage of discharges with complete reconciliation). Data should be used for learning. Regular short reviews help teams connect metrics to system changes. Quality improvement methods such as Plan–Do–Study–Act cycles support iterative testing of workflow changes and spread of successful practices.



Digital infrastructure can amplify integration by making care plans and tasks visible. Shared care-plan modules, standardized order sets, and stewardship alerts can improve coordination when designed to reduce burden. However, technology can also create hazards if it generates excessive alerts or forces redundant documentation. Interdisciplinary design should include usability testing, frontline feedback, and ongoing refinement to ensure that digital tools support the workflow rather than compete with it.

Integration must extend beyond the hospital. Discharge is a high-risk transition. A reliable interdisciplinary discharge process includes a clear problem list, medication changes explained in plain language, follow-up appointments scheduled, pending results identified with responsibility assigned, and contact information for questions. Post-discharge calls or digital check-ins can identify early deterioration or confusion, reducing avoidable readmissions and improving patient confidence in self-management.

11. Evaluation Framework and Metrics

Sustainable integration requires measurement that links teamwork processes to patient outcomes. A practical framework assesses structure, process, and outcomes. Structure measures conditions that enable integration, such as staffing adequacy, pharmacist coverage on rounds, standardized handoff templates, and interpreter access. Process measures capture what the team does: participation in interdisciplinary rounds, completion of medication reconciliation, timely acknowledgment of critical values, and documentation of shared care plans. Outcomes include complication rates, infections, medication-related harm, readmissions, and patient experience scores.

Measurement must be interpreted carefully. Increased detection of medication discrepancies may reflect improved surveillance rather than declining performance. Teams should track trends over time using run charts and annotate changes in workflow. Qualitative data are also important: structured debriefs after critical events, staff surveys of psychological safety and teamwork climate, and patient feedback about clarity of communication. These sources help explain why metrics change and where redesign is needed.

Evaluation should support learning rather than blame. When an outcome worsens, the first question should be what changed in the system. Learning-oriented measurement encourages honest reporting and accelerates improvement. Over time, mature interdisciplinary programs create feedback loops in which frontline teams identify hazards, test solutions, and standardize improvements.

12. Case Vignettes Illustrating Integration

Vignette 1: Preventing medication-related harm. An older adult with atrial fibrillation is admitted with pneumonia and acute kidney injury. During interdisciplinary rounds, the pharmacist notes that the anticoagulant dose is too high for current renal function and that a



newly ordered antibiotic may increase bleeding risk. The physician adjusts dosing, nursing staff increase monitoring and patient education, and the team documents a clear plan for discharge medications. The integrated process prevents a potentially serious adverse drug event.

Vignette 2: Diagnostic stewardship and timely escalation. A patient presents with chest pain and shortness of breath. Initial tests are inconclusive. The laboratory identifies specimen hemolysis and advises repeat sampling, while radiology recommends an imaging protocol to evaluate pulmonary embolism. Nursing reports rising respiratory rate and decreasing oxygen saturation, prompting activation of an escalation pathway. The team coordinates repeat testing, imaging, and early treatment while maintaining shared situational awareness. The patient receives timely care and avoids deterioration.

Vignette 3: Safe discharge and continuity. A patient with heart failure improves clinically but has limited health literacy and unreliable transportation. Social work arranges transport and identifies medication assistance. Nursing conducts teach-back on daily weights and warning signs. The pharmacist provides a simplified medication list and highlights changes. A follow-up appointment is scheduled before discharge, and the team assigns responsibility for pending results. The coordinated approach reduces readmission risk and supports self-management.

13. Recommendations for Implementation and Sustainability

Organizations often ask what the “minimum viable” interdisciplinary integration looks like. A practical answer is to focus on a small number of high-risk, high-frequency processes and build reliable routines around them. First, establish a daily interdisciplinary huddle for each unit that is strictly time-boxed, with a consistent agenda and a visible task list. The huddle should identify the top safety risks for the next 24 hours, clarify the plan for high-risk patients, and assign owners for unresolved tasks. Second, standardize transitions of care. Admission, intra-hospital transfer, and discharge should each have a structured handoff template and an explicit process for medication reconciliation and follow-up of pending results. Third, prioritize diagnostic and medication stewardship. Create clear pathways for laboratory consultation when results are unexpected, and ensure pharmacists have routine access to patients at highest risk for medication harm.

Sustainability depends on embedding practices into the organizational system rather than relying on individual champions. Orientation and competency programs should include interdisciplinary teamwork skills, and simulation training should be repeated for critical events. Measurement should remain meaningful: select a small dashboard that teams can act on and review it briefly but consistently. When measures drift, use improvement cycles rather than punitive responses. Finally, integrate digital tools to support workflow: shared care



plans, automated reminders for pending results, and clear documentation standards that make key decisions easy to find. With these steps, interdisciplinary integration becomes a durable capability that improves quality even when staff rotate, units become busy, or external pressures increase.

14. Future Directions

Healthcare delivery is increasingly networked across hospital, primary care, home services, and digital platforms. Interdisciplinary integration will increasingly involve virtual teams, teleconsultations, remote monitoring, and decision support systems. These tools can expand access to expertise and reduce delays, but they also introduce risks if communication becomes fragmented across channels or if algorithms are not understood by clinicians and patients. Future research should evaluate which integration mechanisms provide the greatest benefit by setting and patient population and how digital tools can support transparency without increasing burden.

Integration should also be evaluated through an equity lens. Standardized pathways may reduce disparities by ensuring consistent follow-up and education, but digital-first systems may widen gaps if access is unequal. Policy and accreditation approaches that reward coordinated, safe, patient-centered outcomes can support organizations in sustaining interdisciplinary integration over time.

15. Conclusion

Interdisciplinary integration among medical specialties is a foundational driver of healthcare quality. By improving communication, clarifying roles, enhancing medication and diagnostic safety, and supporting coordinated decision-making, integrated teams reduce preventable harm and improve outcomes. Successful integration requires more than goodwill; it depends on leadership commitment, structured training, standardized routines, usable information systems, and measurement for continuous learning.

Organizations that treat teamwork as a clinical standard can build reliability even in busy environments. Practical steps include time-boxed interdisciplinary rounds with a clear agenda, explicit ownership of high-risk tasks, standardized communication tools, and dashboards that connect performance data to improvement work. When these steps are supported by psychological safety and shared accountability, interdisciplinary integration becomes sustainable and directly contributes to safer, more effective, and more patient-centered care.

Appendix: Interdisciplinary Integration Checklist

Unit-level interdisciplinary integration can be operationalized through a short checklist used during daily huddles and weekly reviews. The checklist includes: (1) shared goals for the day



and for discharge readiness; (2) identification of the top safety risks (falls, delirium, pressure injury, infection risk, medication risk); (3) medication reconciliation status and high-alert medication plan; (4) diagnostic follow-up plan including pending results and responsibility assignment; (5) escalation plan for deterioration including triggers and contact hierarchy; (6) patient and family communication plan, including interpreter needs and teach-back; (7) device management plan (lines, catheters) and prevention bundles; (8) documentation of decisions in a visible location; and (9) brief reflection on near misses with a learning focus. When the checklist is applied consistently, it reduces omission and supports reliability without lengthening rounds, because it emphasizes focus and task ownership rather than open-ended discussion.

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