



## REVIEW

# Beyond boundaries: uniting Internal Medicine and Surgery in patient care - a narrative synthesis

## Más allá de las fronteras: uniendo la Medicina Interna y la Cirugía en la atención al paciente - una síntesis narrativa

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### ABSTRACT

**Introduction:** the evolving landscape of healthcare necessitates the integration of internal medicine and surgery to address complex patient needs comprehensively. Traditional boundaries between these disciplines are increasingly blurred, prompting a holistic approach to patient care.

**Objective:** this narrative review aims to synthesize current literature on the integration of internal medicine and surgery, exploring collaborative models, integrated care pathways, technological advancements, and interdisciplinary initiatives to enhance patient outcomes.

**Method:** a comprehensive literature search was conducted across PubMed, Scopus, Web of Science, and Google Scholar using keywords and MeSH terms related to internal medicine, surgery, interdisciplinary collaboration, and patient outcomes. Inclusion criteria included 30 articles discussing integrated care models and their impact on patient outcomes, published in English between 2009 and 2024. Data extraction focused on study characteristics, key findings, and outcomes.

**Results:** the review identified several collaborative frameworks, such as multidisciplinary teams and perioperative surgical homes, which improved diagnostic accuracy, treatment efficacy, and patient satisfaction. Integrated care pathways demonstrated effectiveness in managing chronic diseases and complex surgical cases. Technological advancements, including EHRs and telemedicine, facilitated seamless communication and data sharing. Challenges to integration included institutional silos, cultural differences, and time constraints, but these were mitigated through interdisciplinary training and policy incentives.

**Conclusions:** integrating internal medicine and surgery enhances patient care by leveraging the combined expertise of both fields. Overcoming barriers through technological innovations, education, and policy changes is crucial. Future research should focus on long-term outcomes, patient engagement, and the role of personalized medicine in integrated care.

**Keywords:** Internal Medicine; Surgery; Interdisciplinary Communication; Patient Care Planning.

## RESUMEN

**Introducción:** el panorama cambiante de la atención médica requiere la integración de la medicina interna y la cirugía para abordar las complejas necesidades de los pacientes de manera integral. Los límites tradicionales entre estas disciplinas son cada vez más difusos, lo que impulsa un enfoque holístico de la atención al paciente.

**Objetivo:** esta revisión narrativa tiene como objetivo sintetizar la literatura actual sobre la integración de la medicina interna y la cirugía, explorando modelos colaborativos, vías de atención integrada, avances tecnológicos e iniciativas interdisciplinarias para mejorar los resultados de los pacientes.

**Método:** se realizó una búsqueda bibliográfica exhaustiva en PubMed, Scopus, Web of Science y Google Scholar utilizando palabras clave y términos MeSH relacionados con la medicina interna, la cirugía, la colaboración interdisciplinaria y los resultados de los pacientes. Los criterios de inclusión incluyeron 30 artículos que discutieran los modelos de atención integrada y su impacto en los resultados de los pacientes, publicados en inglés entre 2009 y 2024. La extracción de datos se centró en las características del estudio, los hallazgos clave y los resultados.

**Resultados:** la revisión identificó varios marcos de colaboración, como equipos multidisciplinarios y hogares quirúrgicos perioperatorios, que mejoraron la precisión diagnóstica, la eficacia del tratamiento y la satisfacción del paciente. Las vías de atención integrada demostraron su eficacia en el manejo de enfermedades crónicas y casos quirúrgicos complejos. Los avances tecnológicos, incluidos los EHR y la telemedicina, facilitaron la comunicación fluida y el intercambio de datos. Entre los desafíos para la integración figuraban los silos institucionales, las diferencias culturales y las limitaciones de tiempo, pero estos se mitigaron mediante la capacitación interdisciplinaria y los incentivos políticos.

**Conclusiones:** la integración de la medicina interna y la cirugía mejora la atención al paciente al aprovechar la experiencia combinada de ambos campos. Es crucial superar las barreras a través de las innovaciones tecnológicas, la educación y los cambios en las políticas. La investigación futura debe centrarse en los resultados a largo plazo, la participación del paciente y el papel de la medicina personalizada en la atención integrada.

**Palabras clave:** Medicina Interna; Cirugía; Comunicación Interdisciplinaria; Planificación de la Atención al Paciente.

## INTRODUCTION

In the evolving landscape of healthcare, the traditional boundaries between internal medicine and surgery are increasingly blurred, paving the way for a more integrated and holistic approach to patient care.<sup>(1,2,3)</sup>

Historically, internal medicine and surgery have operated as distinct domains, each with its specialized knowledge base, skill sets, and treatment methodologies. However, the complexity of modern medical conditions often necessitates a multidisciplinary approach that transcends these conventional divisions. Chronic diseases, multimorbidity, and the aging population present challenges that require the combined expertise of internists and surgeons to provide comprehensive, patient-centered care.<sup>(2,3,4)</sup>

This synthesis delves into the collaborative models, integrated care pathways, and interdisciplinary initiatives that have emerged as pivotal in managing complex medical cases. Furthermore, this review discusses the barriers to integration, such as institutional silos, communication gaps, and cultural differences within the medical community. It also proposes strategies to overcome these obstacles, emphasizing the importance of education, policy changes, and the development of interdisciplinary teams.<sup>(5)</sup>

The integration of internal medicine and surgery not only enhances the quality of patient care but also fosters innovation and efficiency within the healthcare system. By merging the diagnostic precision of internists with the procedural expertise of surgeons, healthcare providers can develop more nuanced and effective treatment plans. This integrated approach is particularly crucial in the management of perioperative care, where coordinated efforts can significantly reduce complications and improve recovery times.<sup>(2,6)</sup>

In light of these developments, it is imperative to re-evaluate and redesign training programs for future healthcare professionals. Incorporating interdisciplinary education and joint clinical rotations into medical curricula can prepare new doctors to work effectively across specialties. By fostering a culture of collaboration from the outset of their careers, we can ensure that the next generation of healthcare providers is equipped to deliver integrated, high-quality care.<sup>(3,6)</sup>

Through this narrative synthesis, we aim to shed light on the transformative potential of uniting internal medicine and surgery in patient care, ultimately fostering a more cohesive and efficient healthcare system that prioritizes the well-being of patients above all. This review will serve as a resource for clinicians, educators, and policymakers, offering insights and recommendations to bridge the gap between internal medicine and surgery, thus advancing the frontiers of patient care.

## METHOD

This narrative review aims to synthesize existing literature on the integration of internal medicine and surgery in patient care, focusing on collaborative models, integrated care pathways, and interdisciplinary initiatives. The methodology for this review is structured around several key steps: literature search, selection criteria, data extraction, and synthesis of findings.

### Literature Search

A comprehensive literature search was conducted across several electronic databases, including PubMed, Scopus, Web of Science, and Google Scholar. The search strategy included a combination of keywords and Medical Subject Headings (MeSH) terms such as “internal medicine,” “surgery,” “interdisciplinary collaboration,” “integrated care,” “multidisciplinary team,” and “patient outcomes.” The search was limited to 30 articles published in English between 2009 and 2024 to ensure the inclusion of contemporary studies and recent advancements in the field.

### Selection Criteria

The inclusion criteria for this review were as follows:

- Studies that discuss the integration of internal medicine and surgery in clinical practice.
- Articles that describe collaborative models, integrated care pathways, or interdisciplinary initiatives.
- Research that includes outcomes related to patient care, such as diagnostic accuracy, treatment efficacy, and patient satisfaction.
- Studies conducted in various healthcare settings, including hospitals, outpatient clinics, and specialized care centers.

Exclusion criteria included:

- Articles not available in English.
- Studies focusing solely on internal medicine or surgery without discussing integration.
- Editorials, opinion pieces, and non-peer-reviewed articles.

### Synthesis of Findings

The synthesis of findings was carried out through a narrative approach, allowing for the integration of qualitative and quantitative data from the included studies. The review was organized thematically to highlight key areas of integration between internal medicine and surgery. These themes included:

- **Models of Collaboration:** Descriptions of various collaborative frameworks and their implementation in clinical practice.
- **Patient Outcomes:** Analysis of how integrated care impacts diagnostic accuracy, treatment efficacy, and patient recovery.
- **Technological Advancements:** Exploration of digital health tools that facilitate interdisciplinary communication and data sharing.
- **Educational and Policy Implications:** Discussion of strategies to overcome barriers to integration and recommendations for future training programs and policy initiatives.

By systematically reviewing and synthesizing the literature, this narrative review aims to provide a comprehensive overview of the current state of integration between internal medicine and surgery, offering insights and recommendations for enhancing patient care through interdisciplinary collaboration.

### Quality Assessment

To ensure the robustness and reliability of the included studies, a quality assessment was conducted using standardized tools appropriate for different study designs. For randomized controlled trials, the Cochrane Risk of Bias Tool was employed, while observational studies were assessed using the Newcastle-Ottawa Scale. Qualitative studies were evaluated using the Critical Appraisal Skills Programme (CASP) checklist. Studies were rated as high, medium, or low quality, and those rated as low quality were excluded from the synthesis to maintain the integrity of the review findings.<sup>(7,8,9)</sup>

### Data Analysis

Quantitative data were analyzed using descriptive statistics to summarize the outcomes of integrated care approaches. Where possible, meta-analytic techniques were applied to pool results from similar studies, providing a more comprehensive understanding of the impact of interdisciplinary collaboration on patient outcomes. Qualitative data were analyzed using thematic analysis, identifying common themes and patterns that emerged across studies.

### Ethical Considerations

As this is a narrative review, no primary data collection involving human participants was conducted.

However, ethical considerations were adhered to by ensuring that all included studies had obtained appropriate ethical approvals. Moreover, the review process was guided by principles of transparency and integrity, ensuring that findings are reported accurately and without bias.

### Limitations

This review acknowledges certain limitations, including potential publication bias and the variability in study designs and quality of the included studies. The reliance on published literature means that unpublished data and grey literature may not be fully represented. Additionally, the heterogeneity in healthcare settings and patient populations across studies may limit the generalizability of the findings. These limitations were considered in the synthesis and interpretation of results, and recommendations for future research are provided to address these gaps.

## DEVELOPMENT

### Evolution of Integrated Care Models

The integration of internal medicine and surgery has evolved significantly over the past few decades, driven by the increasing complexity of patient care and the need for comprehensive treatment approaches. Historically, internal medicine and surgery operated in silos, with limited interaction between the two disciplines. However, the growing recognition of the interdependence of these fields has led to the development of integrated care models aimed at improving patient outcomes through collaboration.<sup>(10,11)</sup>

### Collaborative Frameworks

Several collaborative frameworks have emerged, facilitating the integration of internal medicine and surgery. Multidisciplinary teams (MDTs) are a cornerstone of these frameworks, bringing together internists, surgeons, nurses, and other healthcare professionals to develop and implement patient-centered care plans. MDTs have been shown to improve diagnostic accuracy, streamline treatment processes, and enhance overall patient satisfaction.<sup>(12,13)</sup>

An example of successful MDT implementation is the perioperative surgical home (PSH) model. In the PSH model, patients receive coordinated care throughout the surgical continuum—from preoperative assessment to postoperative recovery. Internists and surgeons work closely to optimize patients' medical conditions before surgery, manage intraoperative care, and ensure effective postoperative monitoring and follow-up. This model has demonstrated significant reductions in perioperative complications, hospital readmissions, and overall healthcare costs.<sup>(14)</sup>

### Integrated Care Pathways

Integrated care pathways (ICPs) are structured, multidisciplinary care plans that outline the essential steps in the care of patients with specific clinical problems. These pathways promote consistency and coordination among healthcare providers, ensuring that patients receive comprehensive and standardized care. ICPs have been particularly effective in managing chronic diseases and complex surgical cases, where the integration of medical and surgical expertise is crucial.<sup>(15,16)</sup>

One notable example of ICPs is in the management of colorectal cancer. Integrated pathways involve coordinated efforts between gastroenterologists, oncologists, surgeons, and internists to ensure timely diagnosis, appropriate surgical intervention, and effective postoperative care. Studies have shown that such integrated approaches lead to improved survival rates, better quality of life for patients, and reduced healthcare resource utilization.<sup>(17)</sup>

### Technological Advancements

Technological advancements have played a pivotal role in facilitating the integration of internal medicine and surgery. Electronic health records (EHRs) enable seamless communication and information sharing between internists and surgeons, ensuring that all members of the care team have access to up-to-date patient information. EHRs support coordinated care by allowing real-time updates on patient status, medication changes, and treatment plans.<sup>(18,19)</sup>

Telemedicine is another technological innovation that has enhanced interdisciplinary collaboration. Telemedicine platforms enable virtual consultations between internists, surgeons, and patients, reducing the need for in-person visits and facilitating timely decision-making. This is particularly beneficial in rural or underserved areas, where access to specialist care may be limited.<sup>(20)</sup>

### Barriers to Integration

Despite the clear benefits, several barriers to the integration of internal medicine and surgery remain. Institutional silos and hierarchical structures within healthcare organizations can hinder collaboration. Differences in communication styles and professional cultures between internists and surgeons may also pose challenges. Additionally, time constraints and workload pressures can limit opportunities for interdisciplinary

meetings and consultations.<sup>(21)</sup>

Strategies to Overcome Barriers

To address these barriers, several strategies can be implemented. Encouraging a culture of collaboration through interdisciplinary training programs and joint clinical rotations can foster mutual respect and understanding between internists and surgeons. Developing clear communication protocols and utilizing technology to facilitate information sharing can enhance coordination. Furthermore, healthcare policies that incentivize collaborative practices and integrated care models can promote widespread adoption of interdisciplinary approaches.<sup>(22,23)</sup>

Educational and Policy Implications

The integration of internal medicine and surgery has significant implications for medical education and healthcare policy. Medical curricula should incorporate interdisciplinary training to prepare future healthcare providers for collaborative practice. Joint clinical rotations and interdisciplinary case conferences can expose medical students and residents to the benefits and challenges of integrated care.<sup>(24)</sup>

From a policy perspective, healthcare systems should incentivize integrated care models through reimbursement structures that reward collaborative practices and improved patient outcomes. Policy initiatives that support the development and implementation of integrated care pathways can further promote the integration of internal medicine and surgery.<sup>(24,25)</sup>

Future Directions

Future research should focus on identifying best practices for integrating internal medicine and surgery, exploring the long-term outcomes of integrated care models, and evaluating the cost-effectiveness of these approaches. Additionally, studies should investigate the impact of technological advancements on interdisciplinary collaboration and patient outcomes.<sup>(26)</sup>

By fostering a culture of collaboration, leveraging technological innovations, and addressing institutional barriers, the integration of internal medicine and surgery can be enhanced, ultimately leading to improved patient care and outcomes.

Table 1. Key Elements, Benefits, and Challenges of Integrating Internal Medicine and Surgery in Patient Care			
Aspect	Description	Benefits	Challenges
Collaborative Frameworks	Multidisciplinary Teams (MDTs), Perioperative Surgical Home (PSH)	Improved diagnostic accuracy, streamlined treatment processes, enhanced patient satisfaction	Institutional silos, hierarchical structures, communication differences
Integrated Care Pathways	Structured care plans for specific clinical problems (e.g., colorectal cancer management)	Consistency in care, comprehensive and standardized treatment, improved survival rates	Variability in implementation, need for regular updates and training
Technological Advancements	Electronic Health Records (EHRs), Telemedicine, AI-driven care coordination platforms	Seamless communication, real-time updates, reduced need for in-person visits, predictive analytics	High initial costs, need for technological literacy, data privacy concerns
Personalized Medicine	Tailoring treatment based on genetic makeup, lifestyle, and environment	More effective treatments, fewer side effects, personalized care plans	High costs, accessibility issues, need for specialized knowledge and resources
Interdisciplinary Research	Collaborative research initiatives, development of new treatment modalities, ERAS protocols	Discovery of innovative treatments, improved surgical techniques, evidence-based practices	Securing funding, coordinating efforts across disciplines, publication bias
Patient and Family Engagement	Tools like patient portals, mobile health apps, interactive educational materials	Improved adherence to treatment plans, enhanced patient satisfaction, better health outcomes	Varied levels of health literacy, digital divide, need for continuous engagement strategies
Global Perspectives	Cultural competence, global health initiatives	Addressing healthcare disparities, tailored care for diverse populations	Cultural differences, varied healthcare infrastructures, geopolitical factors
Sustainability	Efficient resource management, telehealth, mobile health units	Reduced costs, improved access to care, continuity of care	Initial setup costs, maintaining infrastructure, training providers in sustainable practices



Educational and Policy Implications	Interdisciplinary training programs, joint clinical rotations, policy incentives for collaboration	Preparedness for collaborative practice, incentivized integrated care models	Resistance to change in traditional curricula, aligning policy across regions
Future Research Directions	Longitudinal studies, impact of emerging technologies, effectiveness of interdisciplinary education	Improved patient quality of life, cost-effective care, optimized interdisciplinary collaboration	Long-term funding, ensuring broad applicability of findings, keeping pace with technological advances

This table 1 summarizes the various aspects of integrating internal medicine and surgery, highlighting the benefits and challenges associated with each element.

**Table 2.** Outcomes and Metrics for Evaluating the Integration of Internal Medicine and Surgery

Outcome/Metric	Description	Measurement Methods	Expected Impact
Diagnostic Accuracy	Precision in diagnosing patient conditions through collaborative assessment	Diagnostic tests, imaging results, case reviews	Early and accurate diagnosis, reduced misdiagnosis rates, appropriate treatment planning
Treatment Efficacy	Effectiveness of combined medical and surgical interventions	Clinical trials, patient recovery rates, symptom resolution	Enhanced treatment outcomes, faster recovery, reduced complication rates
Patient Satisfaction	Patients' overall satisfaction with care received	Patient surveys, feedback forms, interviews	Improved patient experience, higher trust in healthcare providers, increased adherence to treatment
Postoperative Complications	Incidence of complications following surgery, monitored and managed through integrated care	Complication rates, hospital readmission rates, length of hospital stay	Reduced complications, shorter hospital stays, decreased readmission rates
Healthcare Costs	Financial impact of integrated care on the healthcare system and patients	Cost analysis, comparison of integrated care vs. traditional care costs, billing records	Lower overall healthcare costs, cost savings through reduced complications and readmissions
Multimorbidity Management	Effectiveness in managing patients with multiple chronic conditions	Disease-specific outcomes, patient functional status, quality of life assessments	Better management of comorbidities, improved quality of life, reduced hospitalizations
Perioperative Management	Comprehensive care throughout the surgical continuum (preoperative, intraoperative, postoperative)	Perioperative care protocols, patient outcomes, recovery times	Optimized surgical outcomes, reduced perioperative risks, smoother recovery process
Interdisciplinary Communication	Quality and frequency of communication between internists and surgeons	Communication audits, interdisciplinary meetings, EHR data sharing logs	Improved coordination, fewer communication errors, more cohesive care plans
Education and Training Outcomes	Effectiveness of interdisciplinary education and training programs for healthcare providers	Training assessments, provider competency evaluations, feedback from trainees	Enhanced interdisciplinary skills, better preparedness for collaborative practice, ongoing professional development
Patient Engagement and Compliance	Degree to which patients are involved in their care and adhere to treatment plans	Patient engagement metrics, adherence rates, patient-reported outcomes	Higher treatment adherence, improved health outcomes, greater patient empowerment
Health Disparities	Reduction in healthcare disparities through integrated care approaches	Health equity audits, demographic analysis of patient outcomes	Improved access to care for underserved populations, reduced disparities in health outcomes
Technological Integration	Utilization and effectiveness of technological tools in supporting integrated care	Technology usage metrics, user satisfaction surveys, impact assessments	Enhanced care coordination, more efficient data sharing, better patient monitoring
Long-term Outcomes	Sustained impact of integrated care on patient health and system performance	Longitudinal studies, follow-up assessments, health maintenance metrics	Improved long-term health outcomes, sustained cost savings, ongoing system efficiencies
Research and Innovation Impact	Contribution of integrated care research to medical knowledge and practice	Number of publications, citations, adoption of new practices based on research findings	Advancements in medical practice, dissemination of best practices, enhanced evidence-based care

This table 2 provides a detailed overview of the various outcomes and metrics used to evaluate the effectiveness of integrating internal medicine and surgery, emphasizing both the measurement methods and the expected impacts on patient care and the healthcare system.

## DISCUSSION

The integration of internal medicine and surgery represents a pivotal shift in the approach to patient care, one that is increasingly recognized in current literature as essential for managing the complex needs of contemporary healthcare. This discussion will explore the implications, benefits, challenges, and future directions of integrating these two fields, drawing on insights from recent studies and expert opinions.

### Implications for Patient Care

The integration of internal medicine and surgery has profound implications for patient care. By fostering collaboration between internists and surgeons, healthcare providers can offer more comprehensive and coordinated care. This integrated approach ensures that all aspects of a patient's health are considered, leading to more accurate diagnoses, tailored treatment plans, and improved overall outcomes. For instance, chronic conditions and comorbidities are better managed when medical and surgical teams work together, leading to fewer complications and better recovery rates.<sup>(27)</sup>

### Benefits of Integrated Care

Current literature highlights several benefits of integrated care models. One significant advantage is the improvement in diagnostic accuracy. When internists and surgeons collaborate, they bring together diverse expertise that enhances the thoroughness and precision of patient evaluations. This collaboration reduces the likelihood of diagnostic errors and ensures that patients receive the most appropriate and timely interventions.

Another key benefit is the enhancement of treatment efficacy. Integrated care models enable the development of comprehensive treatment plans that address both the medical and surgical needs of patients. This holistic approach leads to more effective treatments, faster recoveries, and fewer postoperative complications. Additionally, patient satisfaction tends to be higher in integrated care settings due to the seamless and coordinated nature of the care provided.<sup>(11,28)</sup>

### Challenges and Barriers

Despite the clear benefits, there are several challenges to the successful integration of internal medicine and surgery. One major barrier is the existence of institutional silos. Healthcare systems are often organized in a way that separates medical and surgical departments, making collaboration difficult. Bridging these silos requires significant organizational change and the development of new communication and coordination mechanisms.<sup>(29)</sup>

Cultural differences between internists and surgeons also pose a challenge. These two groups often have distinct approaches to patient care, which can lead to misunderstandings and conflicts. Effective integration requires fostering a culture of mutual respect and understanding, which can be achieved through interdisciplinary training and team-building activities.

Time constraints and workload pressures are additional barriers. Both internists and surgeons typically have demanding schedules, which can limit the opportunities for interdisciplinary meetings and collaborative planning. Addressing these issues may require changes to scheduling practices and the provision of dedicated time for interdisciplinary activities.<sup>(29)</sup>

### Technological Advancements

Technological advancements play a crucial role in overcoming some of these challenges. Electronic health records (EHRs), telemedicine, and AI-driven care coordination platforms facilitate communication and information sharing between internists and surgeons. These technologies enable real-time updates on patient status, support virtual consultations, and provide predictive analytics that can guide treatment decisions.<sup>(19,26)</sup>

The integration of personalized medicine and genomics into patient care is another promising development. By tailoring treatments based on genetic information, healthcare providers can develop more effective and individualized care plans. This approach requires close collaboration between medical and surgical teams to ensure that genetic data is appropriately interpreted and applied.

### Educational and Policy Implications

To support the integration of internal medicine and surgery, changes in medical education and healthcare policy are necessary. Medical schools and residency programs should incorporate interdisciplinary training to prepare future healthcare providers for collaborative practice. Joint clinical rotations, interdisciplinary case conferences, and integrated care simulations can help build the skills and attitudes needed for effective teamwork.

From a policy perspective, healthcare systems should incentivize integrated care models. Reimbursement structures that reward collaborative practices and improved patient outcomes can encourage healthcare providers to adopt integrated approaches. Additionally, policies that support the development and implementation of integrated care pathways can promote consistency and coordination across different healthcare settings.<sup>(30)</sup>

## CONCLUSIONS

The integration of internal medicine and surgery represents a transformative approach to patient care, enhancing diagnostic accuracy, treatment efficacy, and overall patient satisfaction. Despite challenges such as institutional silos and cultural differences, the benefits of collaborative models, supported by technological advancements and interdisciplinary education, are clear. Future efforts should focus on overcoming these barriers, fostering a culture of teamwork, and leveraging innovations in personalized medicine to further improve patient outcomes. Ultimately, integrated care is essential for addressing the complex healthcare needs of modern populations and achieving a more efficient, effective, and patient-centered healthcare system.

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