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# Interdisciplinary Collaboration in Healthcare System: Integrating Nursing, Laboratory, Pharmacy, Radiology, Emergency Services, Administration, and Health Informatics

Abdullah Mohammed Alqarni<sup>1</sup>, Turki Otaibi Muaidh Al-Zahrani<sup>2</sup>, Abdullah Ahmad Alsayed<sup>3</sup>, Khaled Awad Almaliki<sup>3</sup>, Riyadh Khazim Alamri<sup>4</sup>, Nader Mohammad N Alrafea<sup>5</sup>, Abdulsalam Saeed Alghamdi<sup>6</sup>, Saad Saleh Alabbasi<sup>7</sup>, Moaibed Khalaf Khulaif Alharbi<sup>6</sup>, Nafal Mubark Alharthi<sup>7</sup>, Mona Salem Alatawi<sup>8</sup>, Gormallah Yahya Eabdallah Alzahrani<sup>9</sup>, Mohammed Saad Alzahrani<sup>10</sup>

<sup>1</sup> Laboratory Technician, Alhada Military Armed Forces Hospital, Taif, Saudi Arabia

<sup>2</sup> Health Informatics Technician, Prince Mansour Military Hospital, Taif, Saudi Arabia

<sup>3</sup> Emergency Medical Services Specialist, King Salman Armed Forces Hospital, Tabuk, Saudi Arabia

<sup>4</sup> Emergency Medical Services Specialist, Armed Forces Hospital in the South City, Khamis Mushayt, Saudi Arabia

<sup>5</sup> Radiology Specialist, Aseer Health Cluster, Aseer, Saudi Arabia

<sup>6</sup> Pharmacy Technician, King Fahad Medical Complex, Dhahran, Saudi Arabia

<sup>7</sup> Nursing Technician, Armed Forces Center For Psychiatric Care, Taif, Saudi Arabia

<sup>8</sup> Nursing Specialist, King Salman Armed Forces Hospital, Tabuk, Saudi Arabia

<sup>9</sup> Nursing Technician, Alhada military Armed Forces Hospital, Taif, Saudi Arabia

<sup>10</sup> Health Administration Specialist, Alhada military Armed Forces Hospital, Taif, Saudi Arabia

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## Abstract

Interdisciplinary collaboration in healthcare is essential for delivering comprehensive and high-quality patient care in an increasingly complex medical landscape. This collaborative approach integrates diverse disciplines, including nursing, laboratory services, pharmacy, radiology, emergency services, administration, and informatics, to address the multifaceted needs of patients. Each discipline contributes unique expertise, facilitating a holistic view of patient care that enhances diagnosis, treatment, and overall health outcomes. Nurses serve as primary advocates and communicators, bridging gaps between patients and other healthcare professionals. Laboratory services provide critical diagnostic data, enabling timely and accurate clinical decision-making. Pharmacists play a vital role in medication management, ensuring safe and effective therapeutic regimens. Radiologists contribute essential imaging insights that guide treatment planning, while emergency services personnel are crucial for immediate patient stabilization and care. Healthcare administrators foster a collaborative environment by implementing policies that support teamwork and communication, while informatics specialists enhance data sharing and accessibility through advanced health information technologies. Despite the clear benefits of interdisciplinary collaboration, several challenges persist, including professional silos, communication barriers, and time constraints. These obstacles can hinder effective teamwork and compromise patient care. To overcome these challenges, healthcare organizations must prioritize strategies that promote a culture of collaboration, such as interdisciplinary training, regular team meetings, and the use of technology to facilitate communication. This article underscores the importance of integrating diverse healthcare disciplines to improve patient outcomes and enhance the overall efficiency of healthcare delivery. By fostering interdisciplinary collaboration, healthcare teams can develop comprehensive care plans that address the diverse needs of patients, ultimately leading to a more effective and patient-centered healthcare system. The future of healthcare relies on the ability of professionals to work together across disciplines, leveraging their collective expertise to create innovative solutions for complex health challenges.

**Keywords:** Interdisciplinary collaboration; Collaborative service; integrated health management; healthcare system;

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## Introduction

In the complex landscape of modern healthcare, the need for interdisciplinary collaboration has never been more critical. As healthcare systems evolve, the integration of various disciplines—nursing, laboratory services, pharmacy, radiology, emergency services, administration, and informatics—becomes essential for delivering high-quality patient care. This article explores the significance of interdisciplinary collaboration, the challenges faced, and the strategies for effective integration among these diverse fields [1].

The healthcare environment is characterized by rapid advancements in technology, increasing patient complexity, and a growing emphasis on patient-centered care. These factors necessitate a shift from traditional, siloed approaches to a more integrated model of care that leverages the strengths of various disciplines. Interdisciplinary collaboration not only enhances the quality of care but also fosters innovation, improves efficiency, and ultimately leads to better health outcomes for patients [2].

Interdisciplinary collaboration in healthcare refers to the cooperative efforts of professionals from different disciplines working together towards a common goal: improving patient outcomes. This collaborative approach is vital in addressing the multifaceted nature of health issues, which often require diverse expertise for effective management. The integration of various healthcare disciplines allows for a more holistic view of patient care, leading to improved diagnosis, treatment, and overall patient satisfaction [3].

The complexity of patient care necessitates a team-based approach. For instance, a patient with chronic illness may require input from nurses, pharmacists, laboratory technicians, radiologists, and emergency service personnel. Each discipline brings unique knowledge and skills, contributing to a comprehensive care plan that addresses the patient's physical, emotional, and social needs. This collaborative model not only enhances the quality of care but also promotes patient safety, reduces medical errors, and improves health outcomes [4].

Moreover, interdisciplinary collaboration fosters a culture of shared responsibility among healthcare professionals. When team members work together, they can collectively identify and address potential

issues, leading to more effective problem-solving and decision-making. This collaborative environment encourages open communication, where team members feel empowered to share their insights and expertise, ultimately benefiting patient care [5].

The integration of diverse perspectives also enhances the innovation process within healthcare. By bringing together professionals from various disciplines, healthcare teams can develop creative solutions to complex problems. This collaborative approach can lead to the development of new treatment protocols, improved care pathways, and enhanced patient education strategies, all of which contribute to better health outcomes [6].

## The Role of Nursing in Interdisciplinary Collaboration

Nurses are often at the forefront of patient care, serving as the primary point of contact for patients and their families. Their role in interdisciplinary collaboration is crucial, as they possess a deep understanding of patient needs and can effectively communicate these needs to other healthcare professionals. Nurses are trained to assess patients holistically, considering not only their physical health but also their emotional and social well-being [7].

In collaborative settings, nurses act as advocates for their patients, ensuring that their voices are heard in the decision-making process. They facilitate communication among team members, helping to bridge gaps between disciplines. For example, a nurse may identify a patient's medication-related issue and collaborate with pharmacists to resolve it, ensuring that the patient receives the most appropriate treatment [8].

Moreover, nurses play a vital role in educating patients about their conditions and treatment options. By working closely with pharmacists, nurses can provide patients with accurate information about medications, potential side effects, and adherence strategies. This collaborative effort enhances patient understanding and empowers them to take an active role in their healthcare [4].

Nurses also contribute to interdisciplinary collaboration by participating in care planning and decision-making processes. Their insights into patient preferences and experiences can inform

treatment decisions, ensuring that care plans are tailored to meet individual needs. By actively engaging in interdisciplinary discussions, nurses help to create a more patient-centered approach to care [2].

Furthermore, the role of nurses extends beyond direct patient care. They often take on leadership positions within interdisciplinary teams, guiding discussions and facilitating collaboration among team members. This leadership role is essential for fostering a culture of teamwork and ensuring that all voices are heard in the decision-making process [9].

### **The Contribution of Laboratory Services**

Laboratory services are integral to the diagnostic process, providing essential data that informs clinical decision-making. The collaboration between laboratory professionals and other healthcare providers is critical for timely and accurate diagnosis. Laboratory technicians and pathologists work closely with physicians and nurses to ensure that test results are communicated effectively and interpreted correctly [10].

In interdisciplinary teams, laboratory professionals contribute their expertise in diagnostic testing, helping to identify the most appropriate tests for specific clinical scenarios. They also play a role in quality assurance, ensuring that laboratory processes meet established standards. This collaboration is particularly important in emergency situations, where rapid access to accurate test results can be life-saving [11].

Furthermore, laboratory professionals can engage in interdisciplinary rounds, where they share insights about test results and their implications for patient care. This collaborative approach fosters a culture of shared knowledge and enhances the overall quality of care provided to patients. By participating in these rounds, laboratory professionals can provide real-time feedback on test results, allowing for timely adjustments to treatment plans and improving patient outcomes [12].

Additionally, laboratory services play a crucial role in research and development within healthcare. By collaborating with other disciplines, laboratory professionals can contribute to clinical trials and studies that advance medical knowledge and improve diagnostic techniques. This interdisciplinary research fosters innovation and can

lead to the development of new tests and treatments that benefit patients [13].

The integration of laboratory services into interdisciplinary collaboration also enhances the educational opportunities for healthcare professionals. Laboratory staff can provide training and resources to other team members, helping them understand the significance of various tests and the interpretation of results. This shared knowledge not only improves the quality of care but also promotes a culture of continuous learning within healthcare teams [14].

### **The Role of Pharmacy in Interdisciplinary Collaboration**

Pharmacists are essential members of the healthcare team, bringing specialized knowledge of medications and their effects on patients. Their role in interdisciplinary collaboration is multifaceted, encompassing medication management, patient education, and safety monitoring. Pharmacists work closely with physicians and nurses to develop and implement medication therapy plans that align with patients' needs and preferences.

In collaborative settings, pharmacists conduct medication reviews, identifying potential drug interactions, contraindications, and adherence issues. By collaborating with nurses, they can ensure that patients receive the correct medications at the right times, minimizing the risk of errors [9]. Additionally, pharmacists provide valuable education to patients about their medications, helping them understand the importance of adherence and potential side effects.

Pharmacists also play a critical role in managing complex medication regimens, particularly for patients with chronic conditions. By working alongside other healthcare professionals, they can develop comprehensive medication management plans that optimize therapeutic outcomes and enhance patient safety. This collaborative approach ensures that all aspects of a patient's medication therapy are considered, leading to more effective treatment strategies [11].

Moreover, pharmacists can contribute to interdisciplinary discussions by providing insights into the pharmacological aspects of patient care. Their expertise can guide treatment decisions, particularly in cases where medication management

is complex. By actively participating in care planning, pharmacists help to ensure that medication therapy is aligned with the overall goals of patient care [15].

The role of pharmacists extends beyond the clinical setting; they also engage in community outreach and education initiatives. By collaborating with other healthcare professionals, pharmacists can promote public health initiatives, such as vaccination campaigns and medication safety programs. This collaborative effort enhances the overall health of the community and reinforces the importance of interdisciplinary collaboration in healthcare [16].

### **The Impact of Radiology on Interdisciplinary Collaboration**

Radiology is a key component of modern healthcare, providing critical imaging services that aid in diagnosis and treatment planning. The collaboration between radiologists and other healthcare professionals is essential for ensuring that imaging studies are appropriately ordered, interpreted, and integrated into patient care.

Radiologists work closely with physicians and nurses to determine the most appropriate imaging studies for specific clinical scenarios. They provide expertise in interpreting imaging results, offering insights that guide treatment decisions. In interdisciplinary teams, radiologists can participate in case discussions, sharing their findings and collaborating with other professionals to develop comprehensive care plans [17].

Moreover, advancements in imaging technology have led to the emergence of new roles for radiologists, such as interventional radiology, which involves minimally invasive procedures that can significantly impact patient outcomes. This evolution necessitates ongoing collaboration with surgical teams, emergency services, and other specialists to ensure that patients receive timely and effective interventions. The integration of radiology into interdisciplinary care not only enhances diagnostic accuracy but also streamlines treatment pathways, ultimately benefiting patient care [14].

Radiologists also play a vital role in educating other healthcare professionals about the appropriate use of imaging studies. By providing training and resources, they can help ensure that team members understand the indications for various imaging

modalities and the implications of imaging findings. This collaborative approach enhances the overall quality of care and promotes a culture of shared knowledge within healthcare teams.

Furthermore, the collaboration between radiology and other disciplines extends to research and quality improvement initiatives. By working together, radiologists and other healthcare professionals can identify areas for improvement in imaging practices, leading to enhanced patient safety and better health outcomes [18].

### **The Role of Emergency Services in Interdisciplinary Collaboration**

Emergency services are often the first point of contact for patients experiencing acute health crises. The collaboration between emergency medical personnel and other healthcare providers is vital for ensuring that patients receive prompt and appropriate care. Emergency services professionals, including paramedics and emergency room staff, work closely with nurses, physicians, and specialists to stabilize patients and initiate treatment [19].

In interdisciplinary settings, emergency services personnel contribute valuable insights regarding the immediate needs of patients. Their expertise in triage and rapid assessment allows for effective prioritization of care, ensuring that critical cases are addressed swiftly. Furthermore, effective communication between emergency services and hospital staff is essential for seamless transitions of care, particularly when patients are transferred from emergency departments to inpatient units [8].

Collaboration with emergency services also extends to community outreach and education initiatives. By working together with other healthcare disciplines, emergency services can help promote awareness of health issues, prevention strategies, and the importance of timely medical intervention. This collaborative effort not only enhances public health but also reinforces the importance of interdisciplinary teamwork in addressing community health needs [20].

Moreover, emergency services personnel can play a crucial role in disaster preparedness and response efforts. Their collaboration with other healthcare professionals is essential for developing effective emergency response plans and ensuring that all team members are trained to handle various crisis

situations. This interdisciplinary approach enhances the overall readiness of healthcare systems to respond to emergencies, ultimately improving patient outcomes during critical incidents [21].

In addition, emergency services can contribute to the development of protocols that guide the management of specific conditions, such as cardiac arrest or trauma. By collaborating with specialists from various disciplines, emergency services can ensure that these protocols are evidence-based and reflect the latest advancements in medical practice. This collaborative effort not only improves the quality of care provided in emergency situations but also fosters a culture of continuous improvement within healthcare teams.

### **The Role of Administration in Interdisciplinary Collaboration**

Healthcare administration plays a crucial role in facilitating interdisciplinary collaboration by creating an environment that supports teamwork and communication among various disciplines. Administrators are responsible for developing policies and procedures that promote collaborative practices, ensuring that all team members have the resources and support they need to work effectively together [15].

Effective administration involves fostering a culture of collaboration, where open communication and mutual respect are prioritized. Administrators can implement training programs that emphasize the importance of interdisciplinary teamwork, helping to break down silos between departments. By encouraging collaboration, administrators can enhance the overall efficiency of healthcare delivery and improve patient outcomes.

Additionally, healthcare administrators are instrumental in managing the logistics of interdisciplinary collaboration, including scheduling meetings, coordinating care pathways, and ensuring that all team members are informed about patient care plans. Their role in facilitating communication and collaboration is essential for creating a cohesive healthcare team [22].

Moreover, administrators can leverage data and analytics to identify areas for improvement in interdisciplinary collaboration. By analyzing performance metrics and patient outcomes, they can develop targeted interventions that enhance

teamwork and communication among healthcare professionals. This data-driven approach not only improves the quality of care but also fosters a culture of accountability within healthcare organizations [6].

Healthcare administrators also play a vital role in advocating for policies that support interdisciplinary collaboration at the organizational and systemic levels. By engaging with stakeholders and policymakers, they can promote initiatives that enhance collaboration across the healthcare continuum, ultimately benefiting patients and providers alike [2].

### **The Role of Informatics in Interdisciplinary Collaboration**

Informatics is increasingly recognized as a vital component of interdisciplinary collaboration in healthcare. The integration of health information technology enables seamless communication and data sharing among healthcare professionals, enhancing the quality of care provided to patients. Informatics specialists work alongside clinicians to develop and implement electronic health record (EHR) systems that facilitate the exchange of patient information [23].

The use of informatics tools allows for real-time access to patient data, enabling healthcare providers to make informed decisions quickly. This is particularly important in interdisciplinary settings, where timely communication can significantly impact patient outcomes. For example, when laboratory results are available in real-time, nurses and physicians can collaborate more effectively to adjust treatment plans as needed.

Moreover, informatics plays a crucial role in data analysis and population health management. By leveraging data analytics, healthcare teams can identify trends, monitor outcomes, and develop targeted interventions that address the needs of specific patient populations. This collaborative approach to data-driven decision-making enhances the overall effectiveness of healthcare delivery [20].

Informatics also supports the development of clinical decision support systems (CDSS) that provide healthcare professionals with evidence-based recommendations at the point of care. By integrating these systems into interdisciplinary workflows, healthcare teams can enhance their

decision-making processes and improve patient safety.

Furthermore, informatics specialists can facilitate training and education for healthcare professionals on the effective use of technology in interdisciplinary collaboration. By providing resources and support, they can help ensure that all team members are equipped to leverage informatics tools to enhance patient care [24].

### **Challenges to Interdisciplinary Collaboration**

Despite the numerous benefits of interdisciplinary collaboration, several challenges can hinder its effectiveness. One significant barrier is the presence of professional silos, where healthcare providers may be reluctant to engage with colleagues from other disciplines. This can stem from a lack of understanding of each discipline's roles and contributions, leading to miscommunication and fragmented care [25].

Additionally, differences in professional cultures and communication styles can create misunderstandings among team members. For instance, the fast-paced environment of emergency services may contrast with the more methodical approach of laboratory services, leading to potential conflicts in priorities and decision-making.

Time constraints also pose a challenge to interdisciplinary collaboration. Healthcare professionals often face heavy workloads, making it difficult to find time for collaborative meetings and discussions. This can result in missed opportunities for communication and coordination, ultimately impacting patient care [14].

Moreover, varying levels of experience and expertise among team members can create power dynamics that hinder effective collaboration. Some professionals may dominate discussions, while others may feel marginalized or hesitant to contribute their insights. This imbalance can lead to suboptimal decision-making and a lack of shared ownership of patient care [10].

### **Strategies for Enhancing Interdisciplinary Collaboration**

To overcome the challenges associated with interdisciplinary collaboration, healthcare organizations can implement several strategies. First, fostering a culture of collaboration is essential.

This can be achieved through team-building activities, interdisciplinary training programs, and regular opportunities for team members to engage in open dialogue [17].

Establishing clear communication channels is also crucial for effective collaboration. Utilizing technology, such as secure messaging platforms and shared electronic health records, can facilitate real-time communication among team members, ensuring that everyone is informed about patient care plans and updates. Regularly scheduled interdisciplinary meetings can also provide a structured forum for discussing patient cases, sharing insights, and addressing any concerns that may arise [22].

Additionally, healthcare organizations can promote interdisciplinary rounds, where team members from various disciplines come together to discuss patient cases and share insights. This collaborative approach not only enhances communication but also fosters a sense of shared responsibility for patient outcomes. By involving all relevant disciplines in care discussions, teams can develop more comprehensive and effective care plans.

Another effective strategy is to implement mentorship programs that pair experienced professionals with those who are newer to the field. This can help bridge knowledge gaps and foster a culture of learning and collaboration. Mentorship can also empower less experienced team members to contribute their perspectives and ideas, enhancing the overall collaborative dynamic [19].

Furthermore, organizations can invest in training programs that focus on communication skills, conflict resolution, and teamwork. By equipping healthcare professionals with the tools they need to collaborate effectively, organizations can create a more cohesive and productive work environment. These training programs can also emphasize the importance of understanding and respecting the unique contributions of each discipline, fostering a culture of mutual appreciation [25].

### **Conclusion**

Interdisciplinary collaboration in healthcare is essential for delivering high-quality patient care. By integrating the expertise of nursing, laboratory services, pharmacy, radiology, emergency services, administration, and informatics, healthcare teams

can develop comprehensive care plans that address the diverse needs of patients. While challenges exist, implementing strategies to enhance collaboration can lead to improved patient outcomes, greater efficiency in healthcare delivery, and a more cohesive team environment. As the healthcare landscape continues to evolve, fostering interdisciplinary collaboration will be crucial in meeting the demands of complex patient care and ensuring that all professionals work together effectively to achieve common goals. Emphasizing the importance of communication, mutual respect, and shared decision-making will not only enhance the quality of care but also contribute to a more satisfying work environment for healthcare providers. Ultimately, the integration of diverse disciplines within healthcare teams will lead to a more holistic approach to patient care, benefiting both patients and providers alike.

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