

Interdisciplinary Collaboration in Pulmonary Medicine, Infectious Diseases, and Nursing: A Comprehensive Review of Patient Care Outcomes

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Abstract

Interdisciplinary collaboration in healthcare is essential for delivering comprehensive, patient- centered care, particularly in complex fields such as pulmonary medicine, infectious diseases, and nursing. These disciplines, while distinct in their focus, often intersect in the care of patients with respiratory conditions and infections, where effective communication and coordinated management are critical for improving patient outcomes. This review explores the role of interdisciplinary collaboration among pulmonologists, infectious disease specialists, and nursing professionals in optimizing patient care. By examining the benefits, challenges, and impact on clinical outcomes, quality of life, patient satisfaction, and cost-effectiveness, the review highlights how integrated care models improve overall health outcomes. Key benefits include enhanced diagnostic accuracy, more effective treatment strategies, improved symptom management, and reduced hospital readmissions. The review also addresses barriers to collaboration and provides recommendations for fostering a more cohesive healthcare environment. Ultimately, interdisciplinary collaboration is shown to be a critical factor in providing high-quality, holistic care, leading to better patient outcomes and a more efficient healthcare system.

Keywords: Interdisciplinary collaboration, pulmonary medicine, infectious diseases, nursing, patient care outcomes, clinical outcomes, chronic disease management, infection prevention, integrated care

Introduction

Effective healthcare delivery hinges on strong interprofessional collaboration. A collaborative approach, where nurses and other healthcare professionals work together seamlessly, is essential for providing high-quality, patient-centered care. By fostering open communication, coordination, and teamwork, healthcare teams can achieve shared goals, improve patient outcomes, and enhance the overall quality of care. Interprofessional collaboration is particularly crucial for addressing

complex healthcare challenges. When professionals from diverse backgrounds work together, they can pool their knowledge and skills to develop innovative solutions [1]. This collaborative approach can help to overcome obstacles, reduce errors, and improve patient satisfaction. Conversely, a lack of collaboration can have detrimental consequences. Poor communication, coordination failures, and a lack of teamwork can lead to patient safety risks, inefficient use of resources, and negative impacts on both individual and organizational performance.

Interdisciplinary collaboration in healthcare is essential for optimizing patient care outcomes, particularly in complex fields such as pulmonary medicine, infectious diseases, and nursing. These disciplines, while distinct in their expertise, often intersect in the management of patients with respiratory illnesses and infectious conditions, where effective communication, shared decision-making, and coordinated care are vital [2]. Pulmonary diseases, including chronic obstructive pulmonary disease (COPD), asthma, and pneumonia, often require comprehensive management involving both medical and nursing interventions. Similarly, infectious diseases such as tuberculosis, pneumonia, and emerging infections necessitate a multi-faceted approach, blending specialized knowledge from pulmonary medicine, infectious disease experts, and nursing professionals to ensure comprehensive patient care [3].

The synergy between these disciplines can lead to more accurate diagnoses, effective treatment plans, and improved patient outcomes. Interdisciplinary collaboration fosters a holistic approach to care, enabling professionals to leverage their diverse expertise to address the multifaceted needs of patients, particularly those with chronic or acute conditions requiring intensive and continuous management [4].

This review aims to explore the impact of interdisciplinary collaboration between pulmonary medicine specialists, infectious disease experts, and nursing professionals on patient care outcomes. By examining current research, identifying effective strategies for collaboration, and assessing patient outcomes in scenarios where these disciplines work in tandem, the review highlights the potential benefits of integrated care models. Additionally, it discusses the challenges and barriers that may hinder effective collaboration and offers recommendations for fostering a more cohesive, patient-centered healthcare environment. Ultimately, the goal is to understand how collaboration across these disciplines can enhance patient outcomes, improve healthcare efficiency, and contribute to better overall quality of care.

The Importance of Interprofessional Collaboration

Interprofessional collaboration (IPC) is a cornerstone of modern healthcare delivery, particularly in the management of complex conditions like those seen in pulmonary medicine, infectious diseases, and nursing. The importance of IPC lies in its ability to bridge the knowledge and skill gaps between healthcare professionals from different disciplines, ensuring that patients receive comprehensive, coordinated, and effective care [5].

The primary benefit of IPC is the improved quality of care patients receive. When professionals from diverse fields work together, they bring a broad range of expertise and perspectives, leading to more accurate diagnoses, timely interventions, and more tailored treatment plans. In pulmonary and infectious disease cases, where patients may present with overlapping symptoms and comorbidities, having a team approach ensures no aspect of care is overlooked [6]. For example, while a pulmonologist might focus on the respiratory aspects of a patient's condition, an infectious disease specialist can manage the underlying or secondary infection, and nursing staff can provide continuous monitoring and support for daily care needs.

Chronic and complex diseases often require multi-faceted treatment strategies. Pulmonary diseases like COPD, or infections like pneumonia, require medication management, physical therapy, patient education, and monitoring. Interprofessional teams bring together various specialties to develop a holistic treatment plan that encompasses all aspects of the patient's health—medical, psychological, and social. This collaboration reduces the likelihood of fragmented care, ensuring that all aspects of a patient's condition are addressed simultaneously [7].

Research consistently shows that effective IPC leads to improved patient outcomes, including higher satisfaction, reduced hospital remissions, and better management of chronic conditions. For instance, patients with respiratory infections benefit from coordinated care between pulmonologists and infectious disease specialists, while nursing staff can manage day-to-day symptoms, monitor for potential complications, and provide patient education to enhance adherence to prescribed treatments. When healthcare providers collaborate, the chances of missing critical interventions are significantly reduced [8].

IPC leads to greater efficiency in the healthcare system by reducing duplication of services and preventing medical errors. When professionals work as part of an integrated team, communication improves, resulting in fewer unnecessary tests, treatments, or hospital admissions. For example, in managing a patient with an infectious respiratory disease, coordinated care can reduce the time spent on diagnostics by sharing expertise and insights, thereby accelerating treatment and recovery [9].

Pulmonary and infectious diseases often require more than just clinical treatment—they also demand a multi-dimensional approach that addresses the physical, emotional, and social needs of patients. By fostering interprofessional collaboration, healthcare teams are better equipped to provide comprehensive care. Nurses, for instance, are often on the front lines of patient care and can provide valuable insights into patient behavior, adherence to treatment, and overall well-being, which can be critical to long-term management and recovery [10].

Interprofessional collaboration also benefits healthcare providers by enhancing their skills, knowledge, and job satisfaction. Working alongside colleagues from different disciplines promotes learning and mutual respect, broadening the scope of professional development. This collaborative environment fosters a sense of shared responsibility and team cohesion, which can

lead to improved job satisfaction, reduced burnout, and better retention rates within the healthcare workforce [11].

As healthcare systems face increasing pressure from rising patient volumes, aging populations, and emerging infectious diseases, the need for collaborative care becomes even more crucial. Interprofessional teams are better equipped to respond to complex, dynamic healthcare challenges, as each team member can contribute their unique skills and perspectives to adapt to changing patient needs and healthcare environments [12].

In conclusion, interprofessional collaboration is not only vital for improving patient outcomes but also for optimizing the efficiency and sustainability of healthcare systems. In areas like pulmonary medicine and infectious diseases, where treatment protocols are complex and patients' needs are multifaceted, IPC plays a crucial role in ensuring that the best possible care is delivered. As healthcare continues to evolve, fostering strong interprofessional partnerships will remain a key factor in providing high-quality, patient-centered care [13].

Role of Interdisciplinary Collaboration in Pulmonary Medicine, Infectious Diseases, and Nursing

Interdisciplinary collaboration in healthcare is essential for addressing the multifaceted needs of patients, especially those with complex conditions involving pulmonary medicine, infectious diseases, and nursing. Each of these disciplines brings unique expertise to the table, and when combined, they can significantly enhance patient care and treatment outcomes. [10] The role of interdisciplinary collaboration in these areas can be understood through the following key aspects:

1. Comprehensive Assessment and Diagnosis

- **Pulmonary Medicine:** Pulmonologists specialize in the diagnosis and management of respiratory diseases such as chronic obstructive pulmonary disease (COPD), asthma, pneumonia, and interstitial lung diseases. They conduct specialized tests such as pulmonary function tests, imaging, and biopsies to determine the cause and severity of pulmonary conditions.
- **Infectious Diseases:** Infectious disease specialists provide expertise in diagnosing and managing infections that affect the respiratory system, such as tuberculosis, pneumonia, and viral respiratory infections. They may also have expertise in managing hospital-acquired infections or emerging infectious diseases.
- **Nursing:** Nurses play a crucial role in patient monitoring, history-taking, and identifying early signs of deterioration. They are often the first to recognize symptoms or side effects that may be indicative of worsening conditions or complications from infections or pulmonary issues. Nurses can assist in physical assessments and help coordinate diagnostic tests [11].

When these three disciplines collaborate, they combine their knowledge and skills to ensure comprehensive patient assessment, faster and more accurate diagnoses, and timely interventions. For example, a pulmonologist and an infectious disease specialist may work together to diagnose and treat a patient with pneumonia by collaborating on microbiological tests, radiographic assessments, and the appropriate course of treatment. Nurses contribute to early detection of symptoms, such as respiratory distress, and assist in monitoring vital signs and patient comfort.

2. Integrated Treatment Plans

- **Pulmonary Medicine:** Treatment of pulmonary diseases often involves pharmacologic interventions (e.g., bronchodilators, steroids), oxygen therapy, and sometimes surgical procedures. Pulmonologists may also prescribe pulmonary rehabilitation to improve patient outcomes in chronic conditions.
- **Infectious Diseases:** In cases where infections are complicating pulmonary conditions, infectious disease specialists determine the appropriate antibiotic, antiviral, or antifungal therapy. In addition, they help manage the patient's risk of infection, prevent hospital-acquired infections, and consider resistance patterns when prescribing treatment.
- **Nursing:** Nurses are responsible for administering medications, educating patients about their conditions, and providing ongoing care. They play a critical role in ensuring that patients follow their treatment regimens, manage symptoms, and understand the importance of hygiene and preventive measures to avoid further infections. They also monitor adverse reactions and provide patient education about self-management techniques [12].

Collaboration among these disciplines ensures that patients receive a holistic treatment plan that addresses both the underlying pulmonary condition and any associated infections. Nurses help bridge the gap by providing continuity of care and ensuring the plan is followed throughout the course of treatment.

3. Patient Education and Empowerment

- **Pulmonary Medicine:** Pulmonologists are essential in educating patients about managing chronic conditions, the importance of adherence to treatment, and how to avoid exacerbations of respiratory diseases. They provide guidance on lifestyle modifications, such as smoking cessation and physical activity, that are crucial in managing pulmonary diseases [14].
- **Infectious Diseases:** Infectious disease specialists provide education regarding the prevention of infection spread, including hand hygiene, vaccination, and proper use of antibiotics. They may also discuss infection prevention in hospital settings for immunocompromised patients.

- **Nursing:** Nurses play a central role in patient education, helping to reinforce instructions from the physician and specialist, teaching techniques for managing symptoms at home, and ensuring that patients understand their medications and any necessary lifestyle changes. Nurses also provide emotional support, which is essential for patients managing chronic conditions and infections.

Interdisciplinary collaboration ensures that patient education is clear, consistent, and comprehensive. For example, a pulmonologist might recommend a pulmonary rehabilitation program, while the nurse provides hands-on training for breathing techniques and lifestyle modifications. Infectious disease specialists help explain the importance of infection control, and nursing staff ensure patients understand how to implement these practices [15].

4. Coordinated Care in Acute and Chronic Conditions

- **Pulmonary Medicine:** In acute respiratory distress or in patients with severe pulmonary disease, timely interventions are crucial. Pulmonologists often direct critical care, including ventilatory support, invasive monitoring, and interventions for life-threatening conditions.
- **Infectious Diseases:** In patients with respiratory infections or those who are immunocompromised, infectious disease specialists provide guidance on appropriate antimicrobial therapy and strategies to prevent complications, such as sepsis. They help manage co-morbidities that complicate pulmonary conditions.
- **Nursing:** Nurses provide around-the-clock monitoring and support for critically ill patients, administer medications, and provide intensive care where needed. In a hospital setting, nurses are often the ones who stabilize patients, administer life-saving treatments, and detect early signs of deterioration [3].

When these disciplines work together, especially in a critical care setting, the likelihood of better patient outcomes increases. Pulmonologists and infectious disease specialists collaborate on adjusting therapies as needed, while nurses ensure continuous monitoring and early interventions, particularly in intensive care units (ICUs) or emergency settings.

5. Improved Patient Outcomes and Satisfaction

The integration of these three disciplines in a collaborative environment often leads to better outcomes. Studies show that interdisciplinary teams lead to improved patient satisfaction, reduced length of hospital stays, fewer medical errors, and lower healthcare costs. This is because each member of the team brings a specialized skill set that, when combined, can address a wide range of patient needs more effectively [6].

Nurses, in particular, are the key players in implementing the care plan, advocating for patients, and ensuring that there is clear communication among all team members. Their close interaction

with patients often provides insights that can influence treatment decisions, particularly regarding patient preferences and quality of life.

6. Addressing Barriers to Collaboration

Despite the clear benefits, there are challenges to effective interdisciplinary collaboration, such as differences in communication styles, professional hierarchies, and the time constraints faced by healthcare providers. Overcoming these barriers requires structured team meetings, mutual respect, and shared decision-making. Training in collaborative care and fostering a team-oriented culture can significantly enhance the effectiveness of interdisciplinary collaboration.

We noticed that the role of interdisciplinary collaboration in pulmonary medicine, infectious diseases, and nursing is crucial for delivering high-quality, patient-centered care. By combining the expertise of pulmonologists, infectious disease specialists, and nurses, healthcare teams can ensure comprehensive, coordinated care that addresses both the physical and emotional needs of patients. This collaboration not only improves patient outcomes but also enhances efficiency, reduces costs, and promotes a more satisfying and fulfilling healthcare experience for both patients and providers [4].

Patient Care Outcomes in Interdisciplinary Collaboration

Patient care outcomes refer to the measurable impacts of healthcare interventions on a patient's health status, quality of life, and overall well-being. In the context of interdisciplinary collaboration in pulmonary medicine, infectious diseases, and nursing, patient care outcomes are influenced by the integrated efforts of healthcare professionals from these diverse disciplines. These outcomes encompass clinical, psychological, and social aspects of health and well-being and can be measured through various indicators, such as mortality rates, recovery time, quality of life, symptom management, patient satisfaction, and hospital readmission rates [16]. Patient Care Outcomes in Interdisciplinary Collaboration are:

1. Clinical Outcomes

- **Improved Diagnosis and Early Intervention:** One of the primary benefits of interdisciplinary collaboration is the improved accuracy of diagnosis. Pulmonary medicine specialists, infectious disease experts, and nursing staff work together to evaluate a patient's condition from multiple perspectives, leading to more comprehensive diagnostic assessments. This can result in earlier detection of conditions, such as respiratory infections, pneumonia, or complications from chronic pulmonary diseases like COPD. Early diagnosis leads to timely treatment and better clinical outcomes, such as reduced mortality rates and complications.
- **Optimized Treatment Plans:** In the management of complex diseases, such as pulmonary infections or multi-organ conditions, coordinated treatment strategies ensure that all aspects of the patient's health are addressed. For example, a combined treatment approach

involving antibiotic therapy from infectious disease specialists and respiratory support from pulmonologists, along with continuous monitoring and patient education from nursing staff, ensures that no aspect of care is neglected. This integrated approach leads to more effective management, shorter hospital stays, and improved recovery times.

- **Reduced Hospital Readmission Rates:** One of the significant outcomes of effective interdisciplinary collaboration is the reduction in readmission rates. By addressing the patient's needs holistically, interdisciplinary teams can improve disease management, reduce complications, and ensure that patients are better prepared to manage their condition after discharge. For example, patients with chronic pulmonary conditions who receive coordinated care, including medication management, physical therapy, and proper education on self-care, are less likely to experience exacerbations that lead to readmission.

2. Quality of Life and Symptom Management

- **Pain and Symptom Control:** Patients with pulmonary diseases, such as asthma or COPD, often experience chronic symptoms like shortness of breath, fatigue, and coughing. Similarly, those with infectious diseases like pneumonia may experience pain and discomfort during recovery. Through effective interdisciplinary collaboration, the team can focus on holistic symptom management, including pharmacological treatments, respiratory therapy, and non-pharmacological interventions (e.g., breathing exercises, physical rehabilitation, and pain management strategies). Nurses play a crucial role in providing symptom relief and enhancing comfort, while pulmonologists and infectious disease specialists manage the underlying causes of these symptoms [4].
- **Psychosocial Support:** Chronic respiratory illnesses and infections can significantly impact a patient's mental and emotional well-being. The interdisciplinary team, including nurses, plays an essential role in addressing the psychosocial aspects of care, providing emotional support, and helping patients cope with the psychological stress of their condition. Collaborating on creating a supportive environment can help reduce anxiety, depression, and stress, improving the overall quality of life for patients.
- **Patient Education and Self-Management:** Educating patients about their disease, treatment options, and self-management techniques is crucial for improving long-term outcomes. Interdisciplinary collaboration ensures that patients receive consistent and comprehensive information from multiple healthcare professionals. Pulmonologists and infectious disease specialists provide medical explanations, while nurses reinforce these messages and provide practical guidance on how patients can manage their health at home. This empowerment leads to better adherence to treatment plans, improved symptom control, and greater satisfaction with care [13].

3. Patient Satisfaction

- **Holistic and Coordinated Care:** Patients often report higher satisfaction when they feel their care is coordinated and holistic. Interdisciplinary collaboration fosters a patient-centered approach that prioritizes the needs and preferences of the patient. By involving specialists from different fields, patients benefit from a well-rounded care experience, which can lead to greater satisfaction. Additionally, when patients are engaged in their care process and understand their treatment plans, they are more likely to be satisfied with their healthcare experience.
- **Effective Communication and Trust:** One of the key components of interdisciplinary collaboration is open communication between healthcare providers, which fosters a more transparent relationship with patients. When healthcare providers collaborate effectively, it enhances the trust patients have in their care team, knowing that each member is working together to provide the best possible outcomes. Nurses often act as the communication bridge, ensuring that patients understand their treatment and have their concerns addressed in a timely manner [5].

4. Cost-Effectiveness and Efficiency

- **Reduction in Healthcare Costs:** Improved patient care outcomes through interdisciplinary collaboration also lead to cost savings. By reducing complications, preventing readmissions, and shortening hospital stays, interdisciplinary teams contribute to more efficient resource use. Additionally, a well-coordinated care plan reduces the likelihood of unnecessary tests and procedures, leading to more cost-effective treatment. Collaborative care models can optimize the use of healthcare resources while improving clinical outcomes.
- **Efficient Use of Time and Resources:** The integration of pulmonologists, infectious disease specialists, and nurses into a coordinated team allows for more efficient use of time and resources. Instead of overlapping or conflicting treatments, patients receive a streamlined care plan that maximizes effectiveness and minimizes redundancy. This leads to shorter hospitalization times, fewer delays in treatment, and a more streamlined discharge process [9].

5. Long-Term Health Management and Prevention

- **Chronic Disease Management:** For patients with chronic pulmonary conditions like asthma or COPD, effective management is crucial for preventing flare-ups and complications. Interdisciplinary collaboration ensures that patients receive the most up-to-date treatments and preventive care, such as vaccination for infections or pulmonary rehabilitation for those with chronic lung disease. The team approach provides comprehensive follow-up care, lifestyle recommendations, and support to help patients manage their condition effectively over the long term.

- **Infection Prevention:** In infectious disease management, especially for patients with compromised immune systems or hospital-acquired infections, effective prevention strategies are crucial for improving patient outcomes. Interdisciplinary teams work together to implement infection control practices, including antimicrobial stewardship, isolation protocols, and vaccinations. By preventing infections early, the team can reduce complications, improve recovery, and enhance long-term health outcomes [16].

Conclusion

Interdisciplinary collaboration in pulmonary medicine, infectious diseases, and nursing is crucial for improving patient care outcomes. Through enhanced communication, comprehensive treatment planning, and coordinated care, healthcare teams can provide more accurate diagnoses, effective treatments, and better symptom management, ultimately leading to improved clinical outcomes, quality of life, and patient satisfaction. Furthermore, this collaborative approach promotes more efficient use of resources, reduces healthcare costs, and supports long-term disease management and prevention. The integration of expertise from multiple disciplines not only enhances the quality of care but also ensures a patient-centered, holistic approach that addresses all aspects of a patient's health.

In conclusion, interdisciplinary collaboration in pulmonary medicine, infectious diseases, and nursing is pivotal in achieving optimal patient care outcomes. By integrating the expertise of pulmonologists, infectious disease specialists, and nursing professionals, healthcare teams are able to offer more accurate diagnoses, timely interventions, and comprehensive treatment plans. This approach not only improves clinical outcomes but also enhances patient satisfaction, reduces healthcare costs, and promotes efficient use of resources. Effective collaboration allows for a holistic approach to patient care, addressing both the medical and psychosocial aspects of health. While there are challenges in fostering interdisciplinary teamwork, such as differences in communication styles or professional hierarchies, the benefits of integrated care far outweigh these barriers. As healthcare becomes increasingly complex, continuing to build and strengthen interdisciplinary collaboration will be essential for improving the quality of care and ensuring better health outcomes for patients. This review emphasizes that collaboration among diverse healthcare professionals is not merely beneficial but necessary for advancing patient care in a rapidly evolving healthcare landscape.

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