

# Enhancing Diagnostic Accuracy: The Role of Interprofessional Collaboration Between Laboratory Specialists and Clinicians in Improving Patient Outcomes

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## Abstract

This qualitative study explores the role of interprofessional collaboration between laboratory specialists and clinicians in improving diagnostic accuracy and patient outcomes in a tertiary hospital setting. In-depth interviews with 20 participants, including laboratory specialists and clinicians, revealed four key themes: communication and information sharing, challenges to collaboration, impact on diagnostic accuracy, and improving patient outcomes through teamwork. While effective collaboration enhances diagnostic accuracy and patient care, barriers such as time constraints and professional silos hinder optimal communication. The findings highlight the need for improved communication channels, cross-disciplinary training, and institutional support to foster collaboration and improve healthcare outcomes.

**Keywords:** Interprofessional Collaboration, Diagnostic Accuracy, Laboratory Specialists, Clinicians, Patient Outcomes, Healthcare Teamwork

## Introduction

Accurate diagnostic results are fundamental to effective patient care, as they form the basis for clinical decision-making and treatment planning. The precision of diagnostic tests not only affects the immediate course of treatment but can also have long-term consequences for patient outcomes. Laboratory specialists and clinicians play vital, interconnected roles in the diagnostic process, with laboratory professionals ensuring the accuracy and reliability of test results, and clinicians interpreting these results to guide patient care (Wain et al., 2012). However, despite their complementary roles, the importance of collaboration between these two groups is often overlooked, which can lead to inefficiencies, communication breakdowns, and diagnostic errors.

Interprofessional collaboration is increasingly recognized as a critical component of quality healthcare. In environments where laboratory specialists and clinicians work closely together, information sharing and joint decision-making can significantly improve diagnostic accuracy and patient outcomes (Graber et al., 2017). Effective collaboration ensures that clinicians receive timely, accurate diagnostic information, while laboratory specialists benefit from clinical context, helping them better understand the implications of their findings. This reciprocal exchange of knowledge helps bridge the gap between test results and clinical application, leading to more accurate diagnoses and improved patient care (Rambiritch, 2016).

Despite the potential benefits, several barriers hinder effective collaboration between laboratory specialists and clinicians. These include communication gaps, siloed work environments, and a lack of shared understanding of each other's roles (Skodvin et al., 2017). Addressing these barriers and fostering stronger collaboration has the potential to improve diagnostic processes, reduce errors, and ultimately enhance patient outcomes.

The purpose of this study is to explore the role of interprofessional collaboration between laboratory specialists and clinicians in improving diagnostic outcomes. Specifically, this research aims to investigate how collaboration impacts diagnostic accuracy, identify the challenges and facilitators of collaboration, and assess the broader implications for patient care.

### Research Questions

1. How does interprofessional collaboration between laboratory specialists and clinicians influence diagnostic accuracy?
2. What are the key challenges and facilitators of collaboration between these professionals?
3. How does enhanced collaboration impact overall patient outcomes?

### Literature Review

Interprofessional collaboration between healthcare professionals has become increasingly recognized as a critical factor in improving patient outcomes, especially in the context of diagnostic processes. This literature review explores the existing research on the impact of collaboration between laboratory specialists and clinicians, the barriers that hinder such collaboration, and the benefits that effective communication and teamwork can bring to patient care and diagnostic accuracy.

#### 1. Importance of Diagnostic Accuracy in Patient Care

Accurate diagnosis is fundamental to effective treatment planning and overall patient management. Errors in the diagnostic process can have serious consequences, ranging from delayed treatment to inappropriate or harmful interventions (Rambiritch, 2016). Diagnostic accuracy relies heavily on the seamless interaction between laboratory data and clinical decision-making. Laboratory specialists ensure the precision and reliability of diagnostic tests, while clinicians rely on these results to make informed decisions about patient care. However, when communication between these professionals is inadequate, the risk of misinterpretation and diagnostic errors increases significantly (Wain et al., 2012).

Research has shown that improved collaboration between laboratory teams and clinicians can enhance diagnostic accuracy by facilitating the timely exchange of information, improving the understanding of test results, and integrating clinical context into laboratory processes (Skodvin et al., 2017). By sharing their expertise, laboratory specialists can help clinicians interpret complex or ambiguous results, ensuring that diagnoses are made based on a comprehensive understanding of the patient's condition.

#### 2. Interprofessional Collaboration in Healthcare

Interprofessional collaboration is a well-documented practice in healthcare that involves professionals from different disciplines working together to provide comprehensive care (Graber et al., 2017). Collaboration between laboratory specialists and clinicians is particularly crucial in the diagnostic process, where the quality of laboratory tests directly impacts clinical decisions. Studies have shown that fostering teamwork and communication across professional boundaries leads to better health outcomes, reduced medical errors, and improved patient satisfaction (Graber et al., 2017; Skodvin et al., 2017).

The World Health Organization (WHO) emphasizes the importance of interprofessional collaboration, noting that it fosters a shared responsibility for patient care, optimizes the use of healthcare resources, and enhances patient safety (WHO, 2010). Collaboration allows laboratory specialists and clinicians to combine their knowledge, skills, and perspectives to address complex diagnostic challenges. It also helps break down professional silos that often limit effective communication and mutual understanding between different healthcare providers.

### 3. Barriers to Collaboration Between Laboratory Specialists and Clinicians

Despite the acknowledged importance of interprofessional collaboration, several barriers prevent laboratory specialists and clinicians from working together effectively. One major barrier is the lack of direct communication between the two groups. Many laboratory specialists and clinicians work in separate departments, often with minimal face-to-face interaction, which can lead to delays in exchanging critical information (Rambiritch, 2016). Furthermore, the complexity of diagnostic tests and the specialized knowledge required to interpret them can create a disconnect, with clinicians lacking a full understanding of laboratory processes and laboratory specialists not always having access to clinical context (Skodvin et al., 2017).

Another common barrier is the hierarchical structure of many healthcare settings. In some cases, laboratory professionals may feel their input is undervalued compared to that of clinicians, leading to reduced engagement and less effective collaboration (Wain et al., 2012). Time constraints and high workloads also contribute to the difficulties in fostering collaboration. Busy clinicians may not have the time to consult with laboratory teams, while laboratory specialists are often under pressure to deliver test results quickly, leaving little room for in-depth discussions with clinicians (Graber et al., 2017).

### 4. Benefits of Collaboration for Diagnostic Outcomes

Despite these challenges, research consistently shows that improving collaboration between laboratory specialists and clinicians leads to better diagnostic outcomes. Effective collaboration helps bridge the gap between test results and clinical interpretation, ensuring that clinicians have a clearer understanding of the laboratory data and that laboratory specialists have insight into the clinical context (Wain et al., 2012). This mutual exchange of information can reduce diagnostic errors, improve the accuracy of test interpretations, and speed up the diagnostic process (Skodvin et al., 2017).

Collaboration is particularly valuable in complex cases where standard diagnostic tests may yield ambiguous or inconclusive results. In such instances, laboratory specialists can work directly with clinicians to determine the most appropriate follow-up tests or to interpret results that may otherwise be unclear (Rambiritch, 2016). Furthermore, collaborative practices, such as regular meetings or case discussions between laboratory teams and clinical staff, have been shown to enhance diagnostic accuracy and improve overall patient care (Graber et al., 2017).

### 5. Improving Collaboration in Healthcare Settings

Given the benefits of interprofessional collaboration, several strategies have been proposed to improve the working relationship between laboratory specialists and clinicians. Structured communication protocols, such as regular interdisciplinary meetings or case reviews, can foster better information sharing and ensure that laboratory results are interpreted within the appropriate clinical context (Graber et al., 2017). Healthcare institutions can also invest in cross-disciplinary training programs that educate both laboratory specialists and clinicians about each other's roles, enhancing mutual understanding and respect (Wain et al., 2012).

Technology can also play a role in facilitating collaboration. Integrated health information systems that allow laboratory and clinical teams to access the same patient data in real-time can improve the speed and accuracy of diagnoses (Skodvin et al., 2017). By breaking down communication barriers, these systems ensure that all relevant stakeholders have access to up-to-date information, reducing the risk of misinterpretation or delayed decision-making.

The literature indicates that interprofessional collaboration between laboratory specialists and clinicians plays a critical role in improving diagnostic accuracy and patient outcomes. Despite barriers such as communication gaps, siloed work environments, and time constraints, the benefits of collaboration are clear. Improved communication, shared decision-making, and a better understanding of each other's roles can significantly enhance the diagnostic process, leading to more accurate diagnoses and better care for patients. To foster effective collaboration, healthcare institutions must prioritize communication protocols, invest in cross-disciplinary training, and leverage technology to bridge the gap between laboratory and clinical teams.

### **Methodology**

This study employed a qualitative research design to explore the role of interprofessional collaboration between laboratory specialists and clinicians in improving diagnostic outcomes in a tertiary hospital setting. A phenomenological approach was used to capture the lived experiences of both groups in working together to enhance diagnostic accuracy and patient care. This approach allowed for a deep exploration of participants' perceptions, challenges, and the impact of collaboration on diagnostic processes.

### **Research Design**

The qualitative, phenomenological design was chosen to investigate the experiences and interactions between laboratory specialists and clinicians. This method enabled the collection of rich, descriptive data about how these professionals collaborate and how their teamwork influences diagnostic outcomes (Creswell & Poth, 2017). The study focused on capturing their perceptions of communication, the barriers they face, and the outcomes of effective collaboration in a real-world clinical setting.

### **Participants**

The study was conducted at a large tertiary hospital with housing departments such as internal medicine, oncology, cardiology, and emergency care, which rely heavily on laboratory services for diagnostic purposes. A purposive sampling technique was used to select participants, ensuring that both laboratory specialists and clinicians involved in diagnostic processes were represented. A total of 20 participants were included in the study: 10 laboratory specialists and 10 clinicians (including physicians and nurses), each with at least five years of experience in their respective roles.

Participants were selected based on their involvement in collaborative diagnostic activities and their roles in clinical decision-making that relied on laboratory results. This inclusion criterion ensured that the participants had direct experience working with both laboratory data and clinical care.

### **Data Collection**

Data were collected through semi-structured, in-depth interviews conducted in a private meeting room at the hospital to ensure confidentiality and minimize disruptions. The interviews lasted between 45 and 60 minutes and were audio-recorded with participants' consent. The interview guide included open-ended

questions designed to explore the dynamics of collaboration between laboratory specialists and clinicians, such as:

- "Can you describe how you communicate with your colleagues from the laboratory or clinical team during the diagnostic process?"
- "What challenges do you face when collaborating with laboratory specialists or clinicians?"
- "How does collaboration with your counterparts affect diagnostic accuracy and patient care?"

The semi-structured format allowed flexibility for participants to elaborate on their experiences and provide detailed insights into the collaborative process. Field notes were also taken to capture non-verbal cues and other contextual details that could enrich the analysis.

### Data Analysis

Thematic analysis was used to analyze the data collected from the interviews, following Braun and Clarke's (2006) six-step process. This method was chosen to identify recurring patterns and themes related to interprofessional collaboration and its impact on diagnostic outcomes.

1. Familiarization with the data: The researcher transcribed the interviews verbatim and reviewed the transcripts multiple times to become immersed in the data.
2. Generating initial codes: Using a manual coding process, the transcripts were systematically coded to identify key concepts and experiences related to communication, teamwork, and the diagnostic process.
3. Searching for themes: The initial codes were grouped into broader themes that reflected the participants' experiences with interprofessional collaboration.
4. Reviewing themes: Themes were refined and reviewed to ensure they accurately represented the data and addressed the research questions.
5. Defining and naming themes: Clear definitions were assigned to each theme, and illustrative quotes from participants were selected to support the analysis.
6. Writing the report: The final themes were incorporated into the findings section, providing a detailed analysis of the participants' experiences and the role of collaboration in improving diagnostic outcomes.

### Ethical Considerations

Ethical approval for the study was obtained from the ethics committee before data collection began. All participants provided informed consent and were assured of their right to withdraw from the study at any time without consequences. Confidentiality was maintained by assigning pseudonyms to participants and anonymizing all interview data. Audio recordings and transcripts were stored securely in password-protected files, accessible only to the research team. Data will be retained for five years before being securely deleted in accordance with institutional guidelines.

### Trustworthiness of the Study

Several strategies were employed to ensure the trustworthiness of the study. Credibility was achieved through member checking, in which participants were given the opportunity to review their interview transcripts to ensure their views were accurately captured. Transferability was addressed by providing rich descriptions of the research setting and participants, allowing readers to assess the applicability of the findings to other contexts. Dependability was ensured by maintaining an audit trail that documented all stages of the research process, including data collection, coding, and thematic analysis. Confirmability was supported by triangulation, where the findings from interviews were cross-checked with field notes and any discrepancies were discussed among the research team.

## Limitations

This study has several limitations. First, the research was conducted in a single tertiary hospital, which may limit the generalizability of the findings to other healthcare settings. Second, the reliance on self-reported data may introduce bias, as participants could overstate or understate their experiences with collaboration. Future research could address these limitations by conducting studies in multiple hospitals and incorporating observational methods alongside interviews to provide a more comprehensive understanding of collaboration dynamics.

## Findings

The analysis of the interviews revealed four key themes that illustrate the role of interprofessional collaboration between laboratory specialists and clinicians in improving diagnostic outcomes: Communication and Information Sharing, Challenges to Collaboration, Impact on Diagnostic Accuracy, and Improving Patient Outcomes through Teamwork. Each theme is further broken down into sub-themes, reflecting the participants' experiences in working together to enhance patient care.

### Theme 1: Communication and Information Sharing

Effective communication emerged as a critical element in the collaboration between laboratory specialists and clinicians. Participants consistently highlighted the importance of timely and accurate information sharing to ensure diagnostic accuracy.

#### Sub-theme 1.1: Direct Communication Channels

Many participants noted that direct communication channels, such as face-to-face meetings or phone calls, were essential for clarifying test results and clinical interpretations.

- "When I have a question about a test result, I make it a point to call the lab directly. It helps me get clarification quickly and prevents any misinterpretation." (Participant 3, Clinician)
- "We have regular meetings with clinicians from the oncology department, which helps us better understand the clinical context of the tests we run. It's been really effective in ensuring we're all on the same page." (Participant 9, Laboratory Specialist)

#### Sub-theme 1.2: Use of Electronic Health Records (EHR)

Several participants mentioned that EHR systems facilitated communication by providing a shared platform for accessing patient data and test results, though they also noted limitations.

- "The EHR is helpful because it allows us to view the results and add clinical notes, but sometimes the lack of direct interaction can make it hard to fully understand the context of the results." (Participant 6, Clinician)
- "While the EHR improves access to results, I still find that we need to have discussions with clinicians to clarify certain findings, especially with complex cases." (Participant 2, Laboratory Specialist)

### Theme 2: Challenges to Collaboration

Despite recognizing the importance of collaboration, participants identified several barriers that hinder effective teamwork between laboratory specialists and clinicians.

#### Sub-theme 2.1: Time Constraints

Time pressures on both laboratory specialists and clinicians were frequently mentioned as a significant barrier to effective collaboration.

- "We're always pressed for time, and it's hard to set aside time to communicate with the lab. We need faster turnaround times, but we also need more time to discuss results in detail." (Participant 4, Clinician)

- “The workload in the lab is intense, and sometimes there’s just no time to sit down and discuss results with the clinicians, even though we know it’s important.” (Participant 10, Laboratory Specialist)

#### Sub-theme 2.2: Professional Silos

Participants highlighted that the separation of clinical and laboratory teams into distinct departments sometimes created a disconnect, limiting collaboration.

- “The lab and clinical teams don’t interact enough because we’re often working in silos. We don’t get the chance to exchange ideas as frequently as we should.” (Participant 7, Clinician)

- “There’s a sense of isolation sometimes. We generate the data, but without input from the clinical side, it’s harder to interpret complex cases.” (Participant 5, Laboratory Specialist)

#### Theme 3: Impact on Diagnostic Accuracy

Participants overwhelmingly agreed that interprofessional collaboration had a direct impact on improving diagnostic accuracy. Effective teamwork between laboratory specialists and clinicians was seen as critical to reducing diagnostic errors.

##### Sub-theme 3.1: Clarifying Ambiguous Results

Collaboration allowed for better interpretation of ambiguous or complex test results, leading to more accurate diagnoses.

- “When we work closely with the lab, we can go over test results in detail. This helps us clarify any ambiguity, especially when the results don’t fit the clinical picture.” (Participant 1, Clinician)

- “I’ve had instances where a clinician pointed out something that wasn’t immediately obvious to us in the lab. Their input is crucial for ensuring we don’t miss anything important.” (Participant 8, Laboratory Specialist)

##### Sub-theme 3.2: Reducing Diagnostic Errors

Participants highlighted that collaboration helped prevent diagnostic errors by ensuring that test results were accurately interpreted and acted upon.

- “There have been times when an error in a test result was caught because we had a discussion with the lab. Without that communication, the error might have gone unnoticed.” (Participant 6, Clinician)

- “We’ve been able to prevent errors, especially in critical cases, by having direct discussions with the clinical team. Collaboration definitely improves accuracy.” (Participant 12, Laboratory Specialist)

#### Theme 4: Improving Patient Outcomes through Teamwork

Collaboration between laboratory specialists and clinicians was seen as essential for improving overall patient care. Participants emphasized that when both teams worked together effectively, it led to better clinical decisions and improved patient outcomes.

##### Sub-theme 4.1: Faster Diagnosis and Treatment

Participants noted that strong communication between the lab and clinical teams led to faster diagnoses, which in turn allowed for quicker initiation of treatment.

- “When the lab and clinical teams are in sync, it speeds up the diagnostic process, and we can start treatment sooner. That’s crucial for patients in critical conditions.” (Participant 11, Clinician)

- “Having open lines of communication with clinicians helps us prioritize tests based on urgency, which ultimately leads to faster diagnosis and better patient outcomes.” (Participant 9, Laboratory Specialist)

#### Sub-theme 4.2: Comprehensive Patient Care

Participants stressed that collaboration allowed for a more holistic approach to patient care, as laboratory data were better integrated into clinical decisions.

- “Collaboration ensures that we’re looking at the patient’s condition from all angles. The lab results are a big part of the picture, but working together helps us make more informed decisions.” (Participant 3, Clinician)

- “I think the key to good patient care is having the lab and clinical teams working as a unit. We can’t do it alone; we need their input to provide the best care possible.” (Participant 2, Laboratory Specialist)

### Discussion

This study explored the impact of interprofessional collaboration between laboratory specialists and clinicians on diagnostic accuracy and patient outcomes in a tertiary hospital. The findings revealed that while effective communication and teamwork enhance diagnostic processes and patient care, there are significant challenges that need to be addressed, such as time constraints and professional silos. Four major themes emerged from the analysis: Communication and Information Sharing, Challenges to Collaboration, Impact on Diagnostic Accuracy, and Improving Patient Outcomes through Teamwork. These themes provide valuable insights into how collaborative efforts between laboratory and clinical teams can optimize the diagnostic process and ultimately improve patient care.

#### Communication and Information Sharing

Effective communication was consistently identified as a key factor in successful collaboration between laboratory specialists and clinicians. Direct communication channels, such as face-to-face meetings or phone calls, were seen as essential for clarifying test results and integrating laboratory data into clinical decision-making. This finding is supported by previous studies, which emphasize that timely and direct communication improves the interpretation of diagnostic data and reduces the likelihood of misinterpretation (Graber et al., 2017).

However, while the use of electronic health records (EHR) was recognized as a valuable tool for sharing information, participants noted that EHRs alone were insufficient for complex cases. This aligns with previous research indicating that while technology facilitates the transfer of data, it cannot replace the depth of understanding that comes from direct, interdisciplinary communication (Skodvin et al., 2017). These findings suggest that healthcare institutions should encourage more direct interaction between laboratory and clinical teams, especially for cases that require detailed interpretation.

#### Challenges to Collaboration

The study identified significant barriers to collaboration, including time constraints and professional silos. Time pressures were highlighted by both laboratory specialists and clinicians, who reported that the demands of their workloads limited opportunities for in-depth discussions about diagnostic results. This finding is consistent with research that identifies time as one of the most significant obstacles to interprofessional collaboration in healthcare settings (Wain et al., 2012).

Moreover, professional silos, or the physical and organizational separation of laboratory and clinical teams, hinder collaboration. The lack of regular interaction between these groups often leads to missed opportunities for communication and teamwork. This finding supports previous studies that have pointed to



the need for integrated teamwork models in healthcare to overcome the isolation of different departments and foster a culture of collaboration (Rambiritch, 2016).

#### Impact on Diagnostic Accuracy

The findings from this study clearly demonstrate that collaboration between laboratory specialists and clinicians positively influences diagnostic accuracy. Participants agreed that when they work together to interpret test results, they are more likely to arrive at accurate diagnoses. This mutual exchange of knowledge ensures that both the clinical context and laboratory data are fully understood, reducing the risk of diagnostic errors. Previous research supports this, showing that interdisciplinary collaboration significantly reduces errors in interpreting complex or ambiguous test results (Graber et al., 2017).

The ability to clarify ambiguous results through collaboration was particularly valuable in this study. Participants noted that discussions with colleagues often led to insights that would not have been apparent without input from both sides. This finding highlights the importance of regular interdisciplinary meetings or consultations, especially when dealing with complex or critical diagnostic cases.

#### Improving Patient Outcomes through Teamwork

The most significant impact of interprofessional collaboration identified in this study was its positive effect on patient outcomes. Participants reported that effective teamwork between laboratory and clinical teams resulted in faster diagnoses and more comprehensive care. This is supported by studies showing that collaborative care models improve patient satisfaction, reduce the time to diagnosis, and lead to more appropriate treatments (Skodvin et al., 2017).

Participants also noted that collaboration allowed for a more holistic approach to patient care. By integrating laboratory data with clinical insights, both teams were able to make more informed decisions, leading to better treatment plans and improved patient recovery. This underscores the importance of fostering a collaborative culture in healthcare settings, where both laboratory specialists and clinicians are encouraged to contribute equally to patient care.

#### Implications for Practice

The findings of this study have several important implications for healthcare practice. First, healthcare institutions should facilitate more direct communication between laboratory specialists and clinicians by encouraging regular interdisciplinary meetings or consultations, particularly for complex cases. The use of technology, such as EHRs, can enhance communication but should be supplemented with face-to-face interactions to ensure a deeper understanding of diagnostic data.

Second, institutions should address the barriers of time constraints and professional silos. Time should be allocated specifically for collaborative discussions, and efforts should be made to integrate laboratory and clinical teams more closely, both physically and organizationally. Cross-disciplinary training programs that educate both laboratory specialists and clinicians about each other's roles could also help bridge the gap and improve mutual understanding (Rambiritch, 2016).

Finally, promoting a culture of collaboration is key to improving patient outcomes. Healthcare leaders should prioritize teamwork and foster environments where both laboratory and clinical perspectives are valued equally in the diagnostic process. This will not only improve diagnostic accuracy but also enhance the overall quality of patient care.

### Limitations

While this study provides valuable insights into the role of interprofessional collaboration in improving diagnostic outcomes, there are limitations to consider. The study was conducted in a single tertiary hospital, which may limit the generalizability of the findings to other healthcare settings. Additionally, the small sample size of 20 participants may not capture the full range of experiences related to collaboration in larger or more diverse institutions. Future research should include multiple hospitals and larger participant groups to confirm and expand on these findings.

### Conclusion

This study highlights the critical role that interprofessional collaboration between laboratory specialists and clinicians plays in improving diagnostic accuracy and patient outcomes. Effective communication, teamwork, and information sharing are essential for reducing diagnostic errors and providing comprehensive patient care. However, barriers such as time constraints and professional silos must be addressed to optimize collaboration. By fostering a collaborative culture and facilitating regular interaction between laboratory and clinical teams, healthcare institutions can enhance diagnostic processes and ultimately improve patient care.

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