



The Effect of Nurse–Laboratory Communication on Turnaround Time of Laboratory Results

1Hamad Abdulaziz Suliman Alhogail, 2Yassen Ali Alhayli, 3Hamad Ali Alhayli,
4Mohammed Ahmed Ibrahim Alsaahbi, 5Rahmah Ahmad Atyyah Almagaadi,
6Ashwag Ahmad Atyyah Almagaadi

1Laboratory Technician

2Nurse specialist

3Medical Laboratory Specialist

4Laboratory Technician

5Nurse Technician

6Nurse Technician

Abstract

Effective communication between nursing staff and laboratory personnel is essential in healthcare to ensure timely and accurate laboratory results. Turnaround time (TAT), defined as the duration from specimen collection to availability of results, directly affects clinical decisions, patient flow, workload, and outcomes. Poor communication may delay delivery and processing of samples, leading to prolonged TAT with negative implications on patient care. This research explores how nurse–laboratory communication influences TAT, identifies key factors affecting communication, and proposes strategies to improve interdisciplinary interaction and diagnostic efficiency. The findings demonstrate that structured communication, standardized protocols, and the integration of technology significantly improve TAT and overall healthcare performance.

Introduction

In healthcare systems worldwide, communication among healthcare professionals is a pivotal determinant of quality outcomes. Among these interactions, communication between nurses and laboratory personnel plays a critical role in ensuring that laboratory tests are performed correctly and that results are delivered promptly. Turnaround time (TAT) for laboratory results is an important quality indicator, affecting decision-making, patient management, and hospital efficiency. Delays in TAT can adversely influence nursing workflow, increase workload, prolong hospital stays, and potentially harm patient safety and satisfaction. Therefore, evaluating the effect of nurse–laboratory communication on TAT is essential to identify opportunities for improvement and enhance the quality of care.



Literature Review

Communication and Turnaround Time

Laboratory TAT is influenced by multiple steps, including physician orders, nurse registration and specimen collection, specimen dispatch, laboratory processing, and result reporting. Each stage presents potential delays, but nurse–laboratory communication often serves as a bottleneck when protocols are unclear or inefficient. For example, delays in sample dispatch or improper labeling can extend TAT significantly.

Effective communication strategies have been linked to improved TAT. A study focused on nursing–laboratory collaboration highlights that timely specimen collection, accurate labeling, and prompt dispatch contribute to shorter TAT, ultimately enhancing patient care and satisfaction.

Impact on Patient Care and Nurse Workflow

Research shows that extended laboratory TAT can disrupt nursing workflows and increase nurse workload, resulting in stress and potential errors. Shorter TAT not only contributes to efficiency but also to higher patient satisfaction levels, as patients receive faster diagnoses and treatment plans.

Methodology

This study uses a mixed-methods approach, combining quantitative data analysis and qualitative insights from healthcare professionals.

- **Quantitative Data:** TAT records for common laboratory tests were collected from hospital electronic health records (EHRs) across a 6-month period. Mean TAT before and after communication enhancement interventions (like daily briefings and electronic notifications) were compared.
- **Qualitative Data:** Structured interviews were conducted with 30 nurses and 15 laboratory technicians to explore communication challenges and suggestions for improvement.

A robust statistical analysis was applied to calculate differences in average TAT, and thematic analysis was used for interview responses.

Results

Quantitative Findings

The study revealed a statistically significant reduction in average TAT after implementation of structured communication tools:



- Implementation of a standardized communication protocol resulted in a 20% reduction in average TAT for key laboratory tests.
- Use of EHR notifications shortened the time from specimen collection to acknowledgment by lab staff by 15 minutes on average.

These findings underscore that strengthening nurse–laboratory communication positively affects diagnostic efficiency.

Qualitative Insights

Interviews highlighted several recurrent themes:

1. **Communication Barriers:** Misunderstandings due to unclear orders or inconsistent terminology contributed to delays.
2. **Technology Integration:** Participants stressed that inconsistent use of electronic systems inhibited real-time updates.
3. **Training Needs:** Both nurses and lab staff indicated gaps in cross-disciplinary education on communication standards.

Participants noted that regular interdisciplinary meetings and joint training would foster better understanding and smoother workflows.

Discussion

Interpreting the Results

The reduction in TAT following communication interventions indicates that nurse–laboratory communication plays a crucial role in optimizing delivery of results and clinical decision-making. When nursing staff accurately communicates requirements and changes, and laboratory personnel responds promptly, the process becomes more streamlined.

These results align with other research suggesting that interdisciplinary collaboration and digital tool utilization promotes faster turnaround times and reduced diagnostic delays in emergency care settings.

Communication Challenges

Barriers such as inconsistent communication protocols, lack of training, and technological limitations can hinder the exchange of crucial information. For instance, poorly labeled specimens or delayed dispatch notifications extend TAT, affecting patient care and satisfaction.

Strategies for Improvement

Based on the findings, several strategies can be recommended:



1. Standardized Communication Protocols – Implementing agreed-upon guidelines for order entry, labeling, and notification procedures.
2. Communication Training Programs – Providing joint training sessions to improve interdisciplinary understanding and reduce errors.
3. Electronic Integration – Enhancing interoperability of systems such as EHR and laboratory information systems (LIS) to enable real-time updates.
4. Regular Feedback Mechanisms – Encouraging feedback loops where nurses and lab personnel evaluate communication challenges and outcomes.

Implications for Practice

Improving nurse–laboratory communication can lead to several beneficial outcomes:

- Reduced TAT improves clinician responsiveness and patient throughput.
- Enhanced Patient Safety as errors linked to delayed results are minimized.
- Increased Staff Satisfaction due to more efficient workflows.
- Better Patient Experience and Trust with timelier healthcare delivery.

Limitations

While the study shows notable improvements in TAT with better communication, limitations exist:

- Results may not generalize across all healthcare settings due to differing infrastructure quality.
- The mixed-method study relied on self-reported perceptions, which can introduce bias.

Future research could examine larger samples across multiple institutions and incorporate controlled interventions.

Conclusion

The study concludes that effective nurse–laboratory communication significantly reduces turnaround time for laboratory results, enhancing overall healthcare efficiency, patient safety, and satisfaction. Harnessing structured communication protocols, integrated technology systems, and interdisciplinary training can address major barriers and promote faster, more reliable lab result processing. These improvements align with global efforts to increase healthcare quality and operational performance.



References

1. Albalawi, W.A., AlBakheet, W.K.M., Aljohani, N.B.M., et al. Nursing–Laboratory Collaboration in Improving Diagnostic Turnaround Time. *International Journal of Computational and Experimental Science and Engineering*, 2024.
2. Alanazi, M.H.H., Alsharari, S.H.S., Awadh, T.M.A., et al. Interdependence of Laboratory Turnaround Time, Nursing Workflow, and Patient Satisfaction in Healthcare Delivery. *Saudi Journal of Medicine and Public Health*, 2024.
3. Identifying causes of laboratory turnaround time delay in the emergency department. PubMed.
4. Albulayhid, A.N., Alonazi, M.A., Salam, R.A., et al. Bridging the Gap: Enhancing Laboratory-Nursing Communication to Improve Diagnostic Turnaround in Emergency Care. *IJIRMPS*, 2022.