

Pre-Analytics in a Laboratory Diagnostics Setup: Enhancing Quality and Efficiency

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Background

- ▶ - The laboratory setup is crucial for the total testing process, emphasizing quality management from pre-analytics to post-analytics. The total testing process begins with test ordering and ends with result interpretation by clinicians. This presentation focuses on the pre-analytical phase, which involves sample collection, transportation, processing, and storage.

Importance of Pre-Analytics

- ▶ - Pre-analytics occupies significant space in ensuring accurate and reliable research. Proper sample collection, transportation, processing, and storage are vital. This includes careful sample handling, appropriate preservation methods, and meticulous record-keeping to maintain sample integrity.

Literature Review

- ▶ - Jivita Cattleya et al. (2011) examined perceived accreditation benefits and organizational commitment in hospital accreditation performance. Findings indicated that perceived benefits, participation, and commitment significantly impact accreditation performance, highlighting the need for employee dedication and support.

Methodology

- ▶ - The study adopted a mixed-method approach, including descriptive analysis, retrospective study using Laboratory Information Management System (LIMS), and observational study. The LIMS provided valuable data on pre-analytical aspects, ensuring comprehensive analysis and accurate data collection.

Findings

- ▶ - Significant issues were identified in process flows and training of personnel. Lack of standard protocols for sample collection, handling, and transportation led to inconsistent quality and sample condition. Improved communication and collaboration among laboratory staff are necessary to reduce errors.---

Results and Analysis

- ▶ - The study highlighted the need for standardized protocols and training programs. Improved communication between laboratory staff and other health professionals is essential to avoid delays and errors. Implementing standardized procedures and regular training can enhance pre-analytical accuracy.---

Discussion

- ▶ - Standardization of pre-analytical procedures introduces consistency, reduces mistakes, and increases reliability. Training programs and continuous education for laboratory staff are crucial to avoid errors and ensure proper sample handling. Quality control procedures, technological advancements, and resource allocation are necessary for effective pre-analytics.

Technological Advancements

- ▶ - Integration of robotics, automation, and barcode tracking can reduce human error and increase efficiency in pre-analytical procedures. Labs should consider adopting these technologies to enhance sample identification and processing, leading to improved accuracy and productivity.

Resource Constraints

- ▶ - Implementing best practices can be challenging in resource-limited laboratories. Adequate funding and resource allocation for infrastructure, equipment, and training are essential. Collaboration and knowledge sharing among laboratories can help overcome these constraints.

Patient Safety and Result Accuracy

- ▶ - Errors in pre-analytical processes can directly impact patient safety and result accuracy. Improving pre-analytical practices ensures accurate and reliable test results, leading to better patient outcomes and effective healthcare delivery.

Regulation and Oversight

- ▶ - Regulatory agencies and professional organizations play a key role in enforcing pre-analytical standards. Ensuring adherence to these standards through legislation and oversight is crucial for maintaining quality and consistency in laboratory testing.

Conclusion

- ▶ - Pre-analytical processes are critical for the accuracy and reliability of laboratory testing. Standardization, training, technological advancements, and resource allocation are essential for improving pre-analytics. Collaboration, regulation, and continuous improvement efforts are necessary for enhanced patient safety and quality healthcare outcomes.

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