
Behind Sample Rejection of Nurse's Role

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ABSTRACT

Sample rejection in the clinical laboratory can lead to delays in diagnosis, increased healthcare costs, and compromised patient care. Nurses play a crucial role in ensuring that samples collected from inpatients meet the required criteria for analysis. This review examines the role of nurses in sample collection, focusing on the importance of adhering to good sample criteria to prevent sample rejection in the clinical laboratory.

Introduction

Precision, accuracy, and short turnaround time (TAT) are important in effective emergency laboratory services. The types of laboratory errors are classified as pre-analytical, analytical, and post-analytical, depending upon the time of presentation. Laboratory specialists have been demonstrated that 70% of errors occur in the pre-analytical phase which is an important component of laboratory medicine(1),(2). The International Organization for Standardization (ISO) 15189:2012 standard for laboratory accreditation defines the pre-analytical phase as “processes that start, in chronological order, from the clinician’s request and include the examination request, preparation and identification of the patient, collection of the primary sample(s), and transportation to and within the laboratory, and end when the analytical examination begins(3).

Plebani *et al.* (4) states that the pre-analytical phase should be subdivided into pre-pre-analytical phase and pre-analytical phase. Pre-pre-analytical phase includes test request, patient or sample identification, sample collection, handling and

transport, whereas pre-analytical phase involves the steps of sample preparation for analysis such as centrifugation, aliquoting and sorting. It has been demonstrated that most errors occur in the pre-pre-analytical phase by healthcare personnel who are not under the control of the laboratory, whereas pre-analytical phase starts following specimen acceptance by the laboratory staff. For the prevention of pre-analytical errors, the most reliable approach is to construct pre-analytical standardization (5).

Quality in laboratory medicine has been defined as the guarantee that each single step throughout the total testing process (TTP) is correctly performed(6). Due to the improvements in analytical techniques and instrumentation, a 10-fold reduction in the analytical error rate has been achieved in the past decades. However, the pre-analytical errors have been found to be much more vulnerable in the TAT(7). Traditionally, pre-analytical phase errors were classified as identification errors and sample problems. The IFCC (International Federation of Clinical Chemistry and Laboratory Medicine) working group of ‘Laboratory Errors and Patient Safety’ (WG-LEPS) has identified several Quality Indicators (QIs) related with all stages of the TTP; pre-analytical phase quality indicators include the appropriateness of test selection, patient/sample identification, samples collected in inappropriate containers or with insufficient volumes, hemolyzed or clotted samples, improperly stored samples or samples damaged in transport(8),(9). Accurate and timely laboratory testing is essential for providing high-quality patient care. However,

sample rejection due to inadequate sample quality is a common issue in clinical laboratories, leading to delays in diagnosis and treatment. Nurses play a critical role in ensuring that samples collected from inpatients meet the required criteria for analysis. This review explores the role of nurses in sample collection and the importance of adhering to good sample criteria to prevent sample rejection in the clinical laboratory.

The Role of Nurses in Sample Collection

1. Sample Collection Procedures

Nurses are responsible for collecting various types of samples from inpatients, including blood, urine, and tissue samples. Proper sample collection techniques, including correct labeling, handling, and transportation, are essential for ensuring sample integrity(10)

2. Patient Preparation

Nurses ensure that patients are adequately prepared for sample collection procedures, which may include fasting, medication restrictions, and other preparatory measures. Proper patient preparation helps ensure sample accuracy and reliability(11)

3. Communication with Laboratory Staff

Nurses communicate with laboratory staff to ensure that samples are collected according to established protocols and guidelines. Clear and accurate documentation of sample collection procedures is essential for preventing sample rejection(10).

Preventing Sample Rejection

1. Adherence to Good Sample Criteria:

Nurses play a crucial role in ensuring that samples collected from inpatients meet the required criteria for analysis. This includes ensuring that samples are collected using appropriate collection devices, in the correct containers, and within the specified time frames(11).

2. Quality Assurance Measures: Nurses are responsible for performing quality assurance checks on collected samples to ensure that they meet the required criteria for analysis. This may include visual inspection of sample integrity, verification of patient identification, and confirmation of correct labeling (11).

3. Education and Training: Providing nurses with ongoing education and training on sample collection procedures and good sample criteria is essential for preventing sample rejection. This may include regular competency assessments, in-service training sessions, and updates on new sample collection techniques and technologies(10).

Conclusion

Nurses play a critical role in ensuring the quality and reliability of samples collected from inpatients for laboratory analysis. By adhering to good sample criteria and following established sample collection procedures, nurses can help prevent sample rejection in the clinical laboratory, leading to more accurate and timely test results and improved patient care.

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