CHAPTER 11

Study on "What Are the Possible Causes for The Delay in Turn-Around-Time in Laboratory Test Results and Gaps in Operations of Phlebotomy and Laboratory Services at A University Hospital in UAE

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INTRODUCTION

A medical laboratory is an institution employing methods and instruments to examine human blood, tissues, secretions, and excretions for diagnosing diseases, monitoring their progression, aiding in treatment, or detecting drugs or toxic substances. It goes beyond specimen collection or preparation, ensuring on-site testing services [1].

Turnaround time (TAT) measures the period from receiving specimens to dispatching verified reports. Thumbay University Hospital's affiliated clinical labs, Thumbay Labs, faced complaints about delayed TAT. The focus was solely on the time from sample arrival to report accessibility, neglecting the minimal advancements in analytical speed, leading to the need for a reassessment.

There were significant delays in the delivery of specimens and accessioning, which were not reflected in the computer-generated Turnaround Time (TAT) reports. The clinical personnel identified that the TAT reports, which assessed the time from sample accessioning, might not capture delays occurring between specimen arrival and accessioning. Adjusting the TAT to include these overlooked delays revealed that the TAT objective was not being met.As the number of staff increased, delays were notably reduced. The laboratories emphasized the importance of including all laboratory-controlled aspects of the testing processes in TAT reports. Addressing the issue required targeted measures, well-planned interventions, and a thorough analysis of the reasons behind discrepancies between computer data and clinician perspectives. This comprehensive approach aimed to reduce TAT and improve overall service efficiency [2]. The primary reason for delayed

laboratory reports was the time required to rectify pre-analytical errors originating from other departments, not within the laboratory. The cash unit, specifically, exhibited the highest frequency of mistakes throughout the testing process, becoming the principal factor contributing to the prolonged Turnaround Time (TAT). However, the factors leading to extended TAT can vary from one hospital to another, influenced by various conditions [3].

Traditionally, Turnaround Time (TAT) assessment focused mainly on the clinical analyses within the laboratory. However, the current definition of TAT spans the entire process from the moment a sample is requested to when the test results are received by the doctor. The procedure initiates with a test request, followed by patient identification and blood sample collection by a nurse or phlebotomist. Subsequently, the sample is transported to the laboratory, where it is registered upon arrival, tested, and the results are then conveyed to the doctor [4].

Despite technological advancements that have significantly reduced laboratory TAT to seconds or less, a more holistic approach to TAT reduction involves minimizing the time from sample acquisition to result availability. This study incorporates a comprehensive time measurement starting from the doctor's test order, through sample collection and receipt in the laboratory, to the eventual generation of results.

RESEARCH QUESTION

What were the possible causes for the delay in Turn-around-time in Laboratory test results and gaps in Operations of Phlebotomy and laboratory services at a University Hospital in UAE

RESEARCH METHODOLOGY

The cross-sectional observational study was conducted over a one-month period in April 2022, with the implementation of an improvement plan executed in June 2022. The study focused on the populations encompassing all reports generated from Biochemistry, Haematology, and Microbiology. Inclusion criteria involved considering reports from these specified areas, while exclusion criteria ruled out histopathology and Urine & Stool samples. The sample size was determined to be 130, and a Convenient Sampling Technique was employed for participant selection.

Data collection involved extracting information from the phlebotomist's logbook and the Information Management System in the hospital and laboratory. The study tool encompassed these sources to gather relevant data for analysis. MS Excel served as the primary tool for data analysis, with the results subsequently compiled in Microsoft PowerPoint. This research design and methodology provided a comprehensive understanding of the factors contributing to Turnaround Time delays and allowed for the implementation of targeted improvements in the subsequent month.

RESULTS AND DISCUSSION

It was observed that 45% of samples reached the laboratory within the first hour, highlighting a relatively prompt transit. However, a significant portion, constituting 55% of samples, took between 1 to 3 hours or more to reach the laboratory, indicating potential delays in the transportation phase. In terms of report release times, 12% were expedited within 30 minutes, 48% within 1 hour, and an impressive 96% within 2 hours. Achieving a 100% report release within 3 hours

further demonstrated the laboratory's efficiency in processing and delivering results. When examining the time taken for samples to reach the laboratory, 27% reached within 30 minutes, while a majority (56%) reached within 2 hours. However, 44% experienced delays, taking more than 2 hours, and, in some cases, up to 8 hours or more. The analysis of report release times revealed that 23% were expedited within 30 minutes, 66% within 1 hour, and 84% within 2 hours. Almost all reports (97%) were released within 3 hours, showcasing a commendable performance in delivering timely and accurate results. These findings underscore the need for targeted interventions to address delays and further optimize the overall Turnaround Time for laboratory test results.

CONCLUSION

In conclusion, various outliers significantly impacted the Turnaround Time (TAT) within the laboratory, necessitating a focused approach to minimize TAT delays. The hospital should prioritize monitoring procedures, reducing wastage, and eliminating the need for repeated tests to enhance efficiency and ensure quality outcomes. Delays were attributed to factors such as the time-consuming process of laboratory consultants' verification, equipment outages, staffing shortages, suboptimal transportation methods, and underutilization of the pneumatic tube system. Notably, the absence of senior management involvement in identifying and addressing operational gaps may have impeded process improvement prior to intervention. To address these challenges, the implementation of policies aimed at improving TAT, coupled with regular audits, is recommended. Such measures not only contribute to heightened patient satisfaction but also have the potential to reduce patient length of stay and expedite the overall hospital release procedure.

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