

# Interpretation of Laboratory Results: A Practical Guide for Healthcare Providers

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Received date: April 22, 2023, Manuscript No. IPACLR-23-13713; Editor assigned date: April 25, 2023, PreQC No. IPACLR-23-13713 (PQ); Reviewed date: May 08, 2023, QC No. IPACLR-23-13713; Revised date: June 22, 2023, Manuscript No. IPACLR-23-13713 (R); Published date: June 29, 2023, DOI: 10.36648/2386-5180.23.11.485

Citation: John W (2023) Interpretation of Laboratory Results: A Practical Guide for Healthcare Providers. Ann Clin Lab Res Vol:11 No:5

## Abstract

Laboratory services play an integral role in the healthcare system from primary through to tertiary level care since diagnostic tests can either confirm or exclude a tentative diagnosis, or screen for potential diseases. The underlying purpose of laboratory testing lies in the association between laboratory test results and the potential to improve a patient's health status. This requires ordering a test when appropriate and necessary, accurate interpretation, and acting upon the result.

**Keywords:** Laboratory services; Healthcare system; Laboratory test; Healthcare providers; Clinical context

## Introduction

Primary care doctors are usually the point of entry into a healthcare system, and are consequently exposed to a variety of medical conditions that range in both complexity and severity. It is postulated that these doctors are therefore at a higher risk of making medical errors than specialists. Due to the variety and intricacies of laboratory tests available, there is the potential for test related errors to occur in a range of clinical conditions that may result in significant patient harm. Studies have shown that between 15% and 54% of errors occurring at a primary healthcare level are related to the testing process. Diagnostic errors can be due to three underlying causes, namely: No identifiable fault, system-related, and cognitive. Cognitive errors are caused by incorrect interpretation of available information and may be caused by faulty knowledge, faulty data gathering, or faulty synthesis of data. A large-scale study found that up to 74% of diagnostic errors are either completely or in part due to cognitive failures. This suggests that many diagnostic errors are related to misunderstanding or misinterpreting the available information [1].

Interpretation of laboratory results is a critical skill for healthcare providers to assess the health status of their patients and make informed decisions about their diagnosis, treatment, and management. It's important to compare the patient's results with the appropriate reference range to determine if the

results are within normal limits or if they fall outside the expected range, indicating a potential abnormality.

## Description

**Consider the patient's clinical context:** Laboratory results should be interpreted in the context of the patient's overall clinical condition, medical history, and presenting symptoms. For example, a slightly elevated white blood cell count may be normal in a patient with an acute infection, but could be concerning in a patient with a history of cancer or immune system disorders. Always consider the patient's individual clinical context when interpreting laboratory results [2].

**Look for trends:** When interpreting laboratory results, it's important to consider trends over time rather than relying solely on a single result. Comparing current results with previous results can provide valuable information about the patient's health status and response to treatment. Trend analysis can help identify worsening or improving conditions and guide further diagnostic or therapeutic interventions. Understand the limitations of laboratory tests: Laboratory tests have limitations, including false positives, false negatives, and variability in results. It's important to be aware of the limitations of each specific test and interpret results accordingly. Consult with laboratory experts or reference materials as needed to better understand the nuances of different laboratory tests [3].

**Consider the pre-analytical factors:** The pre-analytical phase of laboratory testing, which includes specimen collection, handling, and transportation, can greatly impact the reliability and accuracy of laboratory results. Factors such as improper specimen collection or handling errors can result in misleading or erroneous results. Always consider the pre analytical factors when interpreting laboratory results and validate the quality of the specimen before proceeding with interpretation [4].

**Seek expert consultation:** If you encounter laboratory results that are complex, ambiguous, or outside your area of expertise, do not hesitate to seek consultation from a qualified laboratory professional or specialist. Interpreting laboratory results can sometimes require specialized knowledge and expertise, and collaboration with other healthcare providers can help ensure accurate and informed decision-making. Communicate results to patients: After interpreting laboratory results, it's important to communicate the findings to the patient in a clear and

understandable manner. Provide appropriate education and counselling to help the patient understand the significance of the results, their implications for their health and any necessary follow up or interventions [5].

## Conclusion

In conclusion, interpreting laboratory results requires a systematic and comprehensive approach, taking into consideration reference ranges, clinical context, trends, limitations of tests, pre analytical factors, expert consultation and patient communication. It's crucial for healthcare providers to develop and maintain proficiency in interpreting laboratory results to effectively manage their patients health.

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