

# Evaluate laboratory performance pre- and post-COVID pandemic at Major Hospital in Sri Lanka- A case study

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## I. INTRODUCTION

Clinical laboratories are healthcare facilities providing a wide range of laboratory procedures that aid clinicians in diagnosing, treating, and managing patients. These laboratories are manned by scientists trained to perform and analyze tests on samples of biological specimens collected from patients (Bayot et al., 2024).

Further accurate and reliable laboratory test results are required for the diagnosis and effective management of patients carried out by clinicians. Unreliable laboratory results could have serious consequences. It could lead to inappropriate actions such as the mistreatment of patients. Conversely, it could also lead to inappropriate inaction such as under-investigation of a disease when indicated or not instituting any treatment when required. When considering the role in the detection, diagnosis, and treatment of disease in patients, laboratory tests help determine the presence, extent, or absence of disease and monitor the effectiveness of treatment. An estimated 60 to 70 percent of all decisions regarding a patient's diagnosis, treatment, hospital admission, and discharge are based on laboratory test results (Tsai et al., 2019, Zhang et al., 2016).

## II. EFFECT OF COVID-19

COVID-19 have been reported in more than one hundred countries throughout the world and have resulted in a pandemic. Although the COVID-19 epidemic has directly or indirectly impacted every industry, the problem is particularly severe for many countries like Sri Lanka and already overworked health systems. Due to the virus's persistent spread throughout all settings, a significant part of health service delivery was disrupted. It caused difficulties in managing medical supplies, facility utilization, and health staff. Further services for treating and preventing infectious and non-communicable diseases have been impacted by the COVID-19 pandemic. Due to their fear and concern during the pandemic waves, patients were unable to attend follow-up appointments and acute care visits, and healthcare facilities have postponed several essential procedures (Haileamlak, 2021).

## III. JUSTIFICATION

Laboratories are often the first sites for the detection of disease outbreaks and also serve as a major source of health information. They produce critical and relevant information for patient care and treatment, epidemiology, and surveillance. Strong laboratory facilities are therefore essential to health as well as to the national well-being and maintenance of health and economic development.

Change of disease patterns (epidemiological transition), emerging and re-emerging diseases, demographic transition, technical advancement, increased public demand, frequent adverse changes in weather and environmental conditions, improperly planned development activities, changing behavior patterns of the public due to urbanization, globalization, industrialization can be identified increasing demand for laboratory services. However, COVID-19 has an impact on patient care at several stages of the "universal" care route, such as initial screening, specialist referral, diagnosis, start of therapy or surgery, and continuing care (Bernacki et al., 2021). The most frequent explanations given for critical service gaps or reductions during COVID-19 included moving medical staff to support COVID-19 services, postponing planned treatments, decreasing public transportation, losing money to pay for services, and limiting utilization (WHO, 2021).

Therefore, the objective of this study was to evaluate laboratory performance pre- and post-COVID pandemic in Major Hospital in Sri Lanka to identify any changes during the pre and post-COVID pandemic situation.

## IV. METHODOLOGY

This was done by using key informant interviews and secondary data surveys. The key informant interviews were conducted with relevant consultants, medical officers, and superintendent MLTs by using structured questionnaires (Annexure 4)

In this study, the post-pandemic period was considered as the period after the declaration of the pandemic by the WHO (11 March 2020)

V. ANALYSIS

Results of this study revealed that number of tests carried out from different laboratories from 2018 to 2021 varied and slightly reduced in hematology and OPD laboratory sections (Figure 1 and Table 1&2). However, a moderate number of PCR tests were carried out in the year 2021 (Figure 2).

According to the KII, the number of tests done by the labs was reduced during the COVID-19 period due to the number of inpatients and outpatients being reduced. Due to the number of

tests reduced, the number of operating analysis machines was reduced. It does not affect to practice of internal quality assurance and external quality assurance. Although safety measures of the staff were followed more during the COVID-19 period there were no dramatical changes in illegible handwriting, incomplete patient information, missing requisition slips, labeling errors, wrong container, inadequate volume, sample clotted, duplicate reports issued, maintenance of equipment before and during the COVID-19 situation.

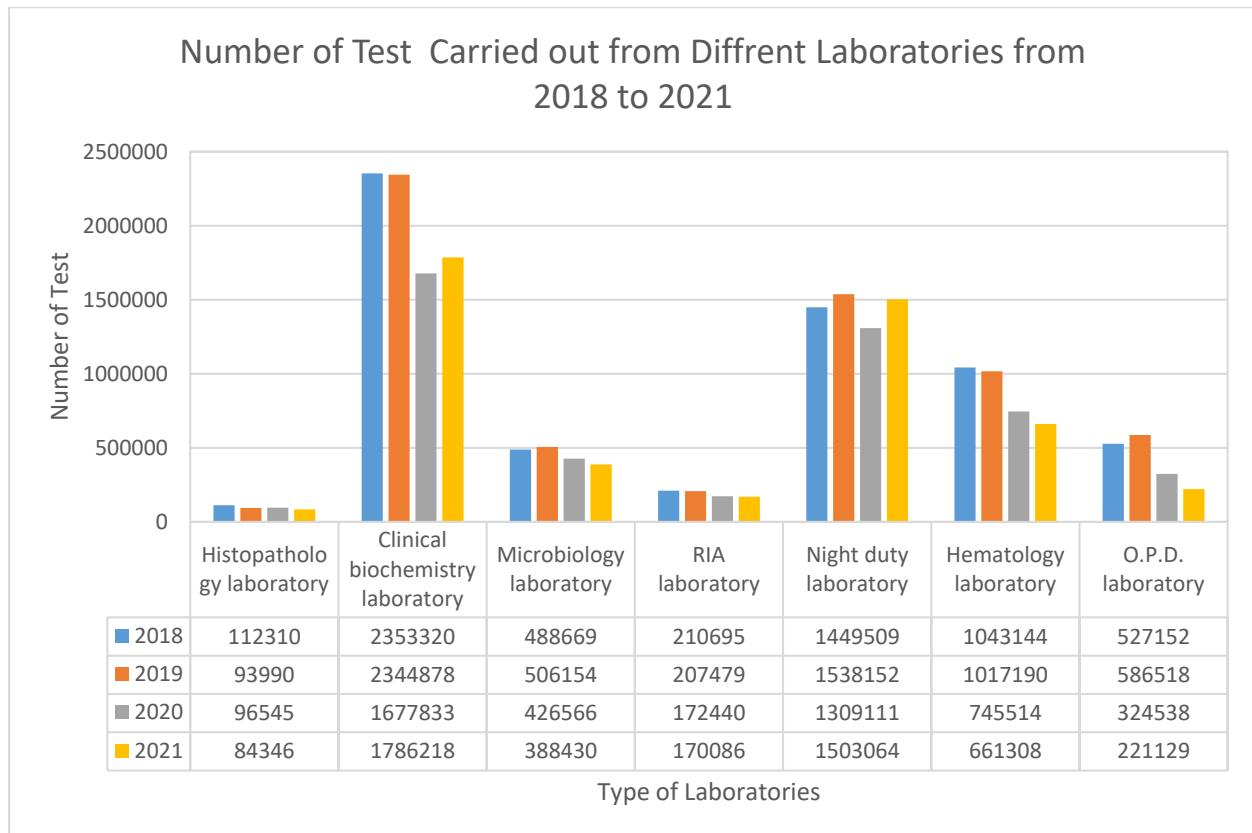


Figure 1: Number of Tests Carried out from Different Laboratories from 2018 to 2021

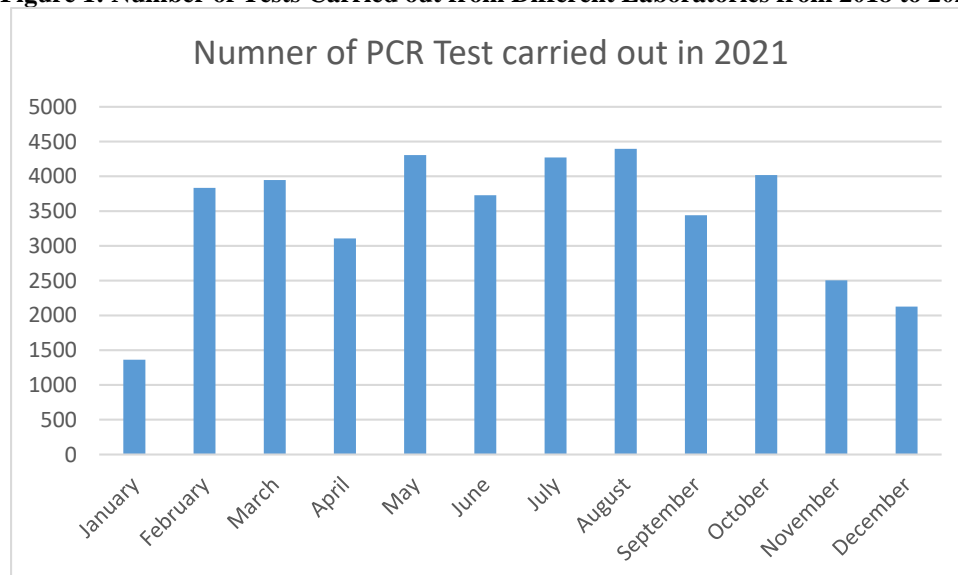


Figure 2: Number of PCR Test carried out in 2021

VI. CONCLUSION

During Covid 19 period available human resources were used in appropriate ways to provide efficient and effective laboratory services to the patients at NHSL. Although the number of tests was reduced in some laboratories, these facilities especially human resources were allocated to carry out PCR tests. Ultimately this analysis showed laboratory performance of the NHSL was not affected by the COVID-19 pandemic.

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**Annexure 01**

**Evaluation of laboratory performance during pre and COVID pandemic period at NHSL**

Name of the laboratory: .....

Staff category: Consultants / Medical Officers / MLTs

Please “X” the number that best describes your experience for each statement

1= Very Low, 2= Low, 3= Middle, 4= High, 5 = Very High

Variable	Pre COVID-19 period					COVID-19 period				
	1	2	3	4	5	1	2	3	4	5
Illegible handwriting										
Incomplete patient information / Identification errors										
Missing requisition slips										
Sample loss / Not received										
Labeling error										
Wrong container										
Inadequate sample volume										
Sample clotted										
Duplicate reports issued										
Maintenance of equipment										
Safety measures of the staff										
Practice of internal quality assurance										
Practice of external quality assurance										
Maintenance of equipment										
Number of tests done										