

**EVALUATION OF EXTERNAL QUALITY ASSURANCE TO STRENGTHEN  
LABORATORY SERVICES IN THE SOUTH RIFT VALLEY REGION OF KENYA**

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## ABSTRACT

Laboratory diagnosis is important in treatment, management and prevention of diseases. The objective of this study was to evaluate the performance of selected clinical diagnostic laboratories in the South Rift Valley region of Kenya under the President Emergency Plan for AIDS relief. The study utilized proficiency panels provided to the Kericho Walter Reed laboratory. Standard Operating Procedures were used to test the panels. Questionnaires and document analysis were used to collect data, of which descriptive statistics and ANOVA were used. Serological assays were graded against proficiency providers expected outcome. Measurement of white blood cells ( $F = 0.07$ ;  $p = 1.000$ ) were not significantly different at  $p \leq 0.05$  in the laboratories. The highest measurement was recorded in Litein laboratory (mean 10.77) and the lowest in Longisa (9.08). There was no significant difference in the measurement of red blood cells ( $F = 0.57$ ;  $p = 0.855$ ) in the twelve laboratories. Highest levels were recorded in Kapkatet (Mean 4.51) while the lowest level was recorded in Unilever Tea Kenya (3.15). There was no significant difference in the measurement of hemoglobin ( $F = 0.58$ ;  $p = 0.845$ ). Highest level of hemoglobin was recorded in Kapkatet (Mean 13.04), whereas the lowest was recorded in Longisa (8.89). Results showed that there was a significant difference in the measurement of Alkaline Phosphates in the four centers ( $F = 4.82$ ;  $P = 0.004$ ) that performed the assay. A significantly high level was recorded in Kapkatet (Mean 194.2). Alanine Aminotransferase values in the laboratories were ( $F = 3.87$ ;  $P = 0.0001$ ). Highest level was recorded in Londiani (Mean 159.9) while the lowest was in Longisa (16.5). A significant difference in the measurement of creatinine was reported ( $F = 4.17$ ;  $P = 0.0001$ ). Highest level was recorded in Tenwek Mission hospital (mean 289.1) whereas the lowest was in Longisa (0.55). A significant difference too was observed in Aspartate Aminotransferase values, ( $F = 3.85$ ;  $P = 0.0001$ ). The highest level recorded in Londiani (mean 110.8) whereas the lowest was in Longisa (15.0). Highest Creatinine was recorded in Tenwek (mean 289.1) and the lowest recorded in Longisa (0.55). Similarly Blood Urea Nitrogen reported, ( $F = 7.50$ ;  $P = 0.0001$ ). The highest levels recorded in Londiani, (mean 19.8) whereas the lowest was in Kilgoris (8.1). CD3 was recorded in 6 laboratories and showed no significant differences ( $F = 0.94$ ;  $P = 0.457$ ). A single measurement by Tenwek was considered as an outlier. The highest CD3 measurement was recorded in Longisa (mean 753.7) whereas the lowest was in Kericho County Hospital (599). The levels of CD4 measurements in the samples were not significantly different in the labs. ( $F = 1.37$ ;  $P = 0.198$ ). Litein Laboratory (mean 405.2) recorded the highest levels of CD4 while Londiani (140.3) recorded the lowest level of CD4. The levels of CD8 were not recorded in any of the twelve laboratories under this study. The qualitative assays done were satisfactory except hepatitis B assay that performed below the pass mark of 80%. Syphilis test for Longisa was at 60%, Pregnancy testing for the same site was at 78% while Cryptococcal antigen assay scored 40%, 20% and 40% for Kericho County, Kapkatet and Kilgoris labs respectively. Thus the performances of the laboratories are satisfactory and at par to the central laboratory in the analyses except for chemistry and Hepatitis B assays.

**Keywords;** Laboratory, Mean, difference, highest, lowest, measurement