

# Total Lymphocyte Count as a surrogate marker for CD4+ T cell count in initiating antiretroviral therapy at Kenyatta National Hospital, Nairobi.

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## **Abstract:**

To evaluate the utility of Total Lymphocyte Count (TLC) as a surrogate marker for CD4 + T cell count in antiretroviral (ARV) treatment initiation in a Kenyan population of HIV seropositive patients at Kenyatta National Hospital. DESIGN:Cross-sectional descriptive study. SETTING:Kenyatta National Hospital, HIV treatment and follow-up outpatient facility; Comprehensive Care Centre, Nairobi, Kenya. SUBJECTS:Two hundred and twenty five HIV Elisa positive, ARV naive patients visiting the Comprehensive Care Centre between January 2006 to March 2006. RESULTS:A significant linear correlation was found between TLC and CD4 cell count for the whole group with a Spearman rank correlation of 0.761 ( $p < 0.01$ ); and was also independently observed in the four WHO clinical stages. The classification utility of TLC 1200 cells/mm<sup>3</sup> cut-off was suboptimal; sensitivity 37% specificity of 99% and the NPV of 56%. The receiver operator characteristics (ROC) curve generated an optimal TLC cut-off of 1900 cells/mm<sup>3</sup> cut-off to be of greatest utility with a sensitivity of 81.1%, specificity of 90.3%, PPV of 90.8% and NPV of 80.2%. This implies that a TLC cut-off of 1900 cells/mm<sup>3</sup> correctly classify eight out of ten HIV positive patients as having a CD4 < 200 cells/mm<sup>3</sup> and only misclassify two such patients. Serial CD4 testing can then be performed on the minority of patients who despite a TLC > or = 1900 cells/mm<sup>3</sup> are, on basis of clinical data, suspect of more advanced disease warranting ARV therapy. This would reduce the number of patients tested for and focus the application of CD4 testing and thus reduce attendant cost in care provision in CD4 resource poor settings. CONCLUSION: Our data showed a good positive correlation between TLC and CD4 cell count, however the WHO recommended TLC cut-off of 1200/mm<sup>3</sup> was found to be of low sensitivity in classifying patients as having a CD4 counts < 200 cells/mm<sup>3</sup>. This would result in underestimation of advanced stage of disease and to withholding ARVs treatment to persons who need treatment. We recommend a TLC cut-off of 1900 cells/mm<sup>3</sup> for our population to classify patients as either above or below the CD4 count cut-off of 200 cells/mm<sup>3</sup> as an indicator of when to start antiretroviral therapy.