

Point-of-care CD4 tests

Initiation of antiretroviral treatment (ART) is guided by a CD4 count and the current WHO guidelines recommend a CD4 count of 350 cells/mm³ as the threshold. In resource poor settings, traditional flow cytometric CD4 counting facilities are not widely available due to high costs and the infrastructure required. In these cases they rely on clinical staging (based upon symptoms and signs of immune deficiency), but this is not very reliable and people with very low CD4 cell counts could be missed. Therefore, there has been much interest in the development of new, point-of-care (POC) CD4 cell tests which need limited technical and infrastructural support (these can be performed onsite by a nurse) and give quick results. The first POC CD4 tests are emerging from the CD4 Initiative and although technical comparisons against gold standard flow cytometry are good, little is known about the potential impact of POC tests on a population. Therefore, the impact of clinical management, flow cytometric CD4 counts and POC CD4 counts were examined using a stochastic cohort model representing disease progression, diagnosis, clinical monitoring of HIV-infected individuals, and associated costs, in Malawi. A published model of ART initiation was adapted, to compare the impact on life-years saved (LYS) of clinical staging and the two CD4 counting strategies, including costs for the

CD4 cell monitoring technologies. Two different CD4 cell initiation thresholds (250 and 350 cells/mm³) were used and different estimates for the CD4 cell costs (incorporating reagent/test price, staffing/personnel and infrastructure/laboratory, the latter if needed). When compared to clinical management, the impact of POC CD4 testing was a 70% increase in the number of LYS whilst flow cytometric CD4 counting increased the number of LYS by 52%. Total costs were almost identical with flow cytometry and POC testing in a cohort of 1000 infected-individuals. However, the costs per LYS were \$148.3 for POC CD4 testing versus \$165.5 for flow cytometry. So the conclusion was that starting treatment on the basis of POC results would be more cost-effective than with traditional CD4 cell tests, and better than initiating treatment on the basis of clinical staging of people living with HIV. However, these results should be confirmed in other settings.

Reference:

Grundy CL, Lara AM, Winogron D, et al. Point-of-care CD4 tests can increase life-years saved with reduced costs compared to flow cytometric CD4 counting. Sixth International AIDS Society Conference on HIV Pathogenesis, Treatment and Prevention, Rome, abstract MOAD0105, 2011. Link to abstract <http://pag.ias2011.org/abstracts.aspx?aid=3791>