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## Earlier treatment averting higher medical costs in South African cohort

[\*Epidemiology, policy and funding\*](#)

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Starting treatment earlier, at a higher CD4 count, and being in care six months or longer before starting ART, is associated with lower treatment costs during the first months of antiretroviral treatment, according to an analysis of the direct health care costs of treating over 10,000 HIV-infected adults in a private HIV care programme in southern Africa, published in the December 1 edition of *PLoS Medicine*.

Careful monitoring of adherence, including interventions to improve adherence, can reduce costs incurred later, reported Rory Leisang and colleagues. Poor adherence is associated with significant increases in costs over time suggesting, according to the authors, that this should be included in economic models of ART.

Progress toward universal access to treatment in resource-poor settings continues in part because of the reduction in costs of antiretroviral drugs. However, antiretroviral drugs are only one part of the direct cost of treatment.

Other direct costs may include general practitioner, specialist, maternity-related care for patients receiving ART, hospital accommodation, CD4 counts, and/or viral loads (when available).

Effective allocation of limited resources in resource-poor settings requires that public health officials and policymakers have the most complete information possible about the direct costs of HIV care. Few studies have looked at these costs and in particular those incurred before the start of ART.

The authors undertook a retrospective cohort analysis of the direct costs of treating over 10,000 HIV-infected adults enrolled in a Southern African managed care programme with close to 600,000 patient months of follow-up from three years before the start of antiretroviral treatment to five years on ART. In this programme ART was provided when CD4 cell counts fell below 350 cells/mm<sup>3</sup>.

Direct costs increased from about four months prior to the start of ART and peaked at the start of ART remaining high for the next four months. After this point costs decreased to an intermediary level and remained stable over the next five years.

The authors note an important and unique aspect of their study—the time-dependent association between total costs and specific variables.

Lower baseline CD4 cell counts, higher baseline viral loads and shorter time of CD4 cell count monitoring before the start of ART (a substitute for HIV care) were independently linked with higher costs in the early time period and mostly driven by hospitalisation.

High rates of morbidity ending in hospitalisation or death are common to antiretroviral programmes in resource-poor settings. When compared with resource-rich settings, patients on ART in resource-

poor settings have higher early mortality because more often people begin ART at a more advanced disease stage.

Poor adherence was the key variable associated with higher costs in the later time period. Conversely higher adherence was associated with lower costs and in particular when removing antiretroviral drug costs. Poor adherence means limited effectiveness of treatment, greater risk of resistance and failure which may lead to earlier switching to more costly second-line regimens. The authors stress that in spite of the importance of adherence it is not included in current economic models.

The authors note several limitations.

The cohort consists of private sector patients while the majority of patients in resource-poor settings are treated in the public sector. The authors acknowledge that the actual cost findings may not be generalisable to public health care systems in Southern Africa and other resource-poor settings. However, they argue, their findings that the drivers of total costs change considerably over time may be generalisable providing valuable information to public health planners and policymakers.

Also, the impact of specific AIDS-defining illnesses on outcomes and costs were not included because the data were not available.

The analysis is that of a provider's perspective. While indirect costs and direct non-health costs were not included this perspective, the authors argue, is relevant in determining the key drivers of health care costs.

They note that public health planners need to be concerned with issues other than reducing costs including quality of care and outcomes which although not addressed in the analysis are essential.

Their findings suggest that high early costs of antiretroviral programmes could be reduced by starting ART at higher CD4 cell counts and being in HIV care for longer periods before starting treatment.

In addition monitoring of ART adherence as well as interventions to improve adherence can reduce later direct costs. They conclude: "The increasing impact of ART adherence on costs over time suggests that this variable should be incorporated in economic models of ART."

## Reference

Rory Leisegang et al. *Early and late direct costs in a Southern African antiretroviral treatment programme: a retrospective cohort analysis*. PLoS Med 6 (12): e1000189. doi:10.1371/journal.pmed.1000189. 2009