Adult life expectancy in the era of ART: evidence from six population-based HIV surveillance studies in eastern and southern Africa

G. Reniers[1], J. Eaton[2], D. Michael[3], J. Nakiyingi-Miiro[4], C.W. Kabudula[5], A.C. Crampin[1 6], K.Herbst[7], M. Urassa[3], A. Nyaguara[8], S. Gregson[2 9], S. Macquins[8], V. Hosegood[6 10], A. Price[6], X. Gomez-Olive[5], I. Kasamba[4], A. Cori[2], E. Slaymaker[1] and B. Zaba[1] on behalf of the ALPHA Network

1 London School of Hygiene and Tropical Medicine, UK
2 Imperial College, UK
3 National Institute for Medical Research, Tanzania
4 Medical Research Council and Uganda Virus Research Institute, Uganda
5 School of Public Health, University of the Witwatersrand, South Africa
6 Karonga Prevention Study, Malawi
7 Africa Centre for Health and Population Studies, University of KwaZulu Natal, South Africa
8 Kenya Medical Research Institute and the Centers for Disease Control, Kenya
9 Manicaland HIV/STD prevention project, Biomedical Research and Training Institute, Zimbabwe
10 Southampton University, UK

Abstract

Few studies directly measure the population-wide impact of antiretroviral therapy (ART) on HIV related mortality in Africa, with existing estimates relying on model extrapolations of clinical data. We describe trends in adult life expectancy (LE), the LE gains attributable to ART, and the remaining LE deficit due to HIV in seven population-based serosurveillance sites. Non-parametric survival analysis is used to estimate adult LE and LE deficit due to HIV. We fit a model of age-specific HIV incidence and natural survival to estimate counterfactual LE trends without ART and use that to derive the gains attributable to ART. Estimates are disaggregated by sex and span the years 2000 to 2011. Total or gross LE gains range between 6 and 17 years and are larger for women than men. LE gains are largest in eastern Africa, where HIV prevalence declined prior to ART availability, but the net effect of ART is largest in South African sites, where LE would have continued to decline without ART.

Contact georges.reniers@lshtm.ac.uk for the latest version of the manuscript