Survival following HIV infection in the pre-ART era in a rural Tanzanian cohort

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Introduction

Survival patterns following HIV infection in African populations in the pre-ART era form an important baseline for measuring the future success of treatment programmes. Only two African cohort studies have followed sero-converters for 10 or more years to allow such patterns to be described: the Kisesa open cohort study by NIMR in North West Tanzania, and the Masaka general population cohort study by MRC/UVRI in Southern Uganda.

Methods

• The Kisesa open cohort study conducted 4 rounds of village clinic-based HIV testing and 19 rounds of household-based demographic surveillance between 1994 and 2005, prior to local availability of ART
• Approximate infection dates were established for individual sero-converters by randomly allocating a date between last negative and first positive test if tests were less than 3 years apart
• Person-years lived post infection were computed, allowing for left and right censoring, and Kaplan-Meier survival functions constructed
• Weibull models were fitted to estimate median survival time, and parametric regression methods used to investigate the influence of sex and infection age on survival

Results

• 229 sero-converters were identified, providing 752 person-years of follow-up during which 37 deaths were observed
• The proportion surviving 10 years post infection was 0.66, with a 95% confidence interval of 0.52 – 0.76 (fig. 1)
• Fitting a Weibull curve to observed survival patterns generated an overall predicted median survival time of 11.2 years (fig 1)

Discussion and conclusion

• Adult mortality for the uninfected, $45q_{15}$, was 0.28 [0.24 – 0.32]
• Among uninfected controls matched for sex and age, the proportion surviving for 10 years was 0.97 [0.96 – 0.98]
• Survival was strongly related to age at infection, with an increase in the hazard ratio of 1.08 per year [1.05-1.12] (fig 2)
• Females had a slight advantage over males, with a hazard ratio of 0.7 [0.4 – 1.4] (fig 2)