Trends in HIV-1 incidence in a cohort of prostitutes in Kenya: implications for HIV-1 vaccine efficacy trials.

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Abstract

BACKGROUND:

Accurate predictions of HIV-1 incidence in potential study populations are essential for designing HIV-1 vaccine efficacy trials. Little information is available on the estimated incidence of HIV-1 in such populations, especially information on incidence over time and incidence while participating in risk-reduction programs.

OBJECTIVES:

To examine time trends in HIV-1 incidence in a vaccine preparedness cohort.

DESIGN:

Prospective cohort study of female prostitutes in Mombasa, Kenya.

METHODS:

HIV-1 incidence was determined using open and closed cohort designs. Generalized estimating equations were used to model HIV-1 and sexually transmitted disease (STD) incidence and sexual risk behaviors over time.

RESULTS:

When analyzed as a closed cohort, HIV-1 incidence declined 10-fold during 3 years of follow-up (from 17.4 to 1.7 cases/100 person-years; p <.001). More than 50% of the cases of HIV-1 occurred during the first 6 months after enrollment, and 73% during the first 12 months. When analyzed as an open cohort, HIV-1 incidence density fell during the first 4 calendar years, influenced by accumulation of lower risk participants and variations in study recruitment. Significant declines occurred in both STD incidence and high-risk sexual behaviors during follow-up.

CONCLUSIONS:

This study documents a dramatic decline in the risk of HIV-1 infection while participating in a prospective cohort, with most seroconversions occurring within 1 year of enrollment. Variations
in HIV-1 incidence within high-risk populations should be anticipated during the design of vaccine trials.

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