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Abstract

TUPE0403 - Four cities modelling: population-level effect of HSV-2 therapy on HIV incidence in sub-Saharan Africa

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Objective: To evaluate the potential impact on population-level HIV incidence of episodic or suppressive therapy for HSV-2 using mathematical modelling techniques.

Methods: An individual-based stochastic model was fitted to demographic, behavioural and epidemiological data from cross-sectional population-based surveys in four African cities (Kisumu, Kenya; Ndola, Zambia; Yaounde, Cameroon; and Cotonou, Benin). The effects of episodic therapy for symptomatic HSV-2 positive individuals, and of continuous suppressive therapy for commercial sex workers (CSW) regardless of symptoms, on population HIV incidence were examined.

Results: Ten years after introducing episodic therapy for symptomatic HSV-2 positive men and women who sought treatment in the model, conservative assumptions (20% symptom recognition and 20% reduction in ulcer duration with treatment) led to a population-level decrease in HIV incidence at that time point by 2%-5% across all four cities. Optimistic assumptions (66% symptom recognition and 78% reduction in ulcer duration) led to a decrease in HIV incidence by 22%-48%. Symptom recognition and treatment seeking behaviour were more important than the reduction in ulcer duration for the impact of episodic HSV-2 therapy on HIV. Continuous suppressive HSV-2 therapy limited to CSW had very little effect on population-level HIV incidence in generalized HIV epidemics, but was effective in Cotonou with a more concentrated HIV epidemic. In sites with generalized HIV epidemics, treating clients in addition to CSW greatly improved the population-level impact; treating 10% of CSW clients with HSV-2 suppressive therapy led to a reduction in HIV incidence by 5%-8% and treating 33% of clients led to a reduction by 14%-17% after ten years.

Conclusions: HSV-2 episodic therapy may have a population-level impact on HIV incidence if symptom recognition and treatment seeking behaviour can be improved. HSV-2 suppressive therapy could have population-level impact if administered to CSW in concentrated HIV epidemics, or to CSW and a proportion of their clients in more generalized epidemics.