Modelling the cost-effectiveness of (HSV-2) suppressive therapy among dually HIV and HSV-2 infected women in Johannesburg, South Africa

Peter Vickerman[1], Angela Devine[1], Gesine Meyer-Rath[1,2], Anna Foss[1], Sinead Delany-Moretlwe[2], Philippe Mayaud[1],

[1] London School of Hygiene and Tropical Medicine, UK

[2]HIV and STI Research Cluster, Reproductive Health and HIV Research Unit, University of the Witwatersrand, South Africa

Background

- Recent clinical trials have shown the effectiveness of HSV-suppressive therapy for decreasing HIV plasma viral load (PVL) in HIV-1/HSV-2 co-infected women.
- This would suggest an impact on HIV transmission and HIV progression and HIV-related death
- However, recent data from the Partners in Prevention (PIP) trial suggest HSV-suppressive therapy may only reduce HIV progression and HIV-related death
- Primary cost data and modelling is used to estimate the cost-effectiveness of this intervention for reducing HIV transmission and delaying progression to AIDS in HSV-2 co-infected women not eligible for HAART.

Methods

- Resource/ cost data for rolling out HSV-2 suppressive therapy in a primary health care setting were collected in Johannesburg.
- Effectiveness was estimated in two ways:
  - Using trial data on the effect on HIV PVL, and a recent literature review of the effect of PVL on HIV disease progression and infectivity.
  - Data from the PiP trial - initial data suggest a **17%** reduction in HIV related progression/death
- A Markov model simulated the cost-effectiveness of HSV-2 therapy on HIV progression and transmission to their male partners of **300 antiretroviral-naïve women** (CD4 >200 cells/μL).
- Two daily total pill costs were used–
  - **US$ 0.5 per day** – cheapest current SA price
  - **US$ 0.07 per day** – cheapest international price

Table: Impact and cost-effectiveness (CE) of HSV-2 suppressive treatment in US$ (2008) per life year gained (LYG) for 300 women obtaining treatment and their male partners.
Figures in bold indicate CE projections using PiP trial data

% decrease in HIV incidence while on HSV-2 therapy	Impact	CE per LYG	
	LYG	daily pills cost=$ 0.50	daily pills cost=$ 0.07
Impact and CE with effect on HIV infectivity only included			
0%	0	NA	NA
14%	17	$ 22,265	$ 7,595
25%	31	$ 12,124	$ 4,136
34%	43	$ 8,707	$ 2,970
Impact and CE with **17% decrease** in HIV disease progression and HIV-related death also included			
0%	**148**	**$ 2,733**	**$ 932**
14%	166	$ 2,430	$ 828
25%	182	$ 2,223	$ 758
34%	195	$ 2,071	$ 706

Projections assume HIV incidence of 8 per 100 p-yrs

Results

- Prior to PiP trial (Pre-PiP), existing data suggested HSV-2 suppressive therapy could reduce:
  - HIV infectivity of co-infected women by 14-34%
  - Rate of HIV progression and death by 4-39%,
- If suppressive therapy just reduces HIV incidence amongst the women's male partners (Pre-PIP scenario), cost per life year gained (CE per LYG) would be (*assum. HIV incidence 8 per 100 p-yrs*) :
  - **US$ 8,704 to 22,265** at US$ 0.5 daily pills cost
  - **US$ 2,970 to 7,595** at US$ 0.07 daily pills cost
- If suppressive therapy also reduced HIV related progression and death, as suggested by Pre-PIP data, then all CE projections **reduced by 90%**
- If suppressive therapy just reduces HIV progression and HIV related death by 17% (PIP scenario) then CE would be:
  - **US$ 2,733 per LYG** at US$ 0.5 daily pills cost
  - **US$ 932 per LYG** at US$ 0.07 daily pills cost

Conclusions

Compared to the CE threshold from the World Development Report (**US$ 1,000 per LYG**), HSV-2 suppressive therapy could be an **affordable strategy for reducing HIV related disease progression** in HSV-2 co-infected women. However, **cheaper drugs** need to be made available.

HIVTools Research Group

Programme for Research & Capacity Building on Sexual & Reproductive Health & HIV in Developing Countries