

## Modelling the potential impact of age-targeted early HIV treatment initiation in South Africa

At the 3<sup>rd</sup> Annual Congress of ISPOR South Africa, Wim Delva – senior researcher at SACEMA – gave a presentation on age-targeted early HIV treatment initiation. As reported earlier in the SACEMA Quarterly, universal, immediate antiretroviral treatment (ART) has the potential to reduce HIV incidence dramatically (1). However, this may not be feasible nor affordable for many countries, including South Africa. Therefore, targeting 20-30 year old adults only (age-targeting) might be more efficient.

A mathematical model for the spread of HIV was developed, stratified by age, sex and CD4 cell count to compare the effectiveness and efficiency of universal, immediate ART versus age-targeted, immediate ART. Demographical, behavioural and ART input data were chosen to reproduce the South African HIV epidemic. Effectiveness and efficiency over 10 years (2010 - 2020) were expressed as the reduction in HIV incidence (effectiveness) and the number of averted HIV infections per additional 100 person years of ART (efficiency), relative to the current scenario of ART eligibility at 200 CD4 cells

per microliter. The results showed that the HIV incidence in 15-49 year olds is expected to drop by 29% (to a level of 0.8%) in 2020 under the current treatment eligibility criteria. Universal, immediate ART initiation results in an 84% reduction in incidence and 7.3 averted HIV infections per additional 100 person years of ART. For age-targeted early HIV treatment initiation these figures are: 75% reduction and 15.9 averted HIV infections.

In conclusion, the incidence of HIV is likely to drop over the next 10 years due to natural dynamics of the epidemic and a limited effect of the current HIV treatment strategy. Age-targeted earlier ART initiation may have a substantial incremental impact on the incidence of HIV while being more than twice as efficient as universal, immediate ART initiation.

**Reference:** Williams BG. Universal Testing and Immediate ART. SACEMA Quarterly, issue March 2009. [[http://www.sacemaquarterly.com/index.php?page=detailview&p\\_id=3&d\\_id=18](http://www.sacemaquarterly.com/index.php?page=detailview&p_id=3&d_id=18)] Accessed May 19, 2009

## Selecting HIV infection prevention interventions in Malawi

In the April 2010 issue of the SACEMA Quarterly an article was published describing a simple mathematical model developed by the UNAIDS Reference Group for Estimates, Modelling and Projections to help countries estimate the proportion of new infections that occur through key transmission modes (1). Indicated was that this type of in-country analysis could be used to inform the planning of appropriately targeted intervention programmes. In BMC Health Services Research recently an article has been published on selecting HIV infection prevention interventions in Malawi using this mode of transmission model. The results indicated that the groups accounting for most new infections were the low-risk heterosexual group (37%) – the discordant couples (one partner infected with HIV, the other not) - and those who had casual sex and their partners (a further 16% and 27% respectively of new cases). Circumcision, condoms with casual sex and bar girls, and improved STI treatment had limited effect in reducing incident cases, while condom use with discordant couples, abstinence and a zero-grazing campaign had major effects. The combination of a successful strategy to eliminate multiple concurrent partners (more partners at the same time) and a successful strategy to eliminate all infections between discordant couples would reduce incident cases by 99%. So the results highlight the importance for a revitalised HIV prevention strategy which needs to include interventions which tackle the two modes of transmission now found to be so important in Malawi: concurrency and discordancy.

### References;

1. Gouws E. Estimating the distribution of new HIV infections by mode of transmission. [http://www.sacemaquarterly.com/magazines.php?page=detailview&p\\_id=14&d\\_id=43](http://www.sacemaquarterly.com/magazines.php?page=detailview&p_id=14&d_id=43) (Accessed 20 September, 2010)
2. Maleta K, Bowie C. Selecting HIV infection prevention interventions in the mature HIV epidemic in Malawi using the mode of transmission model. BMC Health Services Research. 2010;10:243. Link to abstract <http://www.biomedcentral.com/1472-6963/10/243>