

Measurement and Modelling of HIV Epidemic among High Risk Groups and Migrants in Two Districts of Maharashtra, India: An Application of Forecasting Software-Spectrum

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Abstract : Background: For the first time in 2009, India was able to generate estimates of HIV incidence (the number of new HIV infections per year). Analysis of epidemic projections helped in revealing that the number of new annual HIV infections in India had declined by more than 50% during the last decade (GOI Ministry of Health and Family Welfare, 2010). Then, National AIDS Control Organisation (NACO) planned to scale up its efforts in generating projections through epidemiological analysis and modelling by taking recent available sources of evidence such as HIV Sentinel Surveillance (HSS), India Census data and other critical data sets. Recently, NACO generated current round of HIV estimates-2012 through globally recommended tool "Spectrum Software" and came out with the estimates for adult HIV prevalence, annual new infections, number of people living with HIV, AIDS-related deaths and treatment needs. State level prevalence and incidence projections produced were used to project consequences of the epidemic in spectrum. In presence of HIV estimates generated at state level in India by NACO, USIAD funded PIPPSE project under the leadership of NACO undertook the estimations and projections to district level using same Spectrum software. In 2011, adult HIV prevalence in one of the high prevalent States, Maharashtra was 0.42% ahead of the national average of 0.27%. Considering the heterogeneity of HIV epidemic between districts, two districts of Maharashtra – Thane and Mumbai were selected to estimate and project the number of People-Living-with-HIV/AIDS (PLHIV), HIV-prevalence among adults and annual new HIV infections till 2017. Methodology: Inputs in spectrum included demographic data from Census of India since 1980 and sample registration system, programmatic data on 'Alive and on ART (adult and children)', 'Mother-Baby pairs under PPTCT' and 'High Risk Group (HRG)-size mapping estimates', surveillance data from various rounds of HSS, National Family Health Survey-III, Integrated Biological and Behavioural Assessment and Behavioural Sentinel Surveillance. Major Findings: Assuming current programmatic interventions in these districts, an estimated decrease of 12% points in Thane and 31% points in Mumbai among new infections in HRGs and migrants is observed from 2011 by 2017. Conclusions: Project also validated decrease in HIV new infection among one of the high risk groups-FSWs using program cohort data since 2012 to 2016. Though there is a decrease in HIV prevalence and new infections in Thane and Mumbai, further decrease is possible if appropriate programme response, strategies and interventions are envisaged for specific target groups based on this evidence. Moreover, evidence need to be validated by other estimation/modelling techniques; and evidence can be generated for other districts of the state, where HIV prevalence is high and reliable data sources are available, to understand the epidemic within the local context.

Keywords : HIV sentinel surveillance, high risk groups, projections, new infections

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