

# **CURRENT TRENDS AND FUTURE COURSE OF TRANSMISSION DYNAMICS OF HIV/AIDS IN SOUTH INDIA: PROJECTIONS FROM ASIAN EPIDEMIC (AEM) / GOALS MODEL**

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## **Background**

Even after two decades of HIV epidemic, there are many questions about projections, underlying causes and investments to be made to avert its adverse impact on various development and other issues. Although many lessons have been learned about effective prevention programs for focused groups, we still have difficulty in focusing efforts on the interventions that will have the greatest impact in stemming the spread of the virus. The difficulty in focusing prevention efforts appropriately is especially pronounced in countries like India where HIV remains largely concentrated among sub-populations whose behavior puts them at high risk for contracting and transmitting HIV. In the absence of clear understanding of the transmission dynamics, it is difficult to invest in services for different subgroups such as injecting drug users, men who have sex with men and female sex workers and the clients they serve. As a result of this these sub populations remain among the most important focal points for effective HIV prevention especially in India and all its states.

Karnataka in south India is one of the six states in India where HIV Prevalence is high. the average prevalence in this state is 1.52 percent. Based on this prevalence rate, it has been estimated that over 5 lakhs persons are already living with HIV. Out of total population of 2.73 crores, 37 to 40 percent are in the age group of 15 to 50 years. HIV estimates from the available sentinel surveillance and VCTC data, it is revealed that it is 1-2 percent among ANC attendees and 10-20 percent among STD centre attendees. Though several factors are found to be responsible for the high prevalence of HIV in the state and transmission dynamics is quite complex and lack complete understanding. Although several studies have been attempted to understand the dynamics, none of the studies have addressed the issue synthesizing all the existing demographic, epidemic and behavioral data.

## **Objectives**

Therefore in this paper, an effort is made to understand the primary groups and transmission modes driving HIV transmission in Karnataka using Asia Epidemic Model (AEM) and GOALS models. Specifically the paper attempts to: (1) compile and synthesize all the data (behavioral, demographic and epidemiological) collected from different sources for assessing trends and variations; (2) project new infections among subgroups and (3) assess the programmatic impact on the future course of epidemic

## **Data and Methodology**

The paper makes use of the data collected from various behavioral and situational assessment studies in Karnataka. Assumptions (upward or downward adjustments) are

made wherever it necessary, especially on behavioral and STI data which was available for neighboring state Tamil Nadu or at national level.

Based on the past and current demographic, epidemiological and behavioral data, projections of HIV/AIDS incidence and prevalence are made up to year 2010 in the state. The projections for population subgroups include general male and female populations, males who are clients of sex workers, males who are not clients of sex workers, direct female sex workers (those with a higher frequency of partnering), indirect female sex workers (those with a lower frequency of partnering), injecting drug users (IDUs) in higher risk sharing networks, IDUs who are in lower risk networks or do not share, male sex workers, Men who have sex with men (MSM), who are not sex workers. The AEM considers HIV transmission within a population aged >15 years. Further, using GOALS Model, by varying the behavioral inputs, programmatic coverages and STI trends, the paper examined the impact of different interventions on the prevention efforts on the future course of the epidemic. Movement is allowed between different subgroups assuming changes in the transmission dynamics of the behaviors over a period of time.

## **Results**

The overall epidemic situation predicted by AEM suggests that by the end of 2010, the cumulative HIV infections will be around 6,00,000 with 50,000 new infections every year. Further the projected trend suggests that new infections are increasing among low risk women and clients of sex workers. GOALS model suggests that new infections of about 12,211 among clients of sex workers, 39,000 overall infections (among adult population), and 600 among children could be averted from HIV infections during 2005 to 2010 by increasing the coverage of clients of sex workers from the present level of 40 percent to 80 percent. The additional cost for reaching the coverage of 80 percent clients is about 33 percent of the present investments. Increasing coverage of Voluntary Testing and Counseling Centre (VCTCs) and PPTCT programs for high risk groups projects greater impact on the epidemic in the state.