

What do we know?

Guyana's modes of transmission study experience

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Otilia St. Charles, UNAIDS/Guyana . **Rosalinda Hernandez**, PAHO/Guyana . **Paloma Cuchi**, UNAIDS/
Geneva . **Eleanor Gouws**, UNAIDS/Geneva . **Patricia Rivera-Scott**, UNAIDS/Trinidad and Tobago

Background

UNAIDS' advocacy for countries to "Know Your Epidemic and Know your Response" is based on the premise of advanced data collection, analysis and use. For this reason, the UNAIDS Reference Group for Estimations, Models and Projections developed the Modes of Transmission (MOT) model in 2002. It's meant to help countries estimate the distribution of new HIV infections by modes of transmission and use existing epidemiological data to better target prevention programming.

MOT studies can be conducted relatively inexpensively in countries to estimate the distribution of new infections in sub-populations that are at varying risk for HIV infection. These studies allow countries with limited resources to conduct a comprehensive review of available epidemiological data, to identify where new infections will occur in the near future and to ensure that resources are directed to programmatic areas in which the greatest impact may be achieved. In our current economic environment, as funding for HIV-specific programming declines, it no longer suffices to merely know that HIV exists. We need to know what resources are available to respond and, more precisely, where to direct them so that they are more efficiently used.

The MOT incidence model is available as an excel spreadsheet with formulas that facilitate incidence analysis by designated risk populations according to the local context of the epidemic. It is not an isolated tool but rather part of the overall "Know your Epidemic/Know your Response" study methodology, which is comprised of several components:

- The MOT incidence modeling;
- A comprehensive review of available epidemiological data;
- A review of AIDS-related spending sources (NASA); and
- A prevention programming review.



Hence, this study methodology permits a comprehensive analysis based upon available epidemiological data, incidence estimates, financial expenditures to date, and program activities by sub-population.

Thus far, MOTs have been conducted, or are in the process of being conducted, in about 30 countries globally. These include the Dominican Republic and Jamaica in the Caribbean and Peru, Mexico, Nicaragua, El Salvador and Guatemala in Latin America. The modeling process is consistent across countries. However, the MOT exercise and the reliability of its outcomes rely heavily on a country's data availability as well as the quality of existing data sources and the capacity for data analysis.



Consequently, although the standard MOT model does not incorporate estimates of “uncertainty” or confidence intervals for its estimates, this can and has been included in some instances. For example, in Jamaica’s 2011 MOT exercise, an uncertainty analysis was conducted taking

into consideration constraints regarding data quality, availability, and generalisability at the national level.

Guyana is a small country with notable resource constraints. Considerable efforts have been made to mitigate the effects of HIV on its relatively small population. In this context it is especially important to ensure that the optimal use of data leads to the most effective use of resources.

Because Guyana has been one of the most heavily affected countries in the region, its HIV and AIDS response has also benefitted from both financial and technical support from multiple sources (Global Fund, United States Government, the Canadian International Development Agency (CIDA) and United Nations agencies). As a result, it has collected considerable amounts of data that could potentially be used by the MOT study to more clearly understand the epidemic. Furthermore, Guyana has a relatively extensive history of conducting population based surveillance activities (**See Table 1**).

While the country does have a sense of which sub-populations are most affected by HIV in terms of prevalence, to date no previous studies have ventured to assess the distribution of new infections among all populations considered to be playing a role in the epidemic in as much detail as the MOT.

Table 1-

Guyana’s HIV-related data and surveillance study history

HIV Prevalence: 1.2% in 2009

PMTCT: 5.6%- 2000 (ANC); 1.6%- 2006 (ANC); 1.1%-2009 (routine program data)

Young People: Approximately 1%- 2010 (routine program data)

MSM: 21.1%- 2004 (BBSS); 19.4%- 2009 (BBSS)

Sex Workers: 45%- 1997 (BBSS)

Miners: 6.5%- 2000 (Special Study); 3.9%- 2004 (Special Study)

Prisoners: 5.4%- 2008 (BBSS)

Population Based Studies Conducted to Date:

Antenatal Care Sentinel Surveillance Study- 2006

Multiple Indicator Cluster Survey (MICS)- 2006

AIDS Indicators Survey- 2006

Demographic Health Survey- 2008/2009

Biological and Behavioral Surveillance Studies- 2004/2008/2009



Methodology

An agreement was reached by the Ministry of Health (MOH) and partners in Guyana that the MOT exercise would begin with the establishment of a technical working group (TWG) of data experts (including individuals who actually had hands-on experience working on previous surveillance study data collection activities and could respond to key questions posed during the exercise).

This TWG was responsible for conducting the initial inventory of available data for this study and included representatives from organisations such as the MOH, National AIDS Programme (NAP), Pan-American Health Organisation (PAHO), Joint United Nations Programme on HIV/AIDS (UNAIDS), United States Agency for International Development (USAID), Centre for Disease Control and Prevention (CDC), and MEASURE Evaluation.

At the outset of the activity it was also agreed that the findings of the inventory would determine the subsequent course of action—specifically whether to carry out the full MOT study or to develop specific technical recommendations that would assist the country in ensuring that it is well positioned to conduct the study in the near future.

The first step was to explore the feasibility (in terms of data availability for the incidence modeling) of conducting the full MOT Study. The TWG met initially to agree upon the relevant sub-populations to be included in Guyana's MOT exercise and to identify potential data sources pertaining to these populations. It then collected data that responded to the prescribed variables



included in the model and assessed the quality of this data for inclusion in the estimation exercise.

The review of epidemiological data required a thorough analysis of methodologies and questionnaires used in previous studies. In instances when the data necessary to respond to variables included in the model were not reported, it required that the raw data be reviewed as well. It also entailed the formal assessment of other factors such as the adequacy of recruitment strategies used.



Experience with the Epi-Review Tool



A technical team from PAHO and UNAIDS further reviewed data from Guyana's 2008/2009 Biological and Behavioral Sero-surveillance Survey (BBSS) and Demographic Health Survey (DHS) exercises and routine program data. Based on the

findings the team developed specific recommendations on how the country could acquire more relevant and reliable data in its next rounds of data collection by piloting the UNAIDS Epidemiological Review Tool.

The spreadsheet tool was developed by UNAIDS to support countries in conducting a preliminary assessment of its data availability and quality prior to launching the entire MOT study. It permits users to map all of the country's studies and identify strengths and weaknesses of available data. Most importantly, it assists with developing a variable specific work plan to obtain viable data. This makes it possible to conduct the MOT analysis more reliably in the future.

In Guyana, the tool was brought into the data review a bit late. However, the technical team did find it useful in developing a more succinct way of presenting the results of the epidemiological data review for various audiences. It facilitates both a graphic presentation of the amount of data available in country and an assessment of data quality.

Results

The TWG concluded that methodological issues related to the last round of data collection for the 2008/9 BBSS, such as inadequate sample sizes and flawed recruitment strategies, resulted in some speculation about the credibility of the data collected for some most at risk populations (MARPS). The group considered the lack of confidence in the reliability of the current data to be a major drawback in going forward with the MOT study. Additionally, the TWG also found that although there initially appeared to be enough data available for completing the MOT exercise, there were some notable limitations to the available data that would jeopardise the reliability and credibility of assumptions and input needed for the model. The following are examples of challenges and data limitations identified by the technical team:

1. Timely availability of raw data sets when data was not presented in published reports.
2. Questions that were posed in the primary data collection activity failed to respond to the variable that the MOT study requires.
3. The study's target sample size was unmet resulting in small, non-representative, sample sizes.
4. Some pertinent primary data was collected in studies such as the DHS and BBSS but not included in the final report.
5. Data was available for some populations though not in the appropriate time frame (within the last 5 years) for this MOT study.
6. Insufficient data on males in the general population.



Plan of action

The PAHO/UNAIDS technical team, with technical input from the Centre for Disease Control and Prevention (CDC), developed several recommended actions to be undertaken during the 2012—2013 timeframe. These recommendations will enable Guyana to conduct its MOT study in 2014 and project incidence in designated sub-populations in the year 2015.

In general, the recommendations focused on addressing the data quality issues identified as a result of the review, modifications to be made to questions previously posed in the BBSS, potential data sources to be used to acquire additional data needed, and the format for reporting future findings in the BBSS and DHS final reports. (See Table 2 for excerpt).

Conclusion

The evolution of the HIV epidemic and its response have spurred necessary advancements in how we understand the epidemic, streamline and target financial resources, and measure program success. With the improvements in prevention initiatives and availability of anti-retroviral therapy, countries are increasingly relying on tracking new infections (incidence) rather than the total number of HIV and AIDS cases (prevalence) to assess the burden of HIV and develop more effective interventions.

Guyana faced challenges that countries with limited data might face in approaching the MOT study to calculate the distribution of new infections. The country made the informed decision not to conduct the MOT study as a result of the preliminary review of available data. However, the EPI-review exercise served to increase awareness about the limitations of the data and the types of studies /data needed to help better understand the epidemic and determine appro-

priate responses. The effort helped generate substantial recommendations to further enhance future data collection activities.

The UNAIDS Epi-review tool is highly recommended for use as a preliminary assessment tool for the MOT study. The tool can save a lot of time and effort at the country level by focusing on the data needed to conduct the exercise before engaging unnecessary resources to conduct the full MOT study. The lessons learned from this exercise could serve to inform future activities in countries with similar scenarios.

For more information on this report contact Otilia St. Charles—stcharleso@unaids.org

For advice and recommendations on the Epi-review process contact Eleanor Gouws—gouwse@unaids.org

Table 2-

Excerpt of recommendations and lessons learned

-Conduct size estimations to determine the size of MSM and SW populations.

-Conduct formative assessments among MARP groups to ensure that target sample sizes are achieved in next BBSS.

-Introduce questions pertaining to number of sexual acts for MARPs and general populations in future data collection exercises.

-Consider the use of proxy-data sets (STI patients, TB patients, etc.) to represent bridge and other populations as necessary.

-Consider implementing facility or community-based HIV and STI sentinel surveillance study for key populations at higher risk.

-Ensure that all relevant stakeholders buy in to the process (especially those who generate/manage data).