



# **Prevention of mother to child transmission of HIV: Evaluation of a Pilot HIV/AIDS Programme in Dar es Salaam, Tanzania**

By  
Dr. Sophia J. Masanja  
Health Development Expert  
Institute for Environmental & Development Studies  
P.O Box 12556 Dar es Salaam  
Tanzania



# Introduction

- Institute for Environment and Development Studies (IEDS) was established in 2006 as a secular non-profit making private institution. It was established in accordance with the Laws of Tanzania (ACT 2002). It is a think-tank, responsible for higher education, research and consultancy services in the field of environment and Development. It was initiated by an individual family who felt the need for a professional body to provide research, consultancy and training to individuals that can enhance development work at the grass-roots level.
- In all its work, IEDS aims to challenge convention and to generate fresh ideas that foster new approaches to development policy and practice. Such problem-focused thinking requires a commitment to a multi-disciplinary approach.
- In 2006, study on evaluation was commissioned to IEDS to establish the of HIV transmission from mother to child. I was involved in that study. In the study it was estimated 2.3 million children under 15 years were living with HIV and about half a million babies became infected with HIV before birth, during delivery, or through breast feeding in Africa. Prevention of mother to child transmission of HIV is therefore a priority for agencies fighting the global HIV epidemic in Africa and Tanzania in particular, but many questions remain about the effectiveness of the current programmes. We used the TACAIDS programme funded by Global Health Fund as an example to examine how programmes to prevent mother to child transmission are monitored and evaluated and to highlight the problems.



# Strategy to prevent transmission

- Estimates of the efficacy of antiretroviral prophylaxis suggest that at least half of the Tanzanian's children who are at risk of HIV infection might be protected if a mother receives antenatal care, is offered HIV counseling and testing, and, if infected, she and her baby receive prophylaxis. Prophylaxis is the mainstay of the strategy to prevent mother to child transmission. Several antiretroviral regimens are recommended in resource constrained settings, although nevirapine (either alone or with other drugs) is usually favoured because it is cheap, easy to administer, rapidly absorbed, and has a long half life. Depending on the regimen and the mother's choice of infant feeding, the risk of HIV transmission can be reduced to <2%. Whenever feasible, programmes should strive to provide highly active antiretroviral therapy to pregnant women.
- Although formula feeding can reduce HIV infection rates among infants, it is often not acceptable, feasible, affordable, sustainable, or safe in resource limited settings. Programmes should provide counseling and support on various feeding options (including exclusive breastfeeding), highlighting the potential benefits and risks of each. Other activities include promotion of optimal obstetrical practices; improvement of antenatal, postnatal, and child health services; and treatment of maternal diseases. Community based activities are also often implemented to improve community knowledge of HIV and AIDS and counter negative attitudes to people with HIV.



# Routine monitoring and evaluation tools

- Because Tanzania has limited budget on health issues or laboratory resources to determine HIV infection in infants using polymerase chain reaction tests, health facility and patient indicators are generally used to assess the effectiveness of programmes. The effectiveness of the programme is typically measured in terms of the estimated percentage (change) of HIV infected infants who are born to HIV infected mothers. However, data shows that effective prevention relies on a cascade of steps. A pregnant woman must receive antenatal care at a centre offering HIV testing. If she consents to testing she must receive her HIV test result and, if infected, receive appropriate prophylaxis. She must then take the prophylaxis during labour and her infant must receive prophylaxis after delivery. Finally, the mother and infant must receive follow-up care to ensure that they have any necessary treatment and that the infant is tested for HIV, typically in the second year of life when HIV antibody testing is reliable.



# Indicators

- **Health facility indicators** -No of health facilities providing services to prevent transmission in past 12 months. Programme reports and health facility surveys  
Various  
No (%) of practising skilled health workers in antenatal care who have received training in preventing transmission in past 24 months. No of health facilities with adequate capacity to monitor and accurately record services. No of maternity facilities with appropriate referrals at the institutional level to link HIV infected women and their infants to care and support services. No of facilities that offer appropriate advice on infant feeding during post-test counselling. No of antenatal clinics providing family planning advice services during post-test counselling.No of condoms distributed in antenatal clinics
- **Patient indicators** - No of pregnant women who attend at least one antenatal clinic visit at a programme site. Antenatal care enrolment register  
Antenatal care. No of pregnant women who receive counselling for HIV testing  
Voluntary counselling and testing register. No of pregnant women accepting testing for HIV. Voluntary counselling register/  
HIV testing laboratory register  
Antenatal care/labour ward. No of pregnant women testing positive for HIV. No of pregnant women receiving HIV test results and post-test counselling  
No of women who receive counselling for recommended infant feeding practices. Voluntary counselling and testing register  
% of HIV infected pregnant women receiving complete course of antiretroviral prophylaxis to reduce risk of mother to child transmission  
Antiretroviral register/  
labour ward delivery register  
No of infants born to HIV infected mothers who receive cotrimoxazole prophylaxis for the first year of life  
Cotrimoxazole register  
Maternal and child health % of HIV infected children born to HIV infected mothers: programme impact indicator  
Patient register



# Challenges of measuring effectiveness

- Relying exclusively on the data and indicators, there are several limitations. Firstly, indicator/data are commonly collected from several patient registers in the form of unlinked monthly summary reports. Consequently, for example, data on the number of pregnant women who tested HIV positive, received prophylaxis, and then delivered children who also received prophylaxis are not readily available. To obtain linked data, patient registers would need to be thoroughly cross-checked, which would be time consuming and cumbersome without computerization and planning.
- Secondly, the reported HIV prevalence rate in pregnant women is typically derived from those accepting voluntary counseling and testing. These women have a lower prevalence than those who refuse testing, probably because women at risk of HIV are less likely to volunteer for testing.
- Thirdly, in countries such as Tanzania where same day HIV testing is unavailable, 15-67% of women who are tested do not obtain their test results and, hence, may not receive prophylaxis.
- Fourthly, and perhaps most importantly, none of the indicators listed in table 1 objectively measure adherence to the prophylactic drugs, and there can be substantial discordance between the proportion of women who agree to prophylaxis and the proportion of women who actually take the drugs.
- Fifthly, most indicators of programme effectiveness are quantitative rather than qualitative. The quality of services offered at health facilities affects supply and demand for voluntary testing, uptake of antiretroviral drugs, and other activities such as family planning. Also, current indicators do not capture possible adverse effects of the activities, whether related to the antiretroviral drugs or to the revelation of maternal or child infection status (such as, stigmatisation and domestic violence).
- Finally, current indicators fail to evaluate effectiveness in terms of coverage and linkage to care for mothers, infants, and family members. As shown above, rates of postnatal follow-up can be very low. None of the indicators in table 1 capture postnatal follow-up rates so that, for example, the effect of breast feeding can be accurately assessed. Instead, estimates of infant coverage and infection prevented are modelled on nevirapine uptake data or from a limited number of cohort (research) studies.



# The Way Forward

- Ideally programmes should carry out sequential prevalence studies or cohort studies in infants. These studies would reliably estimate infant HIV infections under operational conditions rather than extrapolate figures from clinical trial or "model programme" data. Although these studies could certainly be included in larger programmes, they are labour intensive and costly. For example, infants born to HIV infected mothers would have to be followed up for 15-18 months to rule out transmission. The care benefits of proper follow-up that accrue to mother and infant are substantial, so evaluation costs will be linked to service expenditures. Depending on venue and source of funding, ethical mandates to improve the standard of care for study participants would also reduce the generalisability of evaluations of enhanced prevention programmes and follow-up care. Thus, this type of evaluation would represent a best case scenario. Moreover, cohort studies will not yield data about the programme's coverage unless explicitly designed to do so.
- One approach to measuring effectiveness is through anonymous screening of umbilical cord blood samples for HIV antibodies. Positive samples would then be tested for nevirapine (an indicator of maternal nevirapine coverage) using high performance liquid chromatography or the cheaper but less sensitive thin layer chromatography followed by high performance retesting of samples with negative results.
- Collection of patient data must be simplified and linked. In the absence of fully computerised, real time collection of patient health data, such linkage could be obtained by incorporating a small coded stamp into the medical record of women attending antenatal care



# Conclusion

- Currently, less than 10% of HIV infected pregnant women receive antiretroviral prophylaxis. Scaling-up of programmes to prevent mother to child transmission of HIV remains a huge challenge. Programmes supported by global organisations, are often subject to substantial political and public pressure to report successes rather than failures. Given the amount of public and private sector investments into these programmes and the programmes' potential effect on a country's societal and economic development, we believe that rigorous monitoring and evaluation of operational programmes is a moral and ethical imperative. Evaluation is essential to identify shortcomings in the programme and to conceptualise approaches to improve services. This, in turn, will improve a programme's cost effectiveness and long term sustainability and save the most infant lives