MSP THEMATIC BRIEF – PREVENTION OF MOTHER-TO-CHILD TRANSMISSION OF HIV

Experiences, achievements and lessons learned from MSP projects

South Africa has the highest burden of HIV in the world, with over five million adults and children infected with the virus.

Every year around 300 000 babies are born exposed to HIV, and without treatment 90,000 will be infected. AIDS-related illnesses have become the leading cause of deaths for mothers and children - accounting for an estimated 20% of maternal deaths and 40% of under-five deaths[1].

[1] NDoH (2009) Operational Plan for the scale up and improvement of the quality of services for the prevention of mother to child transmission in the context of integrated maternal and child health care in South Africa.

Some statistics

*Only 47% of babies born to HIV-positive women receive PMTCT, only 26% of HIV-positive babies receive cotrimoxazole prophylaxis to prevent TB and only 18% of HIV-positive children under 14 years of age who need ART, receive it.

*66% of HIV-positive mothers make inappropriate feeding choices. For example only 7% of babies are protected from transmission via breast milk by exclusive breastfeeding for 6 months.

*Only 50% of dying children have their HIV status recorded (of these 80% were exposed to, or infected with HIV). Among children dying, 7% have lost a mother to HIV and AIDS and 9% have a mother who has an HIV-related illness.

Preventing transmission of HIV from mother to child (PMTCT), and ensuring that HIV-positive mothers who need ARV treatment receive it, are essential if South Africa is to reduce this burden of illness and death and meet the Millennium Development Goals 4, 5 and 6. This is given recognition by the HIV&AIDS and STI National Strategic Plan that has set the ambitious target of reducing vertical transmission to less than 5% by 2011[2].

In February 2008 the Department of Health revised the PMTCT guidelines to include dual prophylaxis and HAART for eligible mothers, and early infant diagnosis using PCR testing for all exposed infants at 6 weeks. Aspects of the PMTCT programme are currently implemented in all hospitals and over 90% of primary health care facilities.

However results have been mixed, varying widely across the country. For example in the Western Cape, where dual therapy has been in place for several years, over 95% of pregnant women are being tested for HIV, and more than two thirds of HIV-positive mothers and their babies are receiving PMTCT. In this province both the transmission rate and the infant mortality rate has declined steadily. In other provinces the programme has been less successful. For example in Mpumalanga only 56% of pregnant mothers were tested for HIV; in Free State only 18% of HIV-positive pregnant mothers received PMTCT; and in Gauteng only 27% of babies born to HIV-positive mothers received the drug they needed to prevent transmission[3]. A survey of six-week-old infants in KwaZulu Natal showed that 20% of HIV-exposed infants were infected. This is four times as many as should be expected from a functional programme.

Challenges to effective implementation of PMTCT services have been identified as:

[2] SANAC (2007) HIV & AIDS and STI National Strategic Plan 2007-2011.
[3] Statistics from the DHIS of the NDoH, 2008.

- Inadequate coverage of quality maternal and child health services to provide HIV-related prevention, treatment and care, particularly in the post natal period. Such services include PCR testing for infants, CD4 count testing for women, dual PMTCT therapy, initiation of HAART for mothers and infants who need it, couple counseling, infant feeding counseling as well as information and education programmes for pregnant mothers about all aspects of PMTCT.
- Limited provision and uptake of VCT services, including antenatal HIV testing. Only 68% of pregnant women attending antenatal clinics undertake an HIV test and only seven of the 52 health districts in South Africa test more than 80% of women attending antenatal clinics. This means that many HIV-positive women are not identified and therefore do not benefit from PMTCT services.
- Slow translation of PMTCT policy and technical recommendations into practice by district health systems. In particular the new guidelines on dual therapy have not been uniformly implemented.
- Inadequate data collection and systems for monitoring mortality rates, PMTCT implementation and impact. These are essential to inform decision-making, planning and resource allocation and to identify effective approaches and track quality of care and equity.

MSP-funded projects

DFID through the MSP has funded a range of projects that aim to contribute to a reduction in mother-to-child transmission of HIV. These projects focus on research, policy and practice, aiming to provide models that can be replicated across the country. They are summarized in the table below:

Project	Description	Service provider	Partner
Kesho Bora	Reducing HIV transmission to infants, KwaZulu Natal, Kenya, Burkina Faso	University of KwaZulu Natal	KwaZulu Natal Department of Health
20 000+	Health system strengthening to improve the quality of PMTCT services in KwaZulu Natal	University of KwaZulu Natal	KwaZulu Natal Department of Health
Impact study	Province-wide surveillance of the effectiveness of PMTCT programmes in reducing HIV infections and mortality rates in infants and children in KwaZulu Natal	University of KwaZulu Natal	KwaZulu Natal Department of Health

ECHO	Supporting comprehensive HIV prevention, treatment and care for mothers and children in Limpopo	ECHO Project (U. Limpopo and U. Witwatersrand)	Limpopo Department of Health and Social Development

Kesho Bora: reducing HIV transmission to infants in KwaZulu Natal

The Kesho Bora project is part of an ongoing multi-country study coordinated by the World Health Organisation (WHO). It aims to determine the optimal use of antiretroviral drugs during pregnancy, delivery and breastfeeding in order to reduce HIV transmission while minimizing the risk of drug toxicity and drug resistance. The study is a randomized controlled trial that observes a cohort of mothers and children for two years after delivery.

The study has 5 implementing sites across Africa, including Kwadebeka Clinic on the outskirts of Durban in KwaZulu Natal, where HIV prevalence among pregnant women is over 40%. The study aims to test the hypothesis that triple drug antiretroviral therapy (HAART) during the period of pregnancy and breastfeeding is more effective than short course standard PMTCT in mothers with intermediate immune suppression (CD4 counts between 200 and 500). The study compares a trial group (on triple regimen ZDV, 3TC and Kaletra) with one on a short-course ARV regimen (ZDV twice daily during the last month of pregnancy, plus single dose NVP at onset of labour).

Primary objectives are to compare the two groups with regard to:

- HIV-free infant survival at 6 weeks and 12 months;
- AIDS-free survival of mothers 12 months after birth and
- Incidence of severe adverse effects in mothers, including resistance.

Recruitment began at the Durban site in February 2007 and was completed in August 2008 with 191 participant enrolled. It will provide the first set of interim results in July 2009 and these will be presented to the National Department of Health. They will also be presented to the International AIDS Society conference at the same time. The results of this important trial will inform national and international policy and recommendations.

The results of the trial have not yet been published. However there have been some positive preliminary outcomes:

- Of the 168 infants in the trial group tested at 6 weeks, only 6 were found to be PCR positive (3.5%).
- 13 mothers with CD4 counts less than 200 were referred for HAART.
- There were only ten missed clinic visits recorded up to June 2008.

- The Kwadabeka Clinic site showed the lowest error of all study sites. This reflected the commitment of the clinic staff to the project and the support of clinic management.

20, 000+: Health systems strengthening to improve the quality of PMTCT services in KwaZulu Natal

20 000+ is a partnership between the KwaZulu Natal provincial Department of Health and the University of KwaZulu Natal. It aims to decrease mother-to-child- transmission of HIV to 5%, in line with the NSP target.

The project is situated in three districts of the province where HIV prevalence among pregnant women is extremely high (Ethekwini – 41.6%; Ugu - 37.3%; Umgungundlovu – 40.8%[4]), and covers 260 Primary Health Clinics and 16 hospitals delivering 82,000 babies a year.

Twenty thousand is the number of mother-to-child infections that could be prevented each year in the province if every mother receives care according to the national PMTCT guidelines. The 'plus' refers to the additional children that could be helped if infant feeding practices could be optimized in the same communities, thereby avoiding post natal transmission through breast feeding.

The main focus of the partnership is on improving the performance of local health systems to deliver the interventions *already* provided for in the South African national PMTCT protocol. It is not so much about innovation and new drugs, but about learning how best to deliver quality care in everyday settings. The partnership is using the Continuous Quality Improvement (CQI) methodology, which emphasizes systems changes and attitudinal changes. In this method staff plays a central role in planning and implementing ongoing improvements and monitoring their own performance with user-friendly data collection and feedback systems.

Key project outcomes and progress to date are:

[4] Antenatal survey 2007 – incomplete reference

AIMS	Progress
1. **To implement systems improvement interventions that will increase the effectiveness of current PMTCT sites across three districts.**	These have been launched in all three districts.
2. **To integrate three additional activities that will improve the effectiveness of the PMTCT programme. These are opt-out testing, rapid identification of women needing HAART and the dual therapy regimen (not protocol at the start of this project).**	These have been implemented in a sample of facilities in each of the districts.
3. **To monitor and evaluate the effect of these protocol amendments, and document health systems responses and obstacles to the quality improvement interventions.**	Reports of the performance of each facility in districts are submitted to District managers managers each month . Obstacles to service delivery are dealt with in regular management team meetings. Supervisors in each district have been trained in quality improvement methods.
4. **To implement health systems improvements in districts and provinces that initially improve PMTCT, but can be applied to improve broader health services**	The project is leading to an improvement in completeness and accuracy of data, which has wider applications.
5. **To disseminate findings rapidly in order to facilitate scaling up of similar approached elsewhere.**	The National Department of Health has requested that the 20,000+ team assists to train other staff from 18 districts in quality improvement methods.

In the final twelve months of the project, core mentoring and support teams were trained and a database and web-based interface developed. The team has also devoted attention to building awareness around the need for prioritizing PMTCT and the potential gains for child survival. Bi-monthly newsletters, reporting on success stories of 'early adopters', are sent to managers and staff.

Part of the value of the programme is that the CQI methodology and the health workers trained in it, may be used to bring improvements to other programmes in the Primary Health Care package. The renewed interest in data management will also contribute to improved monitoring of programmes.

The 20 000+ team has contributed significantly to the development of a new national plan for accelerated and improved PMTCT care. It will provide CQI training to the 18 priority health districts targeted by the NDoH . The database and reporting systems designed for the KZN partnership will be also be extended to these other districts.

One of the most important lessons learned in this pilot project is that there are many opportunities to improve health systems if there is the will to do so. Human resource constraints need not be the major cause of poor service delivery.

Impact Universal Testing – feasibility study

This study aimed to evaluate the acceptability, utility and feasibility of routine HIV testing of infants at the six-week immunization visit.

The study aimed to answer the following research questions:

1. How feasible is it to provide post-natal HIV testing as a routine service within immunization clinics? The study also investigated whether test results were taken up, and the feasibility of follow-up to ensure that this happens.
2. How acceptable is post-natal testing as a means of determining infant status and also the status of the mothers? The attitudes of mothers, other caregivers, local community members and health-care providers were tested.
3. How useful is routine post-natal testing? Does it allow for earlier identification of infected children , and does it provide a useful way of evaluating programme effectiveness?

The study was implemented in three clinics in KwaZulu Natal – Caluza, Mpumuza and Bothas Hill. Trained counselors invited mothers bringing their infants for immunization to have them tested for HIV at the same time. Those agreeing were clearly briefed by trained staff on the procedure and the implications of the results. Mothers were also given the opportunity to talk about testing and possible results. They were then given appointments to return for the results.

Blood samples taken from the infants were then tested for HIV antibodies, indicating the mother's HIV status. Positive samples were further tested for HIV by DNA PCR to establish the infant's HIV status. During post-test counseling, HIV-positive mothers and babies were referred to the routine HIV services in the clinic for confirmatory testing and treatment.

During the study period 646 mothers brought their babies for immunization at the three clinics, and of these 584 (90.4%) agreed to HIV testing. Of those, 80% returned for their results. Overall, 42.3% of the infant blood samples had HIV antibodies present, which is comparable to the HIV prevalence in the area.

In general women's attitudes to the offer were positive and few expressed anxiety, shock or fear at the prospect. Most women welcomed the opportunity to confirm their HIV status, but few realized that it would create opportunities for accessing antiretroviral therapy. Only about a quarter of mothers realized that HIV status would inform infant feeding practice and even fewer knew about cotrimoxazole prophylaxis. Nearly 90% of the mothers said they would recommend testing to others.
For their part, counselors were consistently positive about the testing strategy, commenting that mothers were 'excited' by the opportunity and that the approach was 'important for all of South Africa'. However they did comment that there was little space or privacy in the clinics and that it was hard to look after an infant if the mother started crying. Other reported difficulties included mothers who refused subsequent care or were angry or upset during post-test counseling.

The study concluded that HIV testing of infants attending immunization clinics was acceptable and feasible, although as a national strategy it would have cost implications and might present ethical challenges. The study was deemed useful to the National Department of Health and the international community as it demonstrated both the feasibility of such an approach as well as some of the complex issues that would need to be considered before wide-scale implementation.

ECHO – supporting comprehensive prevention, treatment and care for mothers and children in Limpopo province

The ECHO project is a partnership between Wits Paediatric HIV Clinics and the Department of Paeditatrics at the University of Limpopo. It had four key objectives:

1. Improved PMTCT uptake at primary health care clinics though on-site clinical and health systems support.
2. Ensuring effective comprehensive HIV services for pregnant women in hospitals.
3. Effective HIV care and treatment of children in hospitals, and
4. Strategies to increase care and support for HIV-positive mothers and children in the community and health service.

The programme was conducted in 12 clinics in the Vhembe District and one hospital in the Mopani district of Limpopo. There were several specific outcomes and targets, including increasing the testing rates to 90% of women; increasing testing and care for exposed infants to more than 60%. The team also aimed to reorientate the way health workers perceive and manage mothers and children affected by HIV, and to facilitate improved implementation and support.

A baseline situational analysis was conducted at hospitals and primary health care sites. The location of the hospital was found to be the cause of low numbers of pregnant women accessing PMTCT at that site. Barrier to uptake in the clinics were found to be:

- Weak referral links between primary health care sites and hospitals.
- Poor documentation of services and inconsistent coding and decoding of health records.
- Lack of PCR HIV testing for infants.
- Inadequate education of HIV-positive mothers about appropriate infant feeding, in particular advice about avoiding mixed feeding.

The ECHO team provided training, on-site monitoring and support to the district management team, hospital and clinic teams to address these issues. Many improvements were made to systems in relation to patient flow; task shifting or delegation of tasks within the health team; and data collection and management. Systematic PCR testing of infants was introduced and staff were trained in the new PMTCT guidelines and the use of Road to Health Cards.

These efforts brought rewarding results. HIV testing rates increased to over 90% in all facilities (in comparison with the provincial average of 74%) and there was a dramatic increase in the number of PCR tests done on babies at 6 weeks. The study also showed that health workers who were initially unmotivated began working enthusiastically as a team to implement comprehensive care for mothers and children.

Broader conclusions that could benefit PMTCT programmes nationally were:

- Communication around revisions to protocols, and policies need to be made clearly and concisely to all health workers. Clinical supervisors must ensure that these are clearly understood and implemented.
- Communication between PHC facilities and hospitals need to be strengthened to facilitate consistent protocols and effective referrals, collection of results and supplies.
- HAART initiated at Primary Health Care clinics will result in easier access and more comprehensive care for mothers and children. However in order for this to happen, attention and resources need to be diverted to staffing and facilities at primary health care level.

The authors concluded that “in Limpopo we will be able to achieve the Millennium Development goal of a two thirds reduction in under five mortality by 2015. To achieve this we need to take the PMTCT programme to scale. We are on the way to achieving this, and are also working on newborn care and other priority childhood illnesses.”

Conclusion

By the end of December 2008 the MSP had allocated around R13.3 million to four PMTCT projects discussed in this brief.

All four projects have contributed significantly to the ongoing efforts to improve PMTCT and HIV service delivery and outcomes for pregnant women, mothers and children. The Kesho Bora project will provide new insights into effective drug protocols for PMTCT. The Impact study describes a new approach to integrating PMTCT into existing primary health care services, thus expanding access to paediatric treatment and diagnosis of HIV-positive mothers. The 20 000+ and ECHO projects both demonstrate that strengthening health systems through mentoring, supervision and improved data collection can enhance the quality and scale-up of PMTCT services.

Most importantly, all four projects have played a role in informing PMTCT policy and practice in their respective provinces and nationally. In fact the 20, 000+ programme has formed the basis of the new national Department of Health Accelerated Plan to scale up PMTCT.

While it is too soon to demonstrate outcomes in terms of infant and maternal lives saved, these projects have paved the way for South Africa to achieve the ambitious NSP target of reducing PMTCT to 5%, and the MDG Goals to reduce infant and maternal mortality by 2015.