Prevention of vertical transmission of HIV in India through service integration: lessons from Mysore District, Karnataka

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ABSTRACT

Meeting the needs of HIV-positive pregnant women and their offspring is critical to India’s political and financial commitment to achieving universal access to HIV prevention, treatment, care and support. This review of the strategy to prevent vertical transmission of HIV in Mysore district, Karnataka, highlights the need to integrate prevention of parent-to-child transmission (PPTCT) and reproductive and child health (RCH) services. All key officials who were involved in the integration of services at the state and district levels were interviewed by use of semistructured protocols. Policy documents and guidelines issued by the Department of Health and Family Welfare and Karnataka State AIDS Prevention Society were reviewed, as were records and official orders issued by the office of District Health and Family Welfare Officer and District HIV/AIDS Programme Office, Mysore. Routine data were also collected from all health facilities. This review found that 4.5 years of PPTCT-RCH integration resulted not only in a rise in antenatal registrations but also in almost all pregnant women counselled during antenatal care undergoing HIV tests. Based on the findings, we propose recommendations for successful replication of this strategy. Integration of PPTCT services with RCH should take place at all levels — policy, administration, facility and community. The increased demand for HIV counselling and testing resulting from service integration must be met by skilled human resources, sufficient facilities and adequate funds at the facility level.

Key words: Integration, National Rural Health Mission, parent-to-child transmission, reproductive and child health

INTRODUCTION

An estimated 430,000 children younger than 15 years were infected with human immunodeficiency virus (HIV) worldwide in 2008. Almost all of these infections occurred in developing countries. The primary mode of HIV acquisition in children is through parent-to-child transmission (PTCT) during pregnancy, childbirth or breastfeeding. Most infant HIV infections can be averted by provision of prevention of parent-to-child transmission (PPTCT) services. Since the United Nations General Assembly Special Session in 2009, PPTCT services have been significantly scaled-up in many countries. Emphasis has been put on the need to integrate PPTCT services into existing public health systems, with services provided by all antenatal and delivery clinics. To date, only a few developing countries have achieved this goal.

The World Health Organization and United Nations have developed a comprehensive strategic framework for preventing mother-to-child transmission of HIV, which comprises the following four parts.

• Primary prevention of HIV, especially among pregnant women and young people
In India, a pregnant woman, irrespective of her HIV status, comes under the purview of the state reproductive and child health (RCH) programme. The Government of India’s guidelines stipulate that all pregnant women must be encouraged to be tested for HIV to prevent transmission from mother to baby and to enable the mother to enrol in the government’s antiretroviral therapy (ART) programme. PPTCT is part of a broader strategy to prevent the transmission of HIV and sexually transmitted diseases; to care for HIV-positive women and their families; and to promote maternal and child health services.

**Prevention of parent-to-child transmission programme in India**

In 2006, India’s Joint Technical Mission estimated that out of 27 million annual pregnancies, 189,000 occur in HIV-positive women. An estimated 56,700 HIV-positive babies were born each year in the absence of intervention. The most affected states are Andhra Pradesh, Karnataka, Maharashtra, Tamil Nadu, Nagaland and Manipur. PPTCT was initiated in India in 2002 following a feasibility study in 11 centres in these high-incidence states. There has been remarkable uptake of pregnant women into this programme. The PPTCT programme involves counselling and HIV testing of pregnant women together with safe-delivery practices and administration of prophylactic nevirapine to HIV-positive pregnant women and their infants. In 2007, the Voluntary Counselling and Testing and PPTCT services were merged renamed the Integrated Counselling and Testing Centre (ICTC). However, the National AIDS Control Programme (NACO) faced a number of challenges in providing universal access to HIV services to pregnant women. According to NACO, only 20% of pregnant women were counselled and tested for HIV in 2009. Furthermore, only 30% of the estimated 65,000 HIV-positive pregnant women were detected that year.

The National Rural Health Mission (NRHM), which was launched in April 2005, recognized that the HIV/acquired immunodeficiency syndrome (AIDS) pandemic required convergent action within the health system and health facilities at all stages to help early detection, effective surveillance and timely intervention. NRHM presents an opportunity for integration of RCH and PPTCT services, since the two programmes serve the same target population. Karnataka was one of the first states to respond to this need to integrate HIV and RCH services and ensuring universal coverage of all pregnant women with HIV counselling, testing and treatment services. This paper documents this strategy in Karnataka, with special reference to Mysore district.

**REVIEW MATERIALS AND METHODS**

This review was conducted in Mysore district of Karnataka state during September–October 2010 using quantitative and qualitative techniques. Both primary and secondary data were used. We reviewed: (i) policy documents and guidelines issued by the Department of Health and Family Welfare and Karnataka State AIDS Prevention Society (KSAPS); (ii) records and official orders issued by the office of District Health and Family Welfare Officer and District HIV/AIDS Programme Office; and (iii) routine data received by the district from all health facilities.

All key officials who involved in the planning and implementation of integration of PPTCT services with RCH under the NRHM in Karnataka state were interviewed by use of semistructured schedules. At the state level, the Director of KSAPS, Mission Director of NRHM, Director (Medical and Health) and Programme Officer of RCH were interviewed. Information was gathered on the integrated policy framework; operational guidelines; roles and responsibilities of health providers; issues related to access to services, availability of drugs, logistics and supplies; monitoring and reporting; and administrative, financial, programmatic and human-resource issues.

At the district level, interviews were conducted with District Health and Family Welfare Officer, Medical Superintendent of the District Hospital, District Reproductive and Child Health Officer (RCHO) and District HIV/AIDS Programme Officer. Details were collected on the current status of integration, infrastructure and other logistics; integration with other programmes; referral facilities for positive cases; training of human resources for health; linkages within the health systems; reporting, monitoring and supervision; involvement of nongovernmental organizations (NGOs) and private hospitals; coordination with other functionaries; and issues on accessibility, quality and sustainability. Interviews were held with gynaecologists, staff nurses, auxiliary nursing midwives (ANMs), laboratory technicians and counsellors. Information was gathered on services offered; workload of paramedical staff; outreach services; community mobilization; counselling on breastfeeding, reproductive tract and sexually transmitted infections and HIV/AIDS; male involvement; issues on infrastructure and logistics; human resources; training; record keeping; and monitoring, supervision and review meetings.

A community health centre (CHC) was selected for in-depth study. The medical officer, laboratory technicians, counsellors and staff nurses from the selected CHC and its two primary health centres (PHCs) were interviewed.
to elicit details as described above. At the field level, ANMs from 10 subcentres, 20 accredited social health activists (ASHAs) and 20 anganwadi workers (AWWs) from selected villages were interviewed about their knowledge of service integration and activities such as health education, educating women and men on risk perception, risk identification, counselling and facilitating use of PPTCT services including hospital delivery.

RESULTS

Prevention of parent-to-child transmission-reproductive and child health integration in Karnataka State

Karnataka is one of the six states in India with a high prevalence of HIV among mothers and shares a border with three of the other high prevalence states of Andhra Pradesh, Maharashtra and Tamil Nadu, where HIV/AIDS prevalence is greatest with about 2% of pregnant women infected. In March 2008, the state rolled out an RCH-HIV integration strategy with an emphasis on effective collaboration and coordination between the Department of Health and Family Welfare and KSAPS to work towards preventing vertical transmission of HIV. The key strategies included:

- Effective collaboration and coordination between health department and KSAPS;
- expanded coverage of hospital deliveries for all HIV-positive women through involving the private sector as well as the Yeshaswini scheme to facilitate cashless transactions; and
- robust systems for programme monitoring to ensure timely provision of high-quality services.

In the first 4.5 years of the scheme, the state recorded overall improvement in the number of women seeking hospital deliveries and HIV-positive pregnant women receiving nevirapine. There has been a steep rise in the number of pregnant women who registered at antenatal clinics, pretest counselling, HIV testing, posttest counselling, spouse testing and HIV-positive women attending follow-up sessions. Cashless deliveries are conducted for pregnant women registered with Family Health Plan Limited, the third-party managers for the Yeshaswini scheme. A “family-centric” approach is used whereby the spouse and the other children of the HIV-positive women are counselled and followed-up by ANMs and ASHAs. A circular signed by the NRHM Mission Director and KSAPS Director to encourage universal access to treatment and care for all HIV-positive pregnant women was sent to all districts in April, 2010.

Prevention of parent-to-child transmission-reproductive and child health integration in Mysore district

Mysore has 218 PHCs, of which 25 function 24 hours a day, 7 days a week (24/7). Facility-integrated PPTCT services are provided by all 24/7 PHCs. Stand-alone ICTCs have been established in 27 PHCs. Table 1 shows the progress in PPTCT services in Mysore from 2002 to August 2010.

The main focus in the process of integration is the establishment of ICTCs at the PHC level and above, together with community mobilization – especially among pregnant women – for HIV testing. The PHC is the first point of contact with laboratory facilities for pregnant women in rural areas. At the PHC level, existing laboratories are upgraded into ICTCs by training laboratory technicians in HIV testing and staff nurses in counselling. By developing the skills of existing staff, laboratories can be upgraded to ICTCs without recruiting additional human resources.

Community sensitization and mobilization is done by field functionaries – ASHAs, AWWs and ANMs during Village Health and Nutrition Days. Good coordination has been established between ANMs and ASHAs to provide RCH-related services in the villages. ASHAs and village AWWs mobilize all pregnant women and mothers for

| Table 1: Antenatal cases counselled and tested in Mysore, 2002–2010 |
|----------------------|------------------|-----------------|-----------------|------------------|------------------|------------------|
| Year    | Pretest counselled | Tested | HIV-positive women | Posttest counselled | HIV-positive babies | Mother-baby pairs given nevirapine | Infants followed-up |
| 2002    | 4238              | 870    | 6                | 466              | 1                | 1                | 0                |
| 2003    | 12 860            | 4842   | 42               | 3171             | 20               | 20               | 1                |
| 2004    | 17 391            | 12 154 | 97               | 10 197           | 43               | 43               | 8                |
| 2005    | 17 115            | 15 583 | 91               | 14 169           | 54               | 48               | 16               |
| 2006    | 17 512            | 16 004 | 89               | 14 515           | 57               | 45               | 42               |
| 2007    | 24 901            | 23 945 | 117              | 22 321           | 74               | 66               | 32               |
| 2008    | 31 055            | 27 838 | 149              | 27 728           | 106              | 104              | 83               |
| 2009    | 35 343            | 35 229 | 110              | 34 983           | 107              | 102              | 194              |
| 2010*   | 22 554            | 22 523 | 57               | 22 454           | 58               | 52               | 204              |
| Total   | 182 969           | 158 998 | 758             | 150 004          | 520             | 481             | 580              |

*aFurther details are available from the authors
ASHAs in the district are given orientation on HIV/AIDS through reputed NGOs and all are aware about PPTCT programmes. Their major role in integration is to mobilize pregnant women for attend antenatal care; the ICTC staff in PHCs provide counselling, testing, etc. All AWWS are given 2 days training on HIV/AIDS, in which detailed information about the PPTCT services are covered. During the monthly review meeting at PHCs, field staff can clarify their issues about the RCH-HIV integration and implementation activities.

The ANMs are critical to service integration, since they are at the forefront of healthcare provision and run subcentres at the village level. They provide counselling to all antenatal clients and spouses on the importance of knowing one’s HIV status; if a pregnant woman tests positive, ANMs maintain shared confidentiality with the client. ANMs also accompany the HIV-positive pregnant woman to the hospital for delivery and ensure administration of nevirapine. They are required to follow-up with the mother and baby at the PHC at 6 weeks, 6, 12 and 18 months after delivery.

Existing RCH/NRHM staff are trained at ICTC-integrated PHCs, since recruitment of additional human resources is neither feasible nor affordable. The staff nurses posted in CHCs and 24/7 PHCs, including those employed on contract under NRHM, have 5 days of training on counselling skills. Most have done the NRHM 21-day skilled birth attendant training. These staff nurses provide counselling on antenatal, natal and postnatal care to clients. Pretest counselling is usually done in group and posttest counselling and follow-up is done for HIV-positive cases. A 1-day orientation meeting of all field functionaries is held every month at the taluk (county) level.

Laboratory technicians in the integrated ICTCs have received both induction and refresher training on HIV/AIDS and related issues with KSAPS support. Tests kits are provided by the District AIDS Prevention and Control Units (DAPCUs); confirmatory testing is done at Krishna Rajendra Hospital at the district headquarters. All general safety precautions are taken and the facilities are provided with sufficient supplies of postexposure prophylaxis.

The results of HIV-positive cases are communicated to the woman, ANMs and medical officer in charge of the PHC on a shared confidentiality basis. The RCHO also updates the master register periodically depending on the progress of the case. It is the responsibility of the PHC medical officer to ensure that all HIV-positive pregnant women are also registered at the ART centre. The medical officer in charge of PHC and the RCHO in consultation with the HIV-positive pregnant woman identifies the hospital where the delivery will be conducted. Advance information is also sent to the hospital to ensure advance procurement of delivery safety kits and nevirapine tablets/syrup.

If an HIV-positive woman plans to deliver outside the district, the RCHO of the antenatal registration district transfers her to the RCHO of the other district following a prescribed protocol. The ANM wherever the pregnant woman is residing before delivery accompanies the HIV-positive mother to hospital for the delivery. She and the hospital ensure that nevirapine is administered. The hospital that conducts the delivery informs the RCHO about the delivery and nevirapine administration. Postdelivery follow-up of the mother–baby pair is the responsibility of ANM of the area where the woman resides at the time of and after delivery.

The district has two ART centres: one at Krishna Rajendra Hospital and the other one run by the NGO Asha Kiran at the outskirts of Mysore. All HIV-positive cases are referred from ICTC centres to these ART centres. Link ART centres have also been established at Sarguar, Tirumakudalu Narsingpur, Onsur and Nanjapur. Link ARTs are run by a medical officer and staffed with counsellors and laboratory technicians. NGOs play a key role in implementing PPTCT-RCH integration and NGOs have engaged the link-centre workers to ensure follow-up of HIV-positive cases in all villages. Currently four NGOs – Swami Vivekananda Youth Movement, Ashodaya, Anand Jyoti and the Society for People’s Action for Development – are helping to target interventions.

**DISCUSSION**

The NRHM framework emphasizes convergence of services as a core principle. It presents an opportunity for integration of RCH and PPTCT services. There are clear overlaps between the RCH programme and the PPTCT programme’s four-part approach, since the key objective of NRHM is reduction in maternal and child mortality, which is also the aim of PPTCT, related to HIV. Therefore, provision of services to pregnant women, irrespective of their HIV status, is the primary responsibility of the RCH programme, which is a major component of the NRHM. In 2010, the Government of India gave directions to the states for the integration of NRHM and the National AIDS Control Programme. These instructions are summarized in Figure 1.

**Key points for successful PPTCT-RCH integration**

Discussions with stakeholders revealed the following key points for successful integration:

- Integration should be done at the policy, administration, facility and community levels and state should develop...
a framework of operational guidelines to ensure standardized implementation at all levels. The guidelines need to be circulated to all the concerned stakeholders:

- For the planning and implementation of the programme, it is important to collect relevant information from the district and lower levels about availability of human resources at health facilities and at field level, capacity of district training team, existing infrastructure facilities, etc.
- States should develop a well-defined roles and responsibilities for all the departments and stakeholders for the smooth implementation of integration.
- All ICTCs should be brought under the district health system. The DAPCUs and district level RCH units...
should work together in a well-coordinated manner to achieve the objectives of integration. Programme officer for RCH at the district level may be made the focal point for RCH-PPTCT integration

- Districts should develop an integrated training plan for all the health providers involved in implementing PPTCT-RCH integration. Field health workers should be oriented on issues related to HIV/AIDS and PPTCT-related services. Refresher training should be provided to health providers at all levels

- To achieve the universal coverage of PPTCT services, providers should ensure that all pregnant women access PPTCT services. As women with low socioeconomic status are less likely to access the health services, all field health functionaries must motivate the poor to access RCH and PPTCT services

- States should utilize the existing government funded health insurance schemes (including state funded or Rashtriya Swasthya Bima Yojana) to ensure hospital deliveries for HIV-positive pregnant women. If a health insurance scheme does not exist, then private health providers may be involved by utilizing existing resources from NRHM

- A rigorous monitoring system should be developed by the programme managers for the monitoring and reporting of services provided under integration. All the information related to PPTCT services should be merged within the existing RCH monitoring and reporting system.

**Cost implications PPTCT-RCH integration**

The findings from Mysore district revealed that integration of PPTCT with RCH and other components of primary healthcare services is a cost-effective strategy to prevent mother-to-child transmission of HIV. Efficient coordination and convergence of existing services ensures that additional funds are not necessary. Cost-effectiveness may be one of the key factors in sustaining models of integration in other states.

**Training of health functionaries**

Many of the HIV and PPTCT-related trainings were conducted by the KSAPS with technical support from the RCH-NRHM Staff. While the district RCHO provides all the technical support to DAPCU to train all the health functionaries, Karnataka State AIDS Control Society used its budget for capacity building of relevant staff of NRHM, KSAPS, RCH, Yeshaswini, etc. All training modules are selected by the KSAPS in coordination with the health department. Additional funds may be required for strengthening of the district training team and other training centres in the districts.

**Service delivery**

In Mysore, almost all the activities of RCH and PPTCT programme have been integrated at the CHC and PHC levels. To ensure that all HIV-positive pregnant women have access to free hospital deliveries, including the option for a caesarean section, additional incentives for ASHAs are needed. All components of the PPTCT programme have been integrated into existing RCH services in Mysore. The Yeshaswini health insurance scheme has been optimally used to achieve the programme goals and objectives through the support of the Karnataka Department of Cooperation. A camp approach was used initially in Karnataka to address the testing backlog whereby laboratory technicians and counsellors travelled to outreach areas once a week. This approach can be replicated elsewhere; the travel cost can be reimbursed from NRHM funds.

**Monitoring and reporting**

A rigorous monitoring system is necessary to allow daily reporting by the RCH officer at the district level to the state health department. The latter has developed an internal reporting system that includes formats, personnel and technical resources for regular data collection. Relevant PPTCT and HIV-related indicators must be included. For example, information on HIV-positive pregnant women and mother–baby pairs may be included in the mother-and-child tracking system. This activity does not require any additional funds.

**Review meetings**

Regular weekly or monthly monitoring and review meetings are organized at the block, district and state levels. Integration-related issues are built into the agenda for regular updates and reporting. Regular review meetings of the RCH department provided the platform for seeking updates and providing feedback on the integration process.

**Finance**

In Karnataka, NRHM reimburses the cost of cashless deliveries to Family Health Plan Limited. The Department of Cooperation pays the service charges for the Yeshaswini scheme. Travel and other related expenses of counsellors engaged in outreach activities, especially to cover the backlog in registration of pregnant women, was met from untied funds available for Village Health and Sanitation Committees under NRHM. These funds may also be used to provide centrifuges, consumables and refrigerators to the PHCs where required. The states should issue separate guidelines to district and lower levels regarding utilization of untied funds under NRHM for providing PPTCT-related services.

**Human resources**

Recruitment of staff nurses, laboratory technicians and counsellors is challenging. Many PHCs do not have required number of nurses and existing staff are overworked. Other challenges include frequent transfers of existing staff and
reliability of contract staff. NRHM funds may be utilized for recruitment of additional staff in ICTCs.

Integration of information, education and communication (IEC) activities

IEC materials are required to increase awareness among the general population and especially pregnant women about PPTCT services. Budgets available for at the health department and state AIDS control society may be pooled for an integrated approach to IEC.

CONCLUSIONS

Karnataka has been one of the first states in India to integrate HIV services with RCH services and thereby ensure universal availability of counselling, testing and treatment for all HIV-positive pregnant women. The experience in Mysore district shows that this initiative has resulted in an increase in the proportion of registered pregnant women receiving pretest counselling and testing for HIV. As a result of PPTCT-RCigfssues related to HIV/AIDS, PPTCT, general counselling, infant feeding counselling and laboratory tests.

Further research is needed on the extent to which increased demand for HIV counselling and testing services is inhibited by factors such as: Shortage of health human resources; insufficient infrastructural facilities for integrated service delivery; inadequate funds at facility level for PPTCT services; and absence of guidelines for utilization of NRHM funds. Greater male involvement and support will be critical for improved coverage of PPTCT services; primary prevention of HIV; and unintended pregnancy avoidance. In addition, there are gaps in community knowledge about HIV/AIDS, its modes of transmission, testing and treatment facilities. The latter highlights the need for orientation of all field health functionaries and strengthened IEC HIV/AIDS activities, particularly those relevant to PPTCT services.

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How to cite this article: Nair KS, Plang L, Tiwari VK, Raj S, Nandan D. Prevention of vertical transmission of HIV in India through service integration: Lessons from Mysore District, Karnataka. WHO South-East Asia J Public Health 2013;2:121-7.

Source of Support: UNICEF (Field Office), Hyderabad & National Institute of Health & Family Welfare, New Delhi. Figure 1 is Constructed from the letter by the Secretary, Ministry of Health and Family Welfare, and Secretary and Director General, National AIDS Control Organisation, to Mission Directors, NRHMs and all States/United Territories on “NRHM and NACP Convergence”, 27 July 2010 and their subsequent letter to all project directors of the State AIDS Control Societies on 10 August 2010.

Conflict of Interest: None declared.