LINKED RESPONSE FOR PREVENTION, CARE, AND TREATMENT OF HIV/AIDS AND SEXUAL AND REPRODUCTIVE HEALTH ISSUES

CASE STUDY

Prepared by the National Center for HIV/AIDS, Dermatology and STD, and the National Maternal and Child Health Center of the Ministry of Health in collaboration with the Clinton Foundation HIV/AIDS Initiative and the World Health Organization, in Cambodia
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Without the commitment and hard work of these partners, this Case Study could not have been completed.

Phnom Penh, 10 April 2009

Dr. Mean Chhi Vun
Director of NCHADS
List of Abbreviations

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<th>Abbreviation</th>
<th>Description</th>
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<tr>
<td>AFASS</td>
<td>Affordable, Feasible, Acceptable, Sustainable, and Safe</td>
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<tr>
<td>AIDS</td>
<td>Acquired Immunodeficiency Syndrome</td>
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<td>ANC</td>
<td>Antenatal Care</td>
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<td>ART</td>
<td>Anti-retroviral Treatment</td>
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<td>ARV</td>
<td>Anti-retroviral</td>
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<td>AZT</td>
<td>Zidovudine</td>
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<td>CBS</td>
<td>Community Based Support</td>
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<td>CHAI</td>
<td>Clinton Foundation for HIV/AIDS Initiative</td>
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<td>CoC</td>
<td>Continuum of Care</td>
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<td>CPA</td>
<td>Complementary Package of Activities</td>
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<td>CPN+</td>
<td>Cambodian People Living with HIV and AIDS Network</td>
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<td>D&amp;D</td>
<td>Decentralization and De-Concentration</td>
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<td>DBS</td>
<td>Dried Blood Spot</td>
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<td>EPI</td>
<td>Expanded Program for Immunization</td>
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<td>FP</td>
<td>Family Planning</td>
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<td>GFATM</td>
<td>The Global Fund to Fight AIDS, Tuberculosis and Malaria</td>
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<td>HAART</td>
<td>Highly Active Antiretroviral Therapy</td>
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<td>HBC</td>
<td>Home-based Care</td>
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<td>HC</td>
<td>Health Center</td>
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<td>HFC</td>
<td>Health Facility Care</td>
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<td>HIV</td>
<td>Human Immunodeficiency Virus</td>
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<td>HPITC</td>
<td>Health Provider Initiated Testing and Counseling</td>
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<td>HIS</td>
<td>Health Information System</td>
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<td>HSSP2</td>
<td>Health Sector Strategic Plan</td>
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<td>ITM</td>
<td>Belgium Institute of Tropical Medicine</td>
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<td>KHANA</td>
<td>Khmer HIV/AIDS NGO Alliance</td>
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<td>MARPs</td>
<td>Most at Risk Populations</td>
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<td>MCH</td>
<td>Maternal &amp; Child Health</td>
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<td>MCHC</td>
<td>Maternal, Neonatal and Child Health Care</td>
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<td>MMM</td>
<td>Mondul Mith Chuoy Mith (Friends Helping Friends) Support Group</td>
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<td>MNBH</td>
<td>Maternal and Newborn Health</td>
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<td>MoH</td>
<td>Ministry of Health</td>
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<td>MPA</td>
<td>Minimum Package of Activities</td>
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<td>NCHADS</td>
<td>National Center for HIV/AIDS, Dermatology and STD</td>
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<td>NGO</td>
<td>Non-Governmental Organization</td>
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<td>NMCHC</td>
<td>National Maternal and Child Health Center</td>
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<td>NVP</td>
<td>Nevirapine</td>
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<td>OD</td>
<td>Operational District</td>
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<td>OI</td>
<td>Opportunistic Infection</td>
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<td>Acronym</td>
<td>Description</td>
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<tr>
<td>PCR</td>
<td>Polymerase Chain Reaction</td>
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<td>PHD</td>
<td>Provincial Health Department</td>
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<td>PLHA</td>
<td>People Living with HIV and AIDS</td>
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<td>PMTCT</td>
<td>Prevention of Mother-to-Child Transmission (of HIV)</td>
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<td>RACHA</td>
<td>Reproductive and Child Health Alliance</td>
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<td>R&amp;F</td>
<td>Referral and Follow-up</td>
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<td>RH</td>
<td>Referral Hospital</td>
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<td>RH</td>
<td>Reproductive Health</td>
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<td>RHAC</td>
<td>Reproductive Health Association of Cambodia</td>
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<td>SA</td>
<td>Safe Abortion</td>
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<td>SOP</td>
<td>Standard Operating Procedures</td>
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<td>STD</td>
<td>Sexually Transmitted Diseases</td>
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<td>STI</td>
<td>Sexually Transmitted Infection</td>
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<td>TB</td>
<td>Tuberculosis</td>
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<td>UNAIDS</td>
<td>The Joint United Nations Programme on HIV/AIDS</td>
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<td>UNFPA</td>
<td>United Nations Population Fund</td>
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<td>UNICEF</td>
<td>United Nations Children’s Fund</td>
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<td>USAID</td>
<td>United States Agency for International Development</td>
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<td>US CDC</td>
<td>United States Center for Disease Control</td>
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<tr>
<td>VCCT</td>
<td>Voluntary Confidential Counseling and Testing</td>
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<td>WHO</td>
<td>World Health Organization</td>
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<td>ZDV</td>
<td>Zidovudine</td>
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LINKED RESPONSE FOR PREVENTION, CARE, AND TREATMENT OF HIV/AIDS AND SEXUAL AND REPRODUCTIVE HEALTH ISSUES

1. INTRODUCTION

The global commitment to Universal Access to comprehensive HIV prevention, treatment, care and support by 2010 will not be fully achieved without major steps to strengthen the health system; improved linkages between health facility services including HIV, STI, maternal, neonatal and child health care (MNCH), tuberculosis (TB), and the community which contribute to achieving this goal. It is with the overarching goal of enhancing universal access that in 2006-2007 the regional offices of WHO, UNICEF, UNFPA and the UNAIDS Secretariat in the Asia Pacific region joined efforts to conceptualize an integrated or ‘linked’ response. More specifically, the global linked response initiative aimed to increase synergy between national HIV programmes and MNCH programmes, which covered a range of services related to women and children, including the prevention of mother-to-child transmission (PMTCT) and prevention of HIV among women. Following two regional consultations in 2006 in Malaysia and in 2007 in China, an “Asia-Pacific Operational Framework for Linking HIV/STI Services with Reproductive, Adolescent, Maternal, Newborn and Child Health Services” (ref.1) was finalized in 2008 and strong commitment was developed at regional and country levels to start practical implementation.

In Cambodia, The National Center for HIV/AIDS, Dermatology and STD (NCHADS), the National Maternal and Child Health Center (NMCHC) and the Reproductive Health Association of Cambodia (RHAC) started discussions about linking Reproductive Health (RH), HIV and STI in 2005-2006 during regional workshops. In 2006 an informal Technical Working Group made up of NCHADS, NMCHC, WHO, UNICEF, UNFPA, RHAC, The Clinton Foundation HIV/AIDS Initiative (CHAI), USAID, US CDC, the Belgium Institute of Tropical Medicine (ITM), and the Khmer HIV/AIDS NGO Alliance (KHANA) developed Standard Operating Procedures (SOP) on Linked Response. The SOP on ”Linked Response for Prevention, Care, and Treatment of HIV/AIDS and Sexual and Reproductive Health Issues” (ref.2) highlights the key strategies and implementation steps at operational district (OD) level.

2. BACKGROUND, ISSUES AND RATIONALE

2.1. Background

Reducing maternal mortality, improving reproductive health, and reducing the burden of HIV are priorities that are clearly articulated in Cambodia’s Millennium Development Goals, National Strategic Development Plan, and Health Sector Strategic Plan (HSSP2), and Strategic Plan for HIV/AIDS and STI Prevention and Care in the Health Sector in Cambodia. The strong government commitment to scaling up HIV-related services towards Universal Access has resulted in Cambodia becoming one of the few countries that was able to reach its ‘3 by 5’ targets. In Cambodia, the health sector response to HIV/AIDS is implemented at the operational district (OD) level through a Continuum of Prevention, Care and Treatment package and STI control (ref. 4). This package includes VCCT and antenatal care services as entry points, and in and out patient care for HIV/AIDS with OI and ART services. The Continuum of Prevention, Care and Treatment package furthermore offers interactive services between health care services and communities (HBC, MMM, PLHA-SG) and HIV prevention with STI clinics. Reproductive Health (RH) services, including antenatal care (ANC), safe delivery, maternal and newborn health (MNBH) and family planning (FP) are offered in principle at HC level with referral services at district referral hospital level. Effective provision of the HIV and RH package requires close coordination between all relevant actors.

2.2. Issues

Linkages between Reproductive Health (RH), HIV/STI and other services such as TB, pediatrics, and laboratories are crucial to comprehensive management of patients who need concomitant care for related health conditions.
At the end of 2008, a total of 31,999 patients were on ART including 28,932 adults and 3,067 children. More than 90% of patients in need of ART actually received ART. However, although at the end of 2008 there were 213 VCCT sites and 151 PMTCT sites throughout the country the PMTCT coverage was still limited with only 29.1% of pregnant women having received an HIV test result and only 27.0% of identified HIV-positive pregnant women having received ARV prophylaxis or ART for PMTCT. While pediatric AIDS care coverage was high, HIV-exposed infant care and follow-up service uptake appears to have been very limited. A joint PMTCT programme review conducted in September 2007 (ref.3) had highlighted the challenges faced by the current PMTCT program to increase coverage towards universal access. The joint review concluded that because PMTCT encompasses not only ANC HIV testing of pregnant women but also delivery, ARV and pediatric care services, the full PMTCT coverage cannot be achieved without strong linkages between ANC, delivery, HIV, and laboratory services at the Operational District level.

The current situation is that despite the strength and coverage of the CoC, HIV and RH services are often not available at the same health facility, and some operational districts do not offer the full package of services. Because health staff is often specialized (FP, STI management, ANC etc.), they miss opportunities to provide comprehensive information and to refer patients to relevant services for appropriate treatment. In addition, Cambodia’s overall healthcare system is constrained by obstacles to access quality primary health care services that include: 1) limited number of health staff in rural areas; (2) limited availability of services at rural facilities; (3) low staff motivation due to insufficient salaries; (4) limited financial and geographical access to health services for the rural poor; and (5) weak follow-up and referral mechanisms, especially for HIV-positive mothers and their exposed infants.

HIV-positive pregnant women are often lost to follow-up in the community and do not receive ARV prophylaxis nor support for adequate infant feeding. Infants born to HIV-infected mothers are often not followed-up because of the limited referral mechanisms from maternity to pediatric AIDS care services.

### 2.3. Rationale

The linked response is a strategy implemented at OD level to increase the coverage of HIV prevention, care and treatment, and Reproductive Health including maternal health and PMTCT services by strengthening patients’ referrals and follow-up within and between community-based organizations and various facility-based services. This strategy aims to ensure that patients can receive comprehensive reproductive health and HIV/AIDS prevention, care, and treatment, while paying special attention in its initial phases to strengthening and scaling-up services for PMTCT.

Through the Linked Response Approach, HIV prevention, education and testing at ANC are made available at all facilities, ARV prophylaxis services are expanded, ART for women who need it for their own health is facilitated, safe delivery services are made available closer to their home, and their HIV-exposed infant(s) are closely follow-up, early infant diagnosis (using DNA PCR) is performed, and pediatric AIDS care services are ensured. Referral and follow-up between facilities at the local, district and provincial level, strengthened referral mechanisms within and between community-based support services, and improved connections between civil society organizations and health facilities each support the provision of services.

The MoH and its partners began a Linked Response demonstration project in two provinces in 2008. This experience is described in the implementation section of this case study.
3. OBJECTIVES

The main objectives of the Linked Response are to:

1. Increase access to comprehensive HIV prevention, testing, care and treatment towards universal access;
2. Strengthen existing RH and MNCH services including PMTCT, to drastically reduce HIV transmission from mother-to-child by 2015;
3. Contribute to the strengthening of Cambodia’s overall health care system;
4. Build up capacity and ownership of local OD management team and HC management committee.

The strategies used in the Linked Response are:

1. Strengthen community awareness and understanding to increase demand for HIV and RH services;
2. Improve accessibility of HIV and RH services (new services, transportation);
3. Strengthen referrals and follow up between HIV/AIDS, STI, ANC, Safe Delivery, Safe Abortion, FP, MNCH and TB services;
4. Strengthen patients’ follow up and referrals between community-based organizations and health services;
5. Improve decentralization, coordination and management at OD level.

4.0 IMPLEMENTATION

4.1 Strategy development phase

Having recognized several potential benefits of enhanced collaboration within the health system, the Ministry of Health developed a strategy to improve patients’ care through teamwork and coordination. A Standard Operating Procedure (SOP) for the Linked Response (LR) for Prevention, Care and Treatment of HIV/AIDS and Sexual and Reproductive Health Issues was developed by the National Center for HIV/AIDS, Dermatology and STI (NCHADS), and The National Maternal and Child Health Center (NMCHC), in consultation with partners and civil society organizations. The SOP was officially endorsed by the Ministry of Health on 19 December 2007.

The Linked Response Model

The Linked Response model makes use of the MoH Health Provider-Initiated HIV Testing and counseling (HPITC) policy, implemented since 2007 – a strategy that offers HIV testing to all pregnant women, STI and TB patients as well as patients with symptoms suggestive of HIV infection. This major HIV testing policy shift facilitates greater integration of PMTCT services into the routine antenatal care and safe motherhood package of services, and can allow Universal Access to PMTCT and drastically reduce mother-to-child transmission of HIV.

Coordination, referral and follow-up are supported by the “three-S” strategy:

- S 1: Strengthening linkages between health sector services,
- S 2: Strengthening linkages between communities and health facilities,
- S 3: Strengthening linkages within and between communities.

Key: CBS-Community-Based Support including Home-based Care, HFC-Health Facility Care, R&F-Referral and Follow-up, HC-Health Center, RH-Referral Hospital

Figure 1 illustrates the “three-S” concept.
Health Service Strengthening
In addition to strengthening community based services, the Linked Response supports the overall functioning of the district health organization by bringing together OD HIV/AIDS representatives, MCH Coordinators, CoC teams, and health centre staff through planning and implementation of coordinated services. OI/ART sites reinforce Positive Prevention messages at regular patient appointments, and referrals are made to ANC, PMTCT, and maternity services. Service package expansion is divided into three tranches: Hubs provide one-stop service, Satellites offer select PMTCT services, and Linked Health Centers incorporate HIV testing and prevention messages into antenatal care. These services are detailed below:

The Hub is a referral hospital that provides a one-stop service. HIV testing is routinely offered to all women accessing antenatal care. The hub sites provide the standard CPA and some additional services. The complete package includes VCCT, adult OI/ART, pediatric OI/ART, the full PMTCT package, integrated laboratory services, TB screening and care, Safe Abortion, Safe Delivery, Birth Spacing, STI care, Newborn and Child Health, and EPI.

Satellites are health centers or referral hospitals with VCCT that routinely offer HIV* testing services to women accessing reproductive health services in addition to the MPA, or CPA respectively. HIV testing services are also made available to partners of women accessing reproductive health. Partners of women who test positive for HIV are counseled and encouraged to seek testing and care. VCCT services are also available for the general public. Satellite facilities also prescribe 28-week ARV prophylaxis for HIV-infected women with CD4 >350, provide safe delivery care for HIV-infected women, and HIV-exposed infant follow-up care including cotrimoxazole prophylaxis and HIV testing at six weeks (DNA PCR on DBS), and infant feeding counseling and support to mothers. Satellite VCCT services actively refer newly identified PLHIV to OI/ART for TB screening.

Linked Health Centers are health centers that routinely offer HIV testing* services to women accessing reproductive health services in addition to the MPA. HIV testing services are also made available to partners of women accessing reproductive health services.

*Note that in 2009 routine syphilis screening using rapid test and hemoglobin testing will be included in the ANC package at LR ODs.

Key: HC-Health Center, RH-Referral Hospital, MPA-Minimum Package of Activities

Figure 2 illustrates patient flow through local health facilities

Strengthening Community-Health Facility Coordination
Support is provided to community groups to enable referrals, including patient transportation. Ongoing coordination is organized through regular core linked response team meetings and a monitoring and evaluation system was put in place, including a patient tracking system for follow up of HIV-infected pregnant women and their babies. These activities reinforce community-level referrals so that clients, family members and suspect cases increase their use of HIV testing, OI/ART, PMTCT, Reproductive Health including MNCH, SA, STI, TB screening/treatment services, laboratory services, and pediatric AIDS care (as appropriate); and linking teams to service delivery points so that active follow-up of clients who miss appointments.
4.2 Linked Response Pre-implementation

Two demonstration projects, in two provinces, were started in 2008. Four Operational Districts (Neak Loeung, Preah Sedach, Mesang and Kampong Trabek), covering 47 health facilities in Prey Veng Province, were selected to be the first demonstration sites to implement the Linked Response approach. Approximately 600,000 people live within the catchment area. The Prey Veng demonstration is supported by Clinton Foundation. Kirivong, a single Operational District with a population of 220,000 in Takeo province was selected as the second demonstration site, it is supported by WHO/UNAIDS, ITM of Belgium, UNICEF and UNFPA. Implementation in Takeo began in June, 2008.

4.2.1 Pre-implementation: Practical Steps

Pre-implementation activities included assessment, systems development, training, and orientation. A joint review of Cambodia’s PMTCT program conducted in 2007 also informed strategic design.

4.2.1.2 Assessment

Through a careful assessment process facilities in each OD were evaluated. Since Hub sites would need to provide “one-stop services” only referral hospitals with existing VCCT, OI/ART, Pediatric AIDS Care, and PMTCT services were selected for this function. Satellites health centers were identified strategically; strong commitment from health staff, a geographic proximity to main roads and other health centers and VCCT sites were considered. Once facilities were selected, structural and equipment gaps were evaluated. Where necessary, construction of VCCT sites was undertaken and refurbishment of existing antenatal and delivery care facilities were carried out. In some cases, equipment like delivery tables was supplied and safe abortion services were opened. One year of HIS and PMTCT program data was collected from each OD, these data served as baseline status before starting the Linked Response.

4.2.1.3 Capacity Building

Selected HCWs were trained in PMTCT counseling, prescription ARV prophylaxis, use of HIV rapid tests, dried blood spot collection for HIV-DNA PCR for early diagnosis of exposed-children, and monitoring and evaluation systems. These trainings were co-organized and facilitated by NCHADS and NMCHC to build HCW’s capacity at Linked Health Centers, Satellites and Hubs.

Linked Response orientations were conducted for staff from all public health care facilities, community-based organizations and stakeholders in each catchment. The purpose of each one-day orientation workshop was to sensitize participants to the key concepts of the LR approach: providing quality comprehensive services at health facilities, strengthening and supporting the referral and follow-up of patients from community and health care facilities, using monitoring tools to track the flow of referred patients at different levels. Community-based organizations and health staff from HIV, STI, ANC, maternity and family planning services will attend annual orientation workshops to refresh their understanding of roles and responsibilities to ensure adequate linkages and referrals.

4.2.1.4 Development of Coordination and Oversight Systems

A decentralized approach was taken to ensuring strong coordination and oversight. A Technical Support Team of health administrators was identified and trained to ensure local ownership of all activities. Provincial and district health administrators, provincial Maternal and Child Health officers, provincial and OD AIDS officers, and Home-based Care representatives were included in all orientation activities. Lead by the Linked Response OD Coordinator, the Technical Support Team provides assistance and facilitates coordination, management, and monitoring of the implementation sites at the district level.

Collaborative networks that link health centers, referral hospitals and HBC were established within each Operational District. The development of an extensive blood sample transport system made HIV-testing available and accessible at all health centers in each catchment. These networks support...
accountability and ensure provision of high quality, comprehensive services.

4.3 Practical Implementation, Phase 1

4.3.1 Roles of the Health Facility in Linked Response Implementation

The first phase of implementation was dedicated to increasing the uptake of HIV-testing among pregnant women attending antenatal care. HIV and testing services for pregnant women were routinely proposed by HC staff to their clients (HPITC). ANC midwives provide group counselling on pregnancy and HIV testing to women at ANC, and blood draw is subsequently done for all women who choose to accept an HIV test. Blood samples are sent to the VCCT lab within the site if the activity occurs in a satellite facility, or they are sent to the nearest Satellite facility if the blood draw occurs at a Linked Health Center without VCCT. This activity is undertaken with financial support from the decentralized Linked Response budget which managed at the OD level.

When the blood samples arrive at the Satellite VCCT a lab technician performs HIV rapid tests, records results on a confidential form, and places the form in an envelope. At Satellite facilities the envelopes are transferred to VCCT counsellors who disclose the test results to waiting clients. If the sample was drawn at a Linked Health Center the confidential results are given ANC midwife at time of next HC sample transport. In this case, the midwife carries the forms back to her HC and returns the results to women through post-test counselling.

When a woman tests HIV-positive, she is given formal post-test counselling at a satellite facility by a trained VCCT counsellor. If her blood was drawn at a HC facility, she is actively referred to the nearest satellite with the aid of HBC; health center staff alerts the local team of the need for assistance, and she is informed of her status and advised on next steps at that time. The next step for the HIV-positive woman is to register at the nearest OI/ART clinic (at Neak Loeung Referral Hospital in the Prey Veng catchment, and Kirivong Referral Hospital in the Kiriving catchment). Transportation for this visit is also supported by Home Based Care—which will continue to provide support to her through the birth of her child, in the year following the birth and thereafter. Additionally, her partner is encouraged to accept an HIV test if he does not already know his status.

At the OI/ART site, the pregnant woman’s CD4 is tested, and a determination is made regarding her eligibility for HAART or ARV prophylaxis. If CD4 cell count is 350 or lower, she will immediately begin HAART and return to the Hub every month for follow-up monitoring with transportation support from HBC. If she is eligible for ARV prophylaxis, she will not be required to return to the Hub, but will receive follow-up care and monitoring at her local satellite facility.

At each monthly appointment OI/ART counselors and physicians speak to clients about fertility, family planning and PMTCT options. Known HIV-positive women in care and on ART are actively referred to PMTCT services early in their pregnancies.

The pregnant woman will also be asked to commit to delivering at the nearest Satellite or Hub facility, which will be stocked with the appropriate medications in advance of her due date. She is responsible for alerting HBC at onset of labor, and HBC is responsible for ensuring her transportation to the appropriate facility for delivery. Costs associated with her delivery are covered through enhanced HBC support package.
Following are the details of three exposed infants delivered at home.

- The first infant was born in Prek Touch, Leuk Dek in the Kandal Province far from a RH or HC. The mother was on HAART and she did not contact HBC to prepare for transport when labor started at night. She came to hospital one week after delivery and the baby did not receive any ARV prophylaxis. The infant received a DNA PCR test on September 8, 2008 and the result came back negative on September 11, 2008.

- The second infant was born at night in Baphnom satellite facility. The mother has epilepsy and was delivered 20 days earlier than the estimated date. She did not contact HBC to prepare for transport when labor started at night. She received OI and the baby received prophylaxis in the next morning and one month tail. The infant received a DNA PCR test on August 22, 2008 and the result came back positive on September 3, 2008 and died.

- The third infant was born in Tbeng, Trapeang Sre, Mesang. Despite advice from HBC and HC to contact them immediately upon initiation of labor, the mother did not call the HC or HBC team. She informed HBC team immediately after delivery and the infant receive ARV prophylaxis for 1 week. The infant received a DNA PCR test on October 10, 2008 and the result came back negative on October 17, 2008.

After learning of each home delivery, the OD Management team and NCHADS met with HBC and HC staff to understand why the systems that had been put in place to assure facility delivery had not been successful. The management team stressed that for each case a detailed plan of how the women would access facility delivery needed to be put in place. It was determined that to prevent future cases of home delivery, greater effort needed to be taken in building strong relationships between care providers and pregnant women. There have been no HIV positive deliveries at home since October 2008.

Figure 3 illustrates the referral networks established in Kirivong OD, Takeo Province.

4.3.2 Roles of Home-based Care in Linked Response Implementation

HBC teams play a number of key roles; promoting MNCH and PMTCT services at the village level, referring women from the and community to antenatal care, supporting newly diagnosed women to ensure proper follow-up.

Within the Linked Response HBC teams work in an expanded capacity to provide community outreach to increase uptake of ANC and HIV testing, as well as patient follow-up services. Through village-level meetings, HBC workers disseminate educational messages relating to the importance of ante-natal care and HIV testing, and refer woman and their partners to their local health facilities for these services.

The teams work closely with RHs and HCs to initiate follow-ups visits and to receive information regarding new patients to be monitored. They provide information to patients about when and where they need to go for follow-up care and treatment, and they transport/ facilitate the transport of patients to RHs and HCs for necessary care, including prophylaxis monitoring and delivery. Further, they facilitate payment of delivery and other fees for poor women.
HBC teams are tasked with building strong relationships with other health care professionals in their local areas, including health center workers, village chiefs and village health volunteers, traditional birth attendants and other community health workers, as well as other HBC teams, to ensure good coordination among partners and full coverage of catchment populations.

HBC teams also continue play an important role in supporting adherence to ARV regimens, and by providing social support to people living with HIV.

### 4.3.3 Roles of the OD Management Team (Decentralization)

All activities have been supported by a robust administrative and monitoring structure at the Hub. OD Linked Response Coordinators, Data Managers and Logistics Managers are engaged at each catchment. Coordinators are responsible for all activities and provide primary liaison to NCHADS. Data managers collect and compile monthly monitoring data from all facilities and are responsible for ensuring that NCHADS receives data on a quarterly basis. The Logistics Managers work with provincial and national level bodies to ensure that sites are stock with necessary HIV care and treatment commodities.

Working from the Linked Response costing a workplan was developed by each OD, with support from NCHAD. Upon signing funds were disbursed to the Hub quarterly. Decentralized activities include: quarterly coordination meetings, blood sample transport from health centers to satellites for HIV testing, regular on-site monitoring of health centers and satellites, and procurement of necessary supplies related to the effective conduct of Linked Response. By empowering local Linked Response management staff with responsibility for oversight of these activities and monies, Linked Response encourages local ownership and accountability for the effective administration of services.

Because the Hub facility staff were experienced in PMTCT provision they provided support to newly trained staff. In the Prey Veng catchment the “PMTCT Team Leader” from the Hub site, Neak Leoung Referral Hospital mentored nurses and midwives at the newly established satellites. He provided phone consultations, on site supervision and often attended the first delivery at a satellite facility.

Quarterly coordination meetings cultivate communication and collaboration amongst LR staff in each OD. Practical issues including logistics and data management are addressed, and dialog around program improvement is fostered. The meetings also give LR Directors an opportunity to collect monthly/quarterly data from linked sites. Initially, representatives from the central level conducted meetings in the Linked Response demonstration catchments; the first round of self-administered quarterly coordination meetings was carried out at the close of the second quarter of implementation. Each OD administrator convened his own meeting for Linked Response staff in his zone, HBC representatives, Maternal and Child Health administrators, and other relevant partners for a meeting at the Hub. Here, data was collected, difficulties were deliberated, and plans for the following quarter were discussed. The meeting leader provided detailed minutes, and sign-in sheets from these meetings to. Minutes were reviewed, NCHADS, WHO and CHAI and to ensure adequate performance. NCHADS representatives attended the administrators’ meeting to observe the discussion and ascertain the readiness of the LR Coordinators to lead the meetings independently. The conclusion they drew was that the decentralization rollout was timely and functional.

### 4.3.4 Infant Feeding

The MoH feeding recommendation for HIV exposed-infants in Cambodia is exclusive breastfeeding for the first six months of life with complete secession at six months. Where Affordable, Feasible, Acceptable, Sustainable, and Safe (AFASS) mothers may choose to formula feed. Where formula milk is provided along with education and technical support, formula feeding is a viable option. Within the linked response, in certain cases where new mothers are unable to produce sufficient breast milk, they are encouraged to seek formula feeding support.
4.4.1 A example indicates challenges the HIV infected mothers face within the current system in respect to feeding:

In January 2008 NCHADS conducted field visit to the homes of two randomly-selected home-based care beneficiaries, both HIV infected mothers, who had initially chosen exclusive breast feeding were found to be formula feeding their infants. Each mother explained her choice by citing aversion to risk of HIV transmission through breast milk, and insufficient production of breast milk. Both women said that infant formula was a tremendous financial burden and questioned their own ability to sustain associated costs for six month. Despite these challenges each expressed strong commitment toward her replacement feeding choice.

While HBC teams are aware of formula feeding in these homes, the teams are not empowered to assist mothers with financial support for the procurement of formula milk. However, representatives do partner with mothers to ensure proper education regarding the potential risks of each feeding option, support adherence to an exclusive feeding choice, and provide hygiene education to families that choose replacement feeding. NCHADS has worked with local NGOs to facilitate support for HIV-positive mothers who choose to formula feed when programs are known to operate in or nearby the community. For example, in Kirivong OD women who choose to use formula are supported by MSF program.

4.4 Monitoring & Evaluation

4.4.1 Baseline Survey

A baseline assessment of attitudes toward and perceptions of antenatal care and HIV has been developed by the Surveillance Unit of NCHADS and the National Institute of Public Health. It was designed to compliment the Linked Response monitoring and evaluation system and will be carried out during the three year demonstration period. Some of the qualitative themes explored include:

- The level of knowledge about HIV testing and PMTCT that is possessed by pregnant women and the general population
- Why or why not women access antenatal care
- Why or why not women access HIV testing
- Why or why not women use health facilities for delivery
- Village perception of Health Center staff
- Which Health Center team members are the most appropriate providers of HIV testing and counseling services for pregnant women
- Current outreach activities performed by Health Center staff
- Other village members that work in the health arena

Some of the quantitative themes explored include:

- Percentage of women received at least one ANC during last pregnancy
- Percentage of pregnant women who received ANC
- Percentage of pregnant women tested for syphilis

This qualitative and quantitative research is being conducted throughout the seven OD in Prey Veng province and will therefore provide valuable comparison of LR districts against those without the integrated service package. The project received ethical board clearance, and the first series of household surveys and focus groups was conducted in 2008. Investigators plan to repeat the interviews, household surveys, and data collection annually.

4.4.2 Program Monitoring: Patient Monitoring, Recording and Reporting

The Linked Response intervention process and outcome is jointly monitored by NCHADS and NMCHC through a team of data managers at district level with the support from data managers at PHD/NCHADS. A data management system has been designed to monitor the process and output of the Linked Response. At health centers and district referral hospital level, the existing Health Information System (HIS) monitors numbers of ANC, deliveries, FP, safe abortion, and STI syndromes. The HIV services (VCCT, OI/ART, PMTCT, specialized STI clinics) have a specific data management system since 2005. To facilitate
service integration and ensure ease of reporting new tools including registers and reports have been introduced. These include a general ANC register that includes HIV testing information, and LR-PMTCT and HIV-exposed infant registers.

It is essential to get accurate and timely information on where HIV-infected pregnant women are, and where they intend to deliver, in order to provide a complete course of ARV prophylaxis for mother and exposed infant. Necessary services include strong and active follow-up, diagnosis and monitoring services, and referral to AIDS care when appropriate. The Linked Response project has introduced a patient tracking tool with which follow-up information for every HIV-infected pregnant woman all HIV-exposed infants is monitored. Patient follow-up information is continuously shared between all parties involved in the Linked Response under the leadership of the OD director to avoid loss to follow up. RH and maternal health coverage information is discussed monthly at OD level.

To support the monitoring system supervision visits will be conducted quarterly by OD level MCH and HIV staff by the Provincial/National MCH and HIV level staff. Data managers were recruited to facilitate the collection and compilation of data and the coverage reporting by facility and at OD level. Performance against RH and maternal health coverage targets is being progressively improved using the data collected and fed back to health facilities.

Linked Response monitoring indicators include*:

1. Number and percentage of pregnant women accessing antenatal care services in Linked Response OD
2. Number and percentage of pregnant women accessing public health facility delivery services in Linked Response OD
3. Number and percentage of women of reproductive age accessing family planning services in Linked Response OD.
4. Number of OD with at least one center that provides public PMTCT services
5. Number and percentage of pregnant women in Linked Response who were tested for HIV
6. Number and percentage of women who test positive for HIV and received their test result
7. Number and percentage of HIV-infected pregnant women in Linked Response ODs who received a complete course of ARV
8. Number and percentage of HIV-exposed infants in Linked Response ODs who receive a complete course of ARV prophylaxis, according to Cambodia national guidelines
9. Number and percentage of HIV-exposed infants in Linked Response ODs who are initiated on cotrimoxazole prophylaxis
10. Total number of women and their infants in LR program ODs supported by HBC teams
11. Number and percentage of HIV-exposed infants in Linked Response ODs testing negative for HIV by DNA PCR six weeks post-weaning
12. Number and percentage of HIV-exposed infants in Linked Response ODs lost to follow-up before 7.5 months of age.
13. Number and percentage of HIV-infected infants born to HIV-infected mothers in Linked Response ODs (Diagnosis of HIV infection is determined DNAPCR testing <7.5 months of age.

*Note that the indicators have evolved as program scope has expanded.
5. YEAR 2008 RESULTS

During year 2008, Phase I activity centered on integrating HIV testing into antenatal care services at all health facilities and on comprehensive provision of PMTCT services. As follows, service access for each component of the PMTCT cascade is presented below, along with service expansion, antenatal care uptake, and HIV testing data for the Prey Veng districts and Kirivong OD.

<table>
<thead>
<tr>
<th>Service</th>
<th>2007</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number of sites offering HIV testing at ANC</td>
<td>1</td>
<td>47</td>
</tr>
<tr>
<td>Total number of sites offering ARV Prophylaxis, Safe Delivery, HIV-exposed infant Follow-up</td>
<td>5</td>
<td>9</td>
</tr>
<tr>
<td>Total number of sites offering VCCT</td>
<td>5</td>
<td>9</td>
</tr>
</tbody>
</table>

Table 1: Service Expansion in Prey Veng Cluster

Service expansion supported a significant increase in HIV testing coverage among pregnant women after LR start (Figure 4)

In Prey Veng Linked Response districts, of the pregnant women tested for HIV from April through December 2008, 9 were found to be HIV-positive and all of them received their test result through post test counselling. HIV testing coverage at antenatal care service was above seventy percent during the first three quarters of implementation. (Table 2)

<table>
<thead>
<tr>
<th></th>
<th>NL</th>
<th>MS</th>
<th>KTB</th>
<th>PSD</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. ANC-1 Clients</td>
<td>3179</td>
<td>2414</td>
<td>2371</td>
<td>2391</td>
<td>10355</td>
</tr>
<tr>
<td>No. ANC Clients Receiving HIV Test</td>
<td>2345</td>
<td>1589</td>
<td>1555</td>
<td>1896</td>
<td>7385</td>
</tr>
<tr>
<td>Percentage ANC Clients Receiving HIV Test</td>
<td>74%</td>
<td>66%</td>
<td>66%</td>
<td>79%</td>
<td>71%</td>
</tr>
<tr>
<td>No. HIV-Positive Test Results</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>9</td>
</tr>
</tbody>
</table>

Table 2: HIV testing uptake and HIV tests results in the Prey Veng Cluster from April to August 2008

From April through December 2008 an additional 20 pregnant women who knew their HIV status prior to becoming pregnant have been referred by OI/ART site and integrated into the Linked Response PMTCT program. Therefore a total of 29 HIV positive pregnant women have been followed up for PMTCT from April through December 2008. There has been no loss to follow up of these HIV-infected women since the beginning of the project. Availability of follow-up information about status of HIV-infected pregnant women and their infants has improved drastically from 2007 to 2008 (Figure 8, page 13).
Kirivong OD
The following service expansion was supported in Kirivong OD (Table 3):

<table>
<thead>
<tr>
<th>Service</th>
<th>2007</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Number of sites offering HIV testing at ANC</td>
<td>1</td>
<td>20</td>
</tr>
<tr>
<td>Total number of sites offering ARV Prophylaxis, Safe Delivery, HIV-Exposed infant Follow-up</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>Total number of sites offering VCCT</td>
<td>2</td>
<td>6</td>
</tr>
</tbody>
</table>

Table 3: Service Expansion in Kirivong OD

In Kirivong OD, the percentage of pregnant women who received an HIV test increased from 9% in 2007 to 82% after the Linked Response strategy was introduced in 2008 (Figure 6).

![Figure 6: HIV testing coverage of pregnant women in Kirivong OD in 2007 and 2008](image)

In Kirivong OD, the ANC1 coverage has also slightly increased since 2007 (Figure 7).

![Figure 7: ANC1 coverage at Kirivong OD in 2007 and 2008](image)

When we compared the period of June to December 2007 (before the Linked Response) with the first seven months of the Linked Response (June to December 2008), the ANC-1 coverage increased from 70% in 2007 to 77% and health facility deliveries from 54% to 58%.

No significant change was observed so far in the birth spacing coverage. Safe abortion services were started at two sites in 2008, using manual vacuum aspiration. While in 2007, 3 HIV positive women were identified through ANC screening, 8 HIV positive women were detected in 2008 and all of them received their test results. Four PLHA on OI/ART care became pregnant in 2008. None of the 12 HIV-infected pregnant women in 2008 was lost to follow up. After the start of the Linked Response, formula feeding was provided to most infants. All children tested for HIV so far (n=6) were HIV negative.

Information on the PMTCT status of HIV-infected pregnant women and their infant has improved drastically from 2007 to 2008 (Figure 9, page 13).

In conclusion these results show that the Linked Response strategy has allowed a drastic increase in HIV testing coverage of pregnant women and some increasing trends in other reproductive health services so far. The follow up of HIV-infected pregnant women and the coverage of PMTCT interventions have improved through a strong coordination mechanism at OD level. At the time of the close of this report, none of the children born to HIV infected mothers had reached the age of the 7.5 month DNA-PCR test. Therefore, the final outcome of Linked Response in preventing mother-to-child transmission is not yet known.
Figure 8: PMTCT status of HIV-infected pregnant women and their infants in Prey Veng Province in 2007 and 2008

- **HIV infected pregnant women**
  - 29

- **Deliveries**
  - 14

- **Infants born**
  - 15

- **Not yet DNA-PCR test at 6 weeks**
  - 4

- **DNA-PCR test at 6 weeks**
  - 11

- **Delivered**
  - 12
- **At home**
  - 2

- **Completed ARV prophylaxis**
  - 13

- **Initiation Cotrimoxazol**
  - 12

- **Replacement feeding**
  - 3

- **Breast feeding**
  - 10

- **Mixed feeding**
  - 1

- **Not yet DNA-PCR test at 6 weeks**
  - 4

- **DNA-PCR test at 6 weeks**
  - 11

- **Positive**
  - 1

- **Negative**
  - 10

- **Died**
  - 1

- **Not yet delivered**
  - 10

- **Miscarriage/Abortion**
  - 5

- **Moved to PNP and BMC= 2 lost= 1**

- **Initiation Cotrimoxazol**
  - 4

- **Replacement feeding**
  - 9

- **Breast feeding**
  - 1

- **Mixed feeding**
  - 1

- **Not yet DNA-PCR test at 30 weeks**
  - 2

- **DNA-PCR test at 30 weeks**
  - 5

- **Not yet DNAPCR test at 30 weeks**
  - 2

Figure 9: PMTCT status of HIV-infected pregnant women and their infants in Kirivong OD in 2007 and 2008
6. COSTING PER OD

Many costs associated with the Linked Response are covered by specific elements of the previous CoC (HIV and syphilis tests, HBC, TB/HIV, VCCT, etc). A budget template based on year-one expenditures in the demonstration districts has been prepared to illustrate the scale and nature of project spending. Costs are delineated by type: start-up costs occur only during the first year, while running costs require continual support. Expenditures include orientation, training and coordination, staff incentives.

The budget presents an estimation for a district with 12 health centers, a population of 10,000 people, and 2 VCCT sites—one at the RH and one newly established. The capital costs for newly established VCCT sites are not included. See Annex B.

7. CHALLENGES

- Limited political will (NCHADS – NMCHC) and Partners
- Increasing work load of existing health staff at HC and RH
- Creating conflict of interest and competition for resources
- Limited capacity for leadership, management and coordination and monitoring at the OD level (OD Management Team)
- Limited capacity for coordination at local level
- Inadequate resources allocated to provision MPA and CPA
- Missed opportunities for HIV testing during outreach ANC
- Financial sustainability.

8. LESSONS LEARNED

8.1 Consumers: HIV-positive mothers and HIV-exposed infants

Through improved coordination within the community, between health facilities and the community, and within and between health facilities we can ensure appropriate follow-up of HIV-positive mothers and for the first time, truly understand outcomes for mother infant pairs. We know where the mother-infant pairs are, their HIV-status, and support mechanisms. Strong investment in coordination can contribute toward improved service uptake and coverage.

8.2 Providers

Targeted training of HCW has improved capacity at to provide higher quality services. Linked Response changes promotes a shift in provider behaviour from clinical management to a client centered public health approach. Enhanced service quality has resulted in an increase in service uptake. Continued monitoring and support are necessary to ensure that high usage yields favourable health outcomes.

These lessons learned will be used to further develop the evidence-base for the way AIDS resources/expenditure is supporting overall strengthening of health systems and service delivery ("diagonality").

8.3 Health System

The Linked Response approach revitalises OD level management mechanism, building capacity at the local level so that relevant health system issues can be addressed. The system is adaptable and can be modified or expanded to suit diverse catchments. Decentralized OD level coordination and information/data sharing facilitates the timely use of data for program implementation and improvement. The Linked Response strengthens OD capacity in line with overall Government policy for Decentralization and De-concentration (D&D).

9. NEXT STEPS

The next steps include the Nationwide scale up of the first phase and the implementation of the second phase at the demonstration projects sites.

9.1 National scale up of Phase One

The lessons learned from the Linked Response demonstration projects will be used to scale up the Linked Response nationally. In 2009, NCHADS/MoH will scale up the linked response strategy in about 20 ODs in 5 new provinces including Pailin, Pursat, Kg Cham, Svay Rieng provinces with the support of FHI, US CDC, RHAC and RACHA, URC, and AHF. Nationwide expansion is planned in 2011-2015 with GFATM
support. A total of 33 OD and 36 OD will be covered respectively by NCHADS and NMCHC for the linked response by 2015. It is planned that the Linked Response strategy will strengthen the PMTCT coverage up to 80% of HIV pregnant women receiving ARV prophylaxis by 2015.

The specific activities of phase 1 that will be strengthened are the inclusion of information on HIV testing during outreach ANC and in exceptional cases the possibility of blood draw for HIV testing when the pregnant woman leaves too far from any HC. Resources will be mobilized to provide formula milk to organizations that can support infant formula feeding for women with insufficient/no breastmilk and women who want and can provide this option to their baby.

9.2 Implementation of the Phase 2 at the existing demonstration projects

During the second phase of implementation all activities undertaken during the initial phase will continue. In addition to this work focus will expand to include quality and access issues around reproductive health services and TB. At existing demonstration projects, the phase two will be implemented. The second phase includes:

- TB/HIV linkages for the 3ls;
  - intensified TB screening of PLHA,
  - isoniazid prophylaxis for PLHA for which TB has been ruled out, and
  - infection control,
- Promotion of second, third, and fourth antenatal care visits,
- Promotion of delivery services,
- Mobilization of community volunteers structures to support provision of primary, health care.

9.3 Community Mobilization to Support Improved Maternal and Child Health

During the second phase a demonstration of community volunteer mobilization will be carried out. NCHADS and the National Center for Health Promotion have developed a supplemental support mechanism for referral to appropriate services to shore up HBC support. The Addendum to Standard Operating Procedures (SOP) to Initiate a Linked Response for Prevention, Care, and Treatment of HIV/AIDS and Sexual and Reproductive Health Issues provides a roadmap for engagement and revitalization of community-based structures to enhance ties with the health sector and ensure multiple entry points to facility-based care. In phase two, community support and referral mechanisms will augment and expand the work of HBC. Community groups and district and village level government leaders are charged to work cooperatively to increase uptake of health services and improve health outcomes.

Through the Linked Response approach, health centers will formally connect with community-based organizations to increase service uptake. Many community groups have the potential to affect public perception of the health sector and influence community members’ decisions around accessing health services. These groups include: Health Center Management Teams, Village Health Volunteers/Village Health Support Group, Network of Women (Ministry of Women’s Affairs), activists of the Cambodian Red Cross, Network of Rural Health Care (Ministry of Rural Development), Role Model Mother Groups, Home-based Care Non-Government Organizations (NGO), Other NGOs at the Community/Local Level, Traditional Birth Attendants, Village Malaria Workers, Tuberculosis Community Volunteers, Positive Peoples Network (CPN+). Preliminary assessments in Neak Loeung OD have shown that few community-based organizations are operational in the catchment area, and those that exist to do not maintain strong links to the health sector. Further assessment of existing structures and their respective capacities with focus on scalability will determine programmatic direction.

9.4 Most At Risk Populations

Cambodia’s HIV prevalence has decreased significantly in the past decade. New infections are largely thought to be transmitted from mother to child and among most at risk populations (MARPs). The Linked Response will seek to ensure that MARPs are given adequate referral and follow up through the continuum of care as targeted interventions are implemented.

A Standard Operating Procedure (SOP) for targeting entertainment workers for prevention, care and treatment is currently in development and will be tested in Siem Reap town in 2009. The Linked Response plans to expand to Siem Reap town in 2009 which will enable tandem roll out of these two interventions. By expanding the Linked Response with
efforts around entertainment workers, both uptake and quality of services will be improved.

9.5 Positive Prevention

Positive prevention among the OI/ART cohort will scale up based on an SOP developed by NCHADS with support from partners in 2008-2009. These efforts will enable improved counseling, referral and follow up on positive prevention among people living with HIV/AIDS. Services will include active referral for family planning and condom use for positive couples, discordant couples and single people.

REFERENCES


4. Operational framework for the Continuum of Care for People Living with HIV/AIDS in Cambodia, NCHADS, 2008 update.

ANNEX A: ARV Prophylaxis Regimens for PMTCT

<table>
<thead>
<tr>
<th>Course</th>
<th>Antenatal</th>
<th>Intrapartum</th>
<th>Postpartum</th>
<th>Postnatal</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>HAART (mother)</strong></td>
<td>Mother: HAART</td>
<td>Mother: HAART</td>
<td>Mother: HAART</td>
<td>Infant: ZDV (4mg/kg) twice a day for seven days*</td>
</tr>
<tr>
<td><strong>Zidovudine (ZDV) and Nevirapine (NVP)</strong></td>
<td>Mother: ZDV (300 mg) twice a day starting at 28 weeks or as soon as feasible thereafter</td>
<td>Mother: ZDV (300 mg) at onset of labor and every 3 hours until delivery and single-dose NVP (200 mg) at onset of labor</td>
<td>Mother: (If HAART available) ZDV (300 mg) and 3TC (150 mg) twice a day for seven days</td>
<td>Infant: NVP (2 mg/kg) oral suspension immediately after birth and ZDV (4 mg/kg) twice a day for seven days**</td>
</tr>
<tr>
<td><strong>ZDV and/or NVP for Infant</strong> (when mother has received no ARV prophylaxis)</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>Infant: NVP (2 mg/kg) oral suspension immediately after birth and ZDV (4 mg/kg) twice a day for seven days.</td>
</tr>
</tbody>
</table>

* If the mother received HAART less than 4 weeks during pregnancy the infant should receive four weeks of ZDV.

** If the mother received less than 4 weeks of ZDV during pregnancy the infant should receive four weeks of ZDV.


Source: NMCHC PMTCT Guidelines (ref.5)
## Annex B: Budget

### LINKED RESPONSE COSTING: Single OD Implementation, Year 1 costs

Please note: the following budget presents cost estimates for an average-sized OD: 12 health centers with approximate populations of 10,000 people, and 2 VCCT sites (one at the RH and one newly established). The costs estimates are based on experience in Prey Veng: costs are derived from the 4 OD implementation and extrapolated to fit the single OD implementation context. The capital costs for newly established VCCT sites are not included.

<table>
<thead>
<tr>
<th>START-UP COSTS</th>
<th>ANTICIPATED EXPENDITURE PER OD</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Training</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OD assessment trips</td>
<td>$420.00</td>
<td>((25<em>1)/4)+3</em>73+15*1/3</td>
</tr>
<tr>
<td>6-day PMTCT/VCCT course, led by NMHC and NHADS staff</td>
<td>$1,190.00</td>
<td>((5<em>13)/6)+(25</em>4)/6+200</td>
</tr>
<tr>
<td>Linked Response orientation for provincial and district administrators and HC chiefs from all facilities in the zone, as well as ANC and delivery nurses</td>
<td>$1,500.00</td>
<td>((5<em>4)/6)+(25</em>4)/6+100</td>
</tr>
<tr>
<td><strong>VCCT</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VCCT lab and counseling training</td>
<td>$360.00</td>
<td>((5<em>3)/4)+(25</em>2)/4+100</td>
</tr>
<tr>
<td>PCR Heel Prick Training for Clinicians and Nurses</td>
<td>$170.00</td>
<td>((5<em>4)/1)+(25</em>2)/1+100</td>
</tr>
<tr>
<td>PMTCT course for management (3 pp)</td>
<td>$165.00</td>
<td>((5<em>3)/1)+(25</em>2)/1+100</td>
</tr>
<tr>
<td>VCCT/PMCTC field attachment at LR sites: central level</td>
<td>$100.00</td>
<td>((25*1)/2)/2</td>
</tr>
<tr>
<td>VCCT/PMCTC field attachment at LR sites: OD level</td>
<td>$138.00</td>
<td>((5<em>1)/24)+(3</em>1)/6</td>
</tr>
<tr>
<td><strong>OPERATIONAL COSTS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Training</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3-day Refresher Trainings for linked HC staff on counseling and testing for PMTCT</td>
<td>$1,100.00</td>
<td>((5<em>40)/1)+(25</em>4)/1+200</td>
</tr>
<tr>
<td>VCCT/PMCTC supervision at LR sites: central level</td>
<td>$200.00</td>
<td>((25*1)/2)/4</td>
</tr>
<tr>
<td>VCCT/PMCTC supervision at LR sites: OD level</td>
<td>$168.00</td>
<td>((5<em>1)/24)+(3</em>1)/6</td>
</tr>
<tr>
<td><strong>Support for blood transport from HCs to VCCT</strong></td>
<td>$3,600.00</td>
<td>(3*10)/12</td>
</tr>
<tr>
<td><strong>Support for OD, DSB transport to Phnom Penh Technical Strategies</strong></td>
<td>($600)</td>
<td>(25*24)</td>
</tr>
<tr>
<td><strong>Monitoring and supervision from national level</strong></td>
<td>$900.00</td>
<td>((5<em>9)/5)+(15</em>3)/4</td>
</tr>
<tr>
<td><strong>Referrals Network</strong></td>
<td>$750.00</td>
<td>((25<em>3)/3)+(15</em>2)/3*2+75</td>
</tr>
<tr>
<td><strong>Printing of monitoring tools</strong></td>
<td>$176.00</td>
<td>((5<em>3)/10)+(5</em>7)/2</td>
</tr>
<tr>
<td><strong>HBC training</strong></td>
<td>$1,500.00</td>
<td>((5<em>40)/1)+(25</em>4)/1+200</td>
</tr>
<tr>
<td><strong>Community coordination: strengthening village and health center linkages</strong></td>
<td>$250.00</td>
<td>((5<em>10)+(25</em>4)/14</td>
</tr>
<tr>
<td><strong>Support Operations of HBC team for 1 year</strong></td>
<td>$4,500.00</td>
<td>(1500*5)</td>
</tr>
<tr>
<td><strong>Salary &amp; Incentives</strong></td>
<td>$8,800.00</td>
<td>(60<em>12)+(60</em>12)</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>$25,372.00</strong></td>
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</tr>
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</table>