Program to Prevent Mother to Child HIV Transmission in Yunnan, China

A Collaborative Project Between:
Yunnan Bureau of Health
Aaron Diamond AIDS Research Center

Implemented by:
Yunnan AIDS Care Center Yunnan AIDS Initiative
Yunnan AIDS Initiative
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Executive Summary

In August 2005 the Yunnan Bureau of Health started a collaboration program with the Aaron Diamond AIDS Research Center to demonstrate the feasibility, safety, and effectiveness of using maternal HAART prophylaxis to benefit the health of HIV-infected mothers and to prevent mother-to-child transmission of HIV in thirteen counties. Most of these sites are located in mountainous, rural, resource-limited regions of Yunnan, bordering Myanmar. They are also among the counties most severely affected by HIV.

In nearly six years of program implementation, we have provided HAART prophylaxis to 531 HIV positive pregnant women. Three out of 456 infants with a definitive HIV test result were infected. After accounting for infants with unknown HIV status (who either died or were lost to follow up) the adjusted vertical transmission rate in our cohort is 1.31%. Women enrolled in our program have seen rebounds in their CD4 t-cell counts as well as effective control of the virus and are enjoying improved health as a result, enabling them to take better care of their children and to participate in their lives more fully.

The program has not only raised the standard for clinical PMTCT intervention services, it has also promoted the provision of more comprehensive PMTCT services according to the WHO’s four component strategy. With funding and technical support from the Elizabeth Glaser Pediatric Foundation (EGPAF), we expanded services from county level health care facilities to peripheral health facilities by relying on and strengthening the capacity of the rural three-tier health network. For instance, HIV counseling and testing for pregnant women is now available at all township health centers and even in some village clinics. As a result more women are being diagnosed earlier in their pregnancy, with the average week of identification decreasing from 33 weeks of pregnancy at the start of the program in 2005, to 26 weeks of pregnancy in 2010. Similarly, the average duration of HAART treatment during pregnancy has gone from 71 days in 2005 to 117 days in 2010. The proportion of women receiving HAART in these thirteen counties has increased from 10% of patients in 2005 to just shy of 70% in 2010. The program has also introduced early infant diagnostics using DNA-PCR method. This approach allows doctors to test infants for HIV as early as six weeks of age, instead of waiting until twelve or eighteen months, as is required if relying on traditional antibody testing.

Building on the foundation of our PMTCT program, in 2009 we piloted packaged HIV, hepatitis B, and syphilis counseling and testing, and prevention of vertical transmission services to pregnant women in six counties. This pilot demonstrated that integrated PMTCT services has high acceptance among health workers and clients alike, and is a cost-effective way to improve maternal and child health outcomes.

Our program has demonstrated the feasibility, safety and effectiveness of implementing HAART prophylaxis to prevent mother-to-child transmission of HIV, hepatitis B, and syphilis, even in rural resource-limited areas in China. We hope our program experience could inform the scale-up of PMTCT services using maternal HAART in other regions of China.
Background

Yunnan Province is located in the southwest of China. The province, with a population of 42 million, is the region that was hit earliest and most severely by the HIV epidemic. By 2005, a cumulative 40,157 people living with HIV had been reported in Yunnan, making up 28% of the national total. The proportion of women infected had also risen substantially, from 20.7% of newly identified individuals in 2004 to 31.3% in 2005. Heterosexual transmission was also becoming more common, putting more women at risk of infection from their partners. Prevalence among pregnant women across the province was estimated at 0.36%, translating to over 2000 HIV-positive pregnant women each year. Prevention of mother-to-child transmission work in the province began officially in 2003 when the China Ministry of Health designated two counties in Yunnan as PMTCT pilot sites. Building on that experience, in 2005 the number of pilot counties was increased to 52 and by 2006 all 129 counties in Yunnan were included in the national PMTCT program. The program recommended a regimen of maternal AZT starting after 28 weeks of pregnancy, or single dose NVP during labor and delivery if the woman was not identified until then. In actual implementation, single dose NVP was used for most women.

Program Initiation

The Aaron Diamond AIDS Research Center and Yunnan Bureau of Health initiated their collaborative program in August of 2005 with an agreement to provide comprehensive PMTCT services for HIV-infected pregnant women in selected sites across Yunnan. The program would use highly active antiretroviral therapy (HAART) regimen for all enrolled women.

Program Sites

The thirteen selected sites included: Cangyuan, Gejiu, Gengma, Hongta, Kaiyuan, Lancang, Linxiang, Longchuan, Longlin, Mangshi, Tengchong, Wenshan, and Yanshan. Most are located in high HIV prevalence prefectures. Four sites are ethnic minority autonomous counties with over ten ethnic minority groups represented. Seven counties border Myanmar and seven are designated poverty counties with average per capita income below 10 RMB per day. The sites are located in mountainous rural regions with difficult access to health care facilities.
Program Management and Implementation Structure

International Collaborators

US Aaron Diamond AIDS Research Center (ADARC): Providing funding and technical support to deliver clinical PMTCT intervention using maternal HAART regimen.

US Elizabeth Glaser Pediatric AIDS Foundation (EGPAF): Providing funding and technical support to strengthen rural health network and health care worker capacity to deliver comprehensive PMTCT services.

Provincial Level

Yunnan Bureau of Health: Program oversight and supervision

Yunnan AIDS Care Center and Yunnan AIDS Initiative: Overall management of program implementation; provision of technical support to program sites; provision of CD4, viral load and DNA-PCR testing; supply and distribution of antiretroviral drugs.

Yunnan Maternal and Child Hospital (MCH): Partner in program management, monitoring and evaluation.

Site level

County Maternal Child Health Hospital (MCH): Institution responsible for site-level program implementation and management. Responsible for the provision of HIV counseling and testing of pregnant women; provision of PMTCT intervention services during pregnancy, labor and delivery, and post-natal follow up; supervision and technical support.
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support to township health centers and village doctors; data collection and information management across all facilities offering HIV counseling and testing services.

County ARV treatment clinic: Provision of consultations and technical support to MCH in ARV treatment and management of patients.

Township health center: Provision of HIV counseling and testing during ante-natal care and labor and delivery; supervision and technical support to village doctors.

Village doctors: Delivery of health education to villagers; identification of pregnant women in the village; basic counseling on ANC and HIV counseling and testing; referral for ANC care and HIV counseling and testing to township or county health facilities.

Bureau of Health administrators at the provincial, prefecture and county levels; administrators of all health facilities participating in the program, township and village administrative leaders; and women leaders at all the program sites. The support of all these individuals does not only have to be built at the onset of the program, but must be maintained over time.

Program Objectives

Primary Objective: to demonstrate the feasibility, safety, and effectiveness of providing comprehensive PMTCT services using HAART for HIV positive pregnant women in remote, rural, resource-limited regions of Yunnan.

Secondary Objective: To share program experiences and best practices with other regions in China.

Program Strategies and Activities

1. Leadership Mobilization

Garnering support from leadership is essential to the success of any program in China. Key leaders include

2. Healthcare Worker Capacity Building

One of the biggest challenges in the initial stages of the program was the limited experience of MCH doctors in dealing with HIV. Doctors within the MCH system had received little training in basic HIV/AIDS knowledge and lacked experience in caring for and treating people infected with HIV. The program used various training techniques to build capacity of health care workers with a wide range of baseline knowledge and experience.
3. Link program resources and activities with other HIV prevention and treatment programs and resources

This program was designed to fit the local needs, building upon the foundation of the national PMTCT program, and implemented by the local health system and health care workers. Linkages with other international and national collaborative programs have been crucial. Among these integration with the Elizabeth Glaser Pediatric AIDS Foundation PMTCT project, Zeshan Foundation’s HIV, hepatitis B and syphilis PMTCT project, and Rotary International Project SPAN have been essential. Equally important has been our collaboration with the China CDC Women and Child Health Center, UNICEF, and WHO to improve feeding support of children born of HIV positive mothers.

4. Providing technical support to project sites

Technical support to project sites was provided through the Provincial Program Office, housed within the Yunnan AIDS Initiative, and the Expert Advisory Group. The Provincial Program Office communicated regularly through phone and email with each County Program Office to monitor enrollment and data collection, answer clinical questions on a case by case basis, follow up with sample collection and shipping, and communicate laboratory results back to each County Program office. In addition, there were at least two monitoring and evaluation trips each year to each county. The monitoring and evaluation teams were comprised of provincial office staff, domestic and international experts.
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Program Results Summary

From July 2005 when the first woman started HAART treatment until now, a total of 531 HIV-positive pregnant women have been enrolled into the program. Of these, 31 were excluded from the cohort due to miscarriage, abortion, stillbirth, neonatal death following preterm delivery, and other reasons. Figure 1 shows the derivation of the cohort. As of May 31, 2011, 486 women have delivered 492 babies with a further 17 women still pregnant. Women’s age ranges from 18 years to 41 years, with mean age of 26.

Protocol Summary

Target group: Treatment-naive HIV-positive pregnant women

Maternal ARV regimen: HAART starting at 14 weeks of pregnancy. For women with CD4>250/mm3, AZT + 3TC + EFV was recommended, for women with CD4≤250/mm3 AZT + 3TC + NVP was used.

Infant ARV regimen: liquid NVP post-delivery. If duration of mother’s treatment was ≥4 weeks before delivery, then infant received one week of AZT; if duration of mother’s treatment was <4 weeks during pregnancy, the infant received AZT for 4 weeks.

Post-natal follow up: Mother: In line with the national PMTCT protocol, maternal follow up by the MCH ends 42 days post-delivery. At this time women whose CD4 count before beginning HAART was less than 350/mm3, were referred to the local ARV clinic to continue treatment. Women whose CD4 count before starting HAART was greater than 350/mm3, and remained so through delivery, discontinued HAART post-delivery and were referred to the local CDC for follow up, again, in line with the national protocol.

Infants: Infants were followed monthly from birth until 18 months of age. All mothers are recommended to replacement feed to reduce the risk of transmission through breastfeeding as per national guideline. At each follow up, mother or caretakers are given free formula provided by the national program with reinforcement in feeding counseling. Growth monitoring was performed according to national guidelines and vaccination given according to national vaccination schedule. Since 2007, blood samples for HIV DNA-PCR are collected for HIV DNA-PCR at 6 weeks, and HIV antibody tests are performed at 12 months or 18 months.
Ethnic minorities comprise 40% of the total, including Dai (9.6%), Jingpo (8.2%), Wa (7.2%) and other (15%). Eighty-five percent of the women have no more than a middle school education; and 78% are farmers.

![531 HIV+ Women Enrolled](image)

**Figure 1: Derivation of the cohort.**

Mean week of pregnancy at which women began treatment was 23 weeks, with over 70% of the women starting treatment before 28 weeks of pregnancy. At onset of treatment, 51% (255) of women had CD4 counts less than 350/mm$^3$ (Figure 2A). Out of these women, 174 started on AZT+3TC+NVP regimen, and the remainder on AZT+3TC+EFV regimen.

**Maternal Indicators:** Average CD4 t-cell counts for women increased by almost 100/mm$^3$, from 367/mm$^3$ before treatment to 456/mm$^3$ at delivery. Before treatment, 83% (419) of the women had viral load measures greater than 1000 cp/ml. By delivery, this proportion had been reduced to 7% (Figure 2B).
Adverse Effects from ARV: A total of 239 women reported at least one of the following four side-effects during pregnancy: nausea, anemia, rash, and insomnia. There were 32 reported cases of anemia and a further 32 cases of skin rash. Sixteen women with AZT in their initial HAART regimen changed to D4T because of anemia, and 8 changed regimen because of skin rash (six replaced NVP with EFV, 2 replaced EFV with LPV/r).

Delivery Method: Thirty-six percent (36%) of women delivered by natural birth and 64% by C-section. According to international guidelines that show that there is no advantage to C-section if a woman’s viral load is below 1,000 cp/ml at delivery, our program did not recommend routine C-section for HIV-infected women. The program witnessed progress on this measure: in the first two years of the program, only 17% of the women delivered by natural birth. By 2009 and 2010, the percentage of natural births had increased to 46%.

Infant outcomes

Infant HIV status: Of the 456 infants with definitive HIV test results, 453 are HIV negative, and 3 are HIV positive.

HIV-infected infants: Three infants have been diagnosed with HIV. The mothers of these infants all received AZT+3TC+NVP prophylaxis during pregnancy and delivery. One mother was diagnosed shortly before labor and therefore received just one dose of HAART before she delivered. A second mother received 62 days of treatment, and had undetectable viral load (<50cp/ml) by the time she delivered. The third mother had been on HAART regimen for 117 days before she delivered, also with undetectable viral load by delivery. Two of these infants have died (one at 48 days, and one at 49 days). The third was started on ARV treatment at 16 months and continues to be on treatment.

Infant Mortality: A total of 17 HIV-exposed infants have died in our program. Eight died within one week of birth, eight died between one week and six months, and one at 20 months. Among these infants, eight infants were HIV negative, two were HIV positive, and seven were not tested for HIV before death. In eight of these cases, death was attributed to diarrhea and other common childhood infections. Five were preterm low birth weight infants.

Lost to Follow Up: Three mother-infant pairs have been lost to follow up post delivery. Two were lost in 2006 and one in 2009. None of these three infants were tested for HIV.

Infant HIV DNA-PCR Testing: Beginning in 2007 the program worked to build the capacity of the Yunnan AIDS Care Center laboratory to conduct early infant diagnosis using DNA-PCR testing. This method allows babies to be diagnosed at six weeks, instead of waiting until twelve to eighteen months using the traditional antibody testing approach. Infant dry-blood spot samples are collected at each site and sent to Yunnan AIDS Care Center laboratory
for testing. In 2007 when early infant diagnosis began, it took on average 89 days to notify families of the test results. In 2010, the average time was reduced to less than two months (54 days) post-delivery. In accordance with national guidelines, all infants are still tested by HIV antibody testing at 12 or 18 months of age. To date there has been 100% concordance between the HIV DNA PCR results and the later antibody results.

**Mother to Child Transmission Rate:** The adjusted transmission rate, after accounting for those infants who died and those who were lost to follow up without being tested, is 1.31%.

**Strengthening of overall PMTCT services at the sites**

In addition to the clinical intervention, this program has strengthened local healthcare worker capacity and health system functioning. From 2005 to 2010, the week of pregnancy at which infection was confirmed for all HIV-positive pregnant women, including those enrolled and those not enrolled in our program, has showed marked improvement, from an average week of diagnosis of 33 weeks of pregnancy in 2005 to 26 weeks of pregnancy in 2010 (Figure 3A). Consequently, average duration of prophylactic treatment during pregnancy not only increased within our cohort of women receiving HAART, but also for all HIV-positive women delivering babies in the 13 counties in this period (Graph 3B).

Analysis of the proportion of various prophylactic regimens used among all women accessing PMTCT services in these 13 sites reveals that in 2005, women using HAART only accounted for 10% of the total. By 2010, women using HAART made up 69% of the total (Figure 4). This demonstrates the positive impact that the program has had on the provision of PMTCT services at these thirteen sites. While implementation of HAART faced many challenges in the beginning, through years of dedication and hard work, it has been possible to effectively deliver HAART to an increasing proportion of HIV-infected pregnant women.
Program Experiences

Best Practice 1: Leadership Mobilization

1.1 Garnering full support from the leaders of the Bureau of Health, the government agency in charge of the health system and health service provision in Yunnan, was an essential first step underlying the success of the program. This involved continuous and close communication between ADARC and Bureau of Health leaders, to reach consensus on program objectives, significance and implementation strategies. During the program planning process, Bureau of Health leaders provided valuable insights and suggestions regarding how to better integrate the program into the overall HIV/AIDS prevention and treatment efforts at the sites. Once the provincial Bureau of Health and ADARC signed the program contract, the provincial Bureau of Health signed subcontracts with each county Health Department ensuring their active engagement in the program.

1.2 County Health Departments organized regular program coordination meetings. These meetings have provided a platform for the site implementation agencies to report program progress to the Health Department leadership and identified key areas in which the Health Department could also provide assistance to strengthen inter-agency cooperation in order to overcome implementation challenges.

1.3 Meetings between the provincial program office staff and county Health Department leaders during every on-site monitoring and evaluation trip were crucial. These meetings have been critical in ensuring continued, uninterrupted support from the local health authorities. Over the six years of the program, there has been significant turnover of local leaders. These regular meetings thus created opportunities to debrief new leaders on the program in a timely fashion.

1.4 Semi-annual program conferences specifically invited Health Department leaders and facility leaders, as well as healthcare workers. At these meetings the healthcare workers carrying out the work were able to share program progress and challenges in front of an audience of peers from other program sites as well as their supervisors. These occasions served as an opportunity for the leaders and workers to learn technical and management lessons from experiences in other counties.

Best Practice 2: Healthcare Workers Capacity Building

One of the biggest obstacles in the initial years of the program was that the doctors in the MCH system had limited knowledge about HIV/AIDS and lacked experience in treatment and management of people infected with HIV. The program has used various types of trainings targeting healthcare workers of all types and levels:

2.1 MCH clinicians: Trainings focused on improving the capacity of MCH clinicians to provide ARV treatment and manage HIV-positive pregnant women in their care. In addition, trainings sought to increase their capacity to
train township and village doctors by introducing skills and concepts to increase the participatory nature of such trainings. Trainers included both domestic and international experts in the field of AIDS treatment, as well as related fields. Given the limited experience of MCH doctors in dealing with HIV at the start of the program, many of them had fears and misconceptions about HIV, no different from those common in the general population. An important first step was therefore to raise their awareness and change their attitudes towards HIV and people living with HIV/AIDS. Trainings also sought to emphasize the significance of PMTCT work. Reflecting back these few years, many doctors note that they knew very little about HIV when they first started, and thought it was best for pregnant women with HIV to terminate their pregnancy. Through hard work and collecting experiences, they have seen the results of their work, and gained confidence and pride. Now many proudly call themselves “local experts” in the field.

2.2 Township and village health workers: Township and village health workers were trained by county level trainers, who had recently acquired the information and skills through training of trainers sessions. Using participatory methods, which were perceived as novel and effective by trainees, county trainers taught township and village health workers about HIV counseling and testing, and how to integrate these services into routine ANC and labor and delivery. In addition to lessons to provide them with basic HIV and PMTCT information, the training used a lot of case examples and role plays to let the community doctors practice HIV counseling techniques.

2.3. Health administrators and community leaders: The program sought to raise awareness of HIV and the significance of PMTCT work among health administrators and community leaders so that they could be mobilized to coordinate work within the health system and in the community.

2.4 Team Building: Even with all the trainings, implementation of PMTCT services remained a challenge in the first years of the program due to the diverse set of actors across multiple agencies who needed to be involved in order for women to benefit from the services. One effective strategy was to identify a couple of core doctors in each county MCH facility to lead the effort, set examples for others at their own hospitals, take ownership and organize the trainings, and coordinate expansion of services to
township and village level. The contributions of these core doctors at each site have been essential and, importantly, valued by local health administrators as well. During the program period, one of these doctors has been promoted to become the director of the MCH, four have been promoted to vice-director positions, and one has received a national award of excellence. All these promotions and accolades are attributed in large part to these individuals’ success and leadership in the work of PMTCT.

Best Practice 3: Strengthening of three-tier health network

3.1 Expanding services out to the township and village level: Most of the counties are located in Yunnan’s mountainous border regions. Access to county health facilities from remote villages is often difficult, and village residents often have very low income. If HIV counseling and testing services are only available at county level hospitals, it is very difficult to raise the coverage and early testing rate among pregnant women. A critical strategy has therefore been to strengthen the three-tier network and expand some components of PMTCT services to the township and village level. Through training and technical support, village doctors have become more aware of new pregnancies in their village, provided basic HIV counseling to these women, and referred women to township or county level health facilities for HIV counseling and testing. In 2005, township level health centers did not have the capacity to provide HIV testing, and needed to send blood samples to the county for testing; a process rife with logistical challenges. Our program has helped to promote the distribution of HIV rapid test kits to township clinics, and now every township hospital has integrated HIV counseling and testing into their ANC and labor and delivery services.

3.2 Improve data and service linkages between county, township and village: An important aspect of strengthening the three-tier network has been to promote data linkage and usage. The township clinic is the nexus in this system. Every month, the township clinic collects data on pregnant women from all their village doctors and cross-checks this with the township registry and data fed back from the county level. Then the Township Women and Child Health Specialist communicates information back to the village doctors, asking them to follow-up with women who have not had their ANC visit and HIV testing yet. The township clinics also have established a clear contact mechanism with the county MCH. PMTCT contact persons at the MCH
keep their cell-phones on 24 hours a day. If a pregnant woman tests positive at the township, the township doctor can inform the county MCH right away. In this way referrals from the township to the county are relatively effective. Often township doctors will accompany an HIV-positive woman to the county MCH, further strengthening the linkage among the tiers of the health system.

Best Practice 4: Solving “Bottle Neck” Issues in Using HAART Prophylactic Regimen

4.1 Timely CD4 testing results: CD4 monitoring is a core treatment indicator. It is critical information to guide a doctor in her determination of which regimen to use when starting prophylactic treatment, as well as to monitor response to treatment. In the context of PMTCT programs, delayed CD4 testing translates into a shorter duration of treatment during pregnancy. Our program identified several factors that could cause delayed CD4 testing. Chief among these is the limited capacity of county level health facilities to conduct regular CD4 testing and the practice of batch testing in those places where such tests can be performed. The second factor is the challenge for patients to travel from their homes for the appointment on a set date and time. To overcome these challenges our program centralized all CD4 testing at the Yunnan AIDS Care Center Laboratory in Kunming. Blood samples used for confirmatory testing were simultaneously used to run the CD4 test, thereby saving the patient a separate appointment. This particular method required a plan for sample transportation logistics, and also budget support for transportation of the samples. As the national program makes its plans for its PMTCT program expansion, timely CD4 testing will be an important issue to consider if HAART prophylaxis is to be implemented widely and effectively.

4.2 Ensure continuous ARV drug supply: ARV drugs used in the program have been provided by the Yunnan AIDS Care Center. Each county MCH monitors its drug supply closely, and conducts forecasting exercises so that they can report to the provincial program office ahead of time when running low. This way the provincial office can distribute the drugs in a timely fashion and avoid stock-outs. In addition to the regular first line stock, second-line stock should be prepared.

4.3 Regular follow-up and monitoring of women on treatment: An HIV-infected pregnant woman will continue to require regular ANC follow up, and will also need to be followed up according to the national free ARV treatment guideline. Therefore close coordination with the local ARV clinic is a necessary component for providing HAART to pregnant women. Good counseling and support from the doctors is also critical to ensure that the patient understands the importance of adherence, and following a strict appointment schedule. Transportation reimbursement for certain patients living in remote rural areas should also be considered.

Best Practice 5: Integration and Linkage of Services, Synergies between PMTCT and MCH services

5.1 Integration of program activities with routine MCH work: Our PMTCT program is implemented through the local health system and one of our goals has been to demonstrate that PMTCT services can strengthen MCH services in general. Many PMTCT activities are naturally synergistic with routine work of the MCH system. For example, rural community events to promote the Rural...
Cooperative Medical Scheme and encourage hospital delivery could also include education about HIV counseling and testing. Follow up of infants for vaccination could be done together with growth monitoring and infant feeding support.

5.2 Infant feeding support: During program implementation, we became aware of high mortality and morbidity among HIV-exposed infants. The government PMTCT program provides one year of free formula to all HIV-exposed infants. However we discovered that within our cohort the provision of free formula was not enough to keep babies healthy and growing. The combination of unsanitary conditions in rural areas, the dearth of knowledge among health care workers (and therefore babies’ caregivers) on correct replacement feeding practices, and the immunological disadvantage of infants without the protection of antibodies in breast milk, has led to a higher mortality rate among HIV-exposed infants as compared to the general population of infants.

With support from China CDC Women and Child Health Center, WHO, and UNICEF, we adapted infant feeding training curriculum from WHO/EGPAF/PATH into Chinese, and conducted training of trainers in Yunnan under the guidance of Dr. Katherine Krasovec of PATH. The training not only raised health workers’ awareness of exposed infant feeding and follow-up issues, it also brought doctors updated information on infant feeding in the general population and cleared up some long-held misconceptions.

5.3 Psychological support training for health care workers: Even as health workers have become more experienced in providing ARV treatment, many commented that they lacked the skills to provide adequate psychosocial counseling to patients. Our program invited psychiatry experts to Yunnan to provide training to health workers from the counties. The trainings not only taught the doctors to provide better psychosocial support to patients, it also taught them techniques to relieve their own job-related stress.

5.4 Integrating HIV, hepatitis B and syphilis screening and prevention of vertical transmission services to pregnant women: With support from Hong Kong’s Zeshan Foundation in 2009 we started a pilot project to screen pregnant women for hepatitis B and syphilis as well as HIV. Those who tested positive were then provided with appropriate intervention to treat their own disease, in the case of syphilis, and minimize the risk of transmission to their babies by ensuring proper vaccination for the infants. The program experience and results showed that with training of health workers, provision of testing kits and drug supplies, the packaging of services has a high acceptance rate among health providers and clients alike, and is a cost-effective way to provide more complete antenatal care services.

5.5 Broadening of perspective: Through these years of program implementation, local health workers and
administrators have developed a deeper understanding of PMTCT services. There is a marked shift of perspective for many, from the narrow view that PMTCT only means prevention of infant HIV infection through vertical transmission to a more holistic view of comprehensive PMTCT services that are an integral part of broader HIV prevention and treatment, and maternal and child health services. This shift of view is reflected in corresponding changes in models of service provision, for example, expansion of HIV counseling and testing services to premarital couples, partners and other family members of the women, and abortion clients, as well as referral and follow up services to those who test positive.

Best Practice 6: Establishing Positive Women and Family Member Self-support Groups

Mood disorders among PLWHA such as anxiety and depression have been well documented. Psychosocial care and support is important for HIV positive women to help them overcome their feelings of anxiety, fear and despair. To meet their needs, our program developed psychosocial support groups for HIV positive women and their families at all of our county MCH clinics. The meetings of the groups have served as venues for women to provide each other with mutual support, and for doctors to reinforce medical information and provide referrals to other resources available in the community.

Since 2007, 13 support groups from our sites have met over to 200 times. Spouses and other family members also actively participated in the support group meetings. Participants express some measure of relief from the isolation and loneliness they feel in their daily lives. The group meetings offer a forum for women to articulate their thoughts and concerns to others who have gone through or are going through similar experiences and emotions. Whenever possible we have tried to build the capacity of one or two women in the group to act as peer facilitators, as it seems that women more readily accept and absorb information shared by a peer rather than by a health care provider.

Support groups, with the patient’s consent, have made specific efforts to involve partners and other family members. Support from family members is important for any person living with HIV, but especially for HIV-infected pregnant women, where spousal support for treatment during pregnancy and infant feeding is critical. In rural China, where many young married couples live with the parents of the husband, the involvement of the mother-in-law in the support groups has proven especially beneficial. Through their participation these older women learn about HIV generally, and more importantly, witness the health and vitality of mothers and infants who have undergone the PMTCT intervention. Partners’ and family members’ support can contribute to a more supportive and harmonious atmosphere in the home. Overall, our support groups serve as a platform for providing HIV-infected women psychosocial support, promoting improved relationship with their family members, and acting as a complimentary force to clinical treatment.
Remaining Challenges and Looking Ahead

Coverage of HAART: Despite the fact that the proportion of women using HAART has shown a significant increase over the last six years (Figure 4), in 2010 30% of women were still using other prophylactic regimens including single dose NVP during labor and delivery. There are also significant variation in HAART coverage among sites, from lower range of 50% in some counties to close to 100% in others. Preliminary analysis of data for all delivering HIV positive women at the 13 sites, shows that even though the proportion of women who did not receive any prophylaxis before delivery and the proportion who received prophylaxis only during delivery has decreased over the years, in 2010 there were still 13 women who did not receive any prophylaxis, and 26 women who received prophylaxis only at labor and delivery (Figure 5). Various factors contribute to the challenge of early identification and therefore early intervention; chief among these are the difficulties in accessing health care services for women living in remote areas.
villages, significant migrant worker populations that only return to their residence late in pregnancy, and increase in cross Burmese border marriages.

Follow up of HIV-Exposed Children: Seventeen HIV exposed infants (3.4%) died in our program, eight of whom were HIV negative. This matches study results in African settings that suggest HIV-exposed infants, even if HIV uninfected, tend to have higher mortality risk than infants in the general population. In Yunnan in 2009 the under-one infant mortality is reported as 1.3% province-wide, and 1.45% in rural areas. This serves as a warning to us that merely providing free formula to the mothers is not good enough and cautions us to pay more attention to strengthening infant follow up services, and providing better infant feeding counseling and support.

Prevention of Unintended Pregnancies: Preventing unintended pregnancies among HIV infected women is one of the core strategies for comprehensive PMTCT services listed by the WHO, yet it remains one of the weak areas in our work. Despite all the family planning counseling provided and free condoms handed out, each year about 40% of HIV-infected pregnant women terminate their pregnancies. Therefore, finding better intervention methods to prevent unintended pregnancies is an area of need.

Program Expansion

Based on the success of the program, Yunnan Bureau of Health and ADARC are continuing their collaboration to scale-up the prophylactic use of HAART for HIV positive women and integrated PMTCT model to include hepatitis B and syphilis along with HIV. The program has expanded to an additional 13 counties in Yunnan and is now being implemented in a total of 26 sites. The program is funded by Hong Kong Zeshan Foundation.

Program Implementing Management Organizations

Yunnan AIDS Care Center: Yunnan AIDS Care Center (YACC) is the first Ministry of Development and Reform and Ministry of Health approved medical institution that combines treatment, training, research, technical supervision, international collaboration, and psychosocial support in the field of HIV/AIDS. The national and provincial government allocated over 200 million RMB in its construction and establishment. It has over 150 inpatient beds, over 50 million RMB of equipment and supplies including state-of-the-art laboratory with capacity to perform CD4, viral load, and drug resistance testing. In the last six years it has managed ARV therapy for over 2000 patients, treated late stage AIDS patients with opportunistic infections over 3,500 person/times, and controlled mortality rate to less than 5%. Under the leadership of the provincial Bureau of Health it has established provincial, prefecture, and county level ARV treatment network, and provided supervision and technical support to AIDS treatment across the province. Yunnan’s ARV treatment work has led the nation for the past three years, and received national awards each year. YACC is a participant site in 10 national mega-projects, with over 30 million RMB of funding. It has trained over 2000 clinicians both within Yunnan and from the rest of China.

Yunnan AIDS Initiative (YAI): YAI is an NGO dedicated to the prevention and treatment of HIV/AIDS among women and children. It is under the domain of the Yunnan Bureau of Health, and officially registered with the Bureau of Civil Affairs on April 21st, 2008. In the three years since its establishment, it has implemented over 10 international collaborative projects, including: PMTCT program, second line treatment of patients with first line drug resistance, feeding support for HIV-exposed infants, small business support to improve livelihood of PLWHA, care and support of orphans and vulnerable children, promotion of voluntary counseling and testing services, referral and treatment among high risk population, assessment of HIV infection among cross-border couples, and HIV, hepatitis B and syphilis integrated PMTCT. It has won high praise from administrators, health workers, and patients alike.