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**November 2012**

# A Positive Partnership

## Integrating HIV and Tuberculosis Services in Karnataka, India



A rural town in Karnataka.

Daniel Cothran

**C**handrappa arrived at Bagalkot District Hospital unable to fully move his legs. The doctors who examined him quickly discovered he was HIV-positive and on antiretroviral therapy (ART). After studying his medical history, conducting a detailed clinical examination, and discussing the findings among themselves, the doctors ordered an X-ray. The procedure confirmed their suspicions: Chandrappa (not his real name) had developed tuberculosis (TB) of the spine. He immediately began anti-tuberculosis therapy and recovered rapidly. Given the limitations in health care capabilities in remote parts of India, such as this rural area of Karnataka state, chances are that TB of the spine would not have been diagnosed so promptly. But Chandrappa was fortunate that the hospital has integrated TB and HIV services, enabling staff to develop advanced diagnostic skills and offer the best possible treatment and care to patients co-infected with both diseases.

The deadly synergy between HIV and TB is well known. HIV weakens the immune system and makes the body susceptible to such opportunistic infections as TB, while TB infection speeds the progress of HIV-related disease. The higher the number of people living with HIV in a population, the greater the probability that they will contract TB, and the greater the resulting morbidity and mortality, even though TB is a curable disease. In some countries, TB is the greatest killer of people living with HIV.

India, home to more than a billion people, has the second largest population of people living with HIV and the highest TB burden in the world, with an average of 70,000 registered TB patients yearly. In 2009, 258,037 TB patients in India were tested for HIV. Of these, more than 31,058—about 12 percent—were diagnosed with HIV co-infection. In

**By John Franco Tharakan**

### **AIDSTAR-One**

John Snow, Inc.  
1616 North Ft. Myer Drive, 16th Floor  
Arlington, VA 22209 USA  
Tel.: +1 703-528-7474  
Fax: +1 703-528-7480  
[www.aidstar-one.com](http://www.aidstar-one.com)

This publication was made possible through the support of the U.S. President's Emergency Plan for AIDS Relief (PEPFAR) through the U.S. Agency for International Development under contract number GHH-I-00-07-00059-00, AIDS Support and Technical Assistance Resources (AIDSTAR-One) Project, Sector I, Task Order I.

Disclaimer: The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

Karnataka, HIV testing and counseling services for all newly diagnosed TB patients have revealed unexpectedly high levels of TB-HIV co-infection, ranging from 13 to 56 percent.<sup>1</sup> These figures at both the national and state level show that a collaborative model to address the TB-HIV nexus is a public health necessity.

The integrated TB and HIV services at Bagalkot District Hospital are the result of the capacity-building and system-strengthening efforts of the Samastha Project (funded by the U.S. President's Emergency Plan for AIDS Relief through the U.S. Agency for International Development), which from 2006 to 2012 supported integration of TB and HIV services in Karnataka and other areas of India. Clinical and administrative staff at the hospital received specialized training to deliver an integrated package of TB-HIV services, and new collaborations were launched between the hospital and state-level public health agencies, local nongovernmental organizations, and other health

### Key interventions implemented by the national framework for TB-HIV collaboration:

- HIV testing and counseling routinely offered to all TB patients
- Decentralized delivery by RNTCP of cotrimoxazole prophylactic therapy for HIV-infected TB patients
- Referral of all HIV-infected TB patients for ART
- Detailed recording and reporting on access to HIV care of HIV-infected TB patients.

facilities to ensure a coordinated effort. Patients such as Chandrappa—whose co-infection might not have been caught before the Samastha Project began its work—and thousands of others across India are the beneficiaries.

## The National Response to Tuberculosis and HIV

The Government of India began its TB programming in 1962 as the National Tuberculosis Programme. By 1992, the National Tuberculosis Programme had evolved into the Revised National TB Control Programme (RNTCP). That same year, the RNTCP phased in directly observed treatment short-course (DOTS) for TB.

Efforts by the Government of India to integrate HIV and TB programming began early in the 2000s:

- 2001: developed a joint action plan for TB-HIV
- 2003: piloted cross-referral between integrated counseling and testing centers and designated microscopy centers in Maharashtra state, followed by implementation in six other states
- 2005: developed joint training modules on TB-HIV service promotion
- 2006: introduced the RNTCP TB-HIV intensified package
- 2006: conducted a 15-district survey of HIV in TB patients
- 2007: piloted cotrimoxazole prophylactic therapy for TB infection, and routine referral of TB patients for HIV testing in five districts

<sup>1</sup> Central TB Division, Directorate General of Health Services, Ministry of Health and Family Welfare. 2010. *TB India 2010 Revised National TB Control Programme Annual Status Report*. New Delhi: Ministry of Health and Family Welfare.

- 2007 to 2008: developed the national framework for TB-HIV collaboration, which includes the TB-HIV intensified package.

Despite the government's efforts to address the problem of co-infection, given the large number of patients affected by HIV and TB, the demand for services far exceeded availability. Providing integrated TB-HIV services proved difficult due to the weak health systems in many states that did not have the capacity to actively search out TB patients. As a result, many patients slipped through the detection net, which negatively affected early diagnosis and treatment of co-infected patients.

Other challenges included a lack of expertise and skills related to TB-HIV co-infection among health care providers and a lack of effective coordination between different stakeholders involved in the TB-HIV response. The RNTCP urgently needed technical support to help it implement initiatives for improved access, high-quality diagnosis, treatment of co-infected patients, better linkages among different stakeholders, increased uptake of services, and decreased loss to follow-up.

## The Samastha Project

Within this context, the Samastha Project—a comprehensive HIV prevention, care, and support program—launched in October 2006 in Karnataka. In 2007, the Director General of the National AIDS Control Organisation asked the Executive Director of Karnataka Health Promotion Trust and the Chief of Party of the Samastha Project to support integrated TB-HIV activities at the State AIDS Control Society level. The primary aim of this collaboration was to ensure better coordination among the various health departments at the state level to build a more comprehensive and efficient health care system.

Samastha's mission was to reduce the risk of HIV transmission among vulnerable and at-risk populations, while building the capacity of existing health care institutions to provide high-quality HIV care, support, and treatment services. A key strategy was to hire a full-time TB-HIV specialist to provide technical assistance to the State AIDS Control Society, help strengthen systems and processes, build capacity to increase the uptake of TB services, and improve diagnosis and management of TB-HIV co-infection in Karnataka.

Samastha's prime organization, Karnataka Health Promotion Trust (KHPT), implemented by the University of Manitoba, Canada, worked in partnership with international and local nongovernmental organizations—including EngenderHealth, which also played a leading role—and allocated specific tasks to each group for a more cohesive and better-managed program. EngenderHealth provided technical assistance to design care and treatment initiatives, improve access to services, build capacity, and strengthen systems. Both EngenderHealth and Karnataka Health Promotion Trust supported improvement of monitoring and evaluation of services. The initiative involved working closely with the Karnataka State AIDS Prevention Society (KSAPS). KSAPS is the main government agency that supports planning, monitoring, and implementation of the National AIDS Control Programme Phase III in the state of Karnataka.

The State Coordinating Committee and the Technical Working Group, which were primarily responsible for the policy and overview of implementation of the program in Karnataka, conducted regular meetings to discuss various issues. These meetings were facilitated by the TB-HIV specialist appointed through the Samastha Project and were chaired by the Principal Secretary, Health and Family Welfare, Government of

Karnataka, and co-chaired by the Project Director of KSAPS.

The Samastha Project—which ended in March 2012—was ultimately implemented in 12 high-HIV prevalent districts of Karnataka, three urban centers, and five coastal districts of Andhra Pradesh.

## Roll-out in Karnataka

Samastha took four key steps during the roll-out of the TB-HIV integration process in Karnataka:

### Step 1—Design the service delivery model:

The ball was set rolling with a model of service delivery largely centered on the TB-HIV intensified package. The package had three major components: intensified case finding, isoniazid prophylaxis, and infection control. The package required service providers to:

- Routinely offer HIV testing and counseling services to all registered and newly diagnosed TB patients
- Procure and distribute cotrimoxazole prophylactic therapy to all diagnosed TB patients with HIV infection through the drug distribution system of the RNTCP-DOTS program
- Link co-infected patients to the ART centers.

**Step 2—Build human capacity:** Vacant positions in the health system, including lab technicians and integrated counseling and testing center counselors, were filled with qualified new staff. The entire team, old and new, underwent induction or refresher training on the TB-HIV intensified package. HIV testing kits were made

readily available at all centers, with systems in place to ensure their regular supply.

### Step 3—Strengthen integration through better collaboration:

Many innovative measures were taken to ensure that health care providers working in both the TB and HIV programs in Karnataka were on the same page. Samastha facilitated joint monitoring visits at the district level by personnel working with the District AIDS Prevention and Control Units and the RNTCP. Similarly, monthly meetings of personnel working at the community level from the TB and HIV departments were held, which helped track co-infected patients on treatment. District AIDS Prevention and Control Units and district supervisors received district-wide feedback on the performance of TB-HIV activities in monthly reviews.

### Step 4—Train health care providers:

Samastha conducted training of trainer programs on the TB-HIV intensified package at the state level for all program managers of the District AIDS Prevention and Control Units and for district-level TB officers. Training on the package was then conducted for medical and paramedical staff at the district level. This ensured that all health care personnel at the district level were aware of the services that were to be provided, which improved the quality of the services overall. The project also ensured that the TB-HIV intensified package was implemented by releasing funds at the district level.

Samastha was instrumental in facilitating key programs and services related to TB-HIV. These included rolling out the TB-HIV intensified package in allocated districts, planning and coordinating activities at the state and district levels, integrating TB-HIV services at different levels, developing the district action plan on TB-HIV coordination, creating a common platform for the district coordination committee, conducting training of trainers for

district-level TB officers with the support of the State TB Cell and Central TB Division, and helping the state TB program and KSAPS support linkage workers to facilitate better TB-HIV linkages.

Samastha also helped foster an enabling policy environment for TB-HIV coordination at the district level. Previously, the district coordination committee’s member secretary had been the program manager for the TB program. But with the integration of TB-HIV services, the district program officer of the District AIDS Prevention and Control Unit, who is primarily responsible for all the activities in this field, took over the post as program manager. This facilitated better integration of TB-HIV activities at the field level.

## What Worked Well

Because the intervention model proposed was innovative and ambitious, there were initial apprehensions about whether Samastha would succeed. But the dedicated efforts of staff and proactive collaboration of different government departments led to significant achievements.

**Successful integration models:** The Samastha Project successfully facilitated implementation of different models of TB-HIV integration, including integration of TB-HIV activities with integrated counseling and testing centers and designated microscopy centers under the same roof within both the governmental and nongovernmental sector settings. Locating these services together resulted in an increased uptake of TB-HIV services, better diagnosis of TB-HIV co-infection, and a decrease in loss to follow-up of patients. Each diagnostic center now has a counselor. As a result of these efforts, there has been an increase in the number of

referrals from TB to HIV services, and vice versa.

Samastha staff in all the project’s districts conducted regular follow-up with district-level TB officers and DOTS providers to ensure that patients diagnosed with TB were routinely screened for HIV and referred to integrated counseling and testing centers for HIV testing. Additionally, as a result of active case finding among people living with HIV, Samastha was able to detect about 2,000 new cases of TB annually—about one-third of Karnataka’s TB-HIV co-infection burden.

**A focus on capacity building through training and support:** Initially identified as a critical need to ensure integration, capacity building was addressed at two levels. The first—training and support for Samastha staff—was at the program level, while the second was at the field level, as intensified package training efforts were rolled out across Karnataka in a systematic manner.

Between 2008 and 2010, 425 Samastha partner health staff from both the HIV and TB programs received training in TB case detection, TB treatment adherence, referral of TB clients to HIV testing and counseling centers, and management of HIV-related diseases in TB-HIV co-infected clients. Trainees included a wide spectrum of staff: doctors, nurses, counselors, outreach workers, and peer educators (see Table 1). This “whole site” approach

**TABLE I. SAMASTHA PARTNER STAFF TRAINED, 2008 TO 2010.**

CATEGORY OF STAFF	MALE	FEMALE	TOTAL
Doctors	36	124	160
Professional counselors	21	35	56
Outreach workers	106	68	174
Health care workers	3	6	9
Peer counselors	15	11	26
<b>Total</b>	<b>181</b>	<b>244</b>	<b>425</b>

focused on training all health care personnel at the service delivery sites at the same time to ensure that information provided to all was uniform and consistent. Trainees were tested both before and after training; pre- and post-test results show an increase in TB-HIV knowledge among trainees.

In addition, numerous training workshops on the TB-HIV package were held for health care workers at various Samastha service outlets. These training sessions were attended by district-level TB officers, medical officers, counselors, and field-level workers. The training model applied participatory, learner-centric, and sustainable training methodologies to build individual and institutional capacities for high-quality TB-HIV integration. Support and training of this nature continues for newly recruited staff as part of in-service training and is now leveraged from the state TB-HIV program rather than the Samastha Project.

At the field level, the EngenderHealth TB-HIV specialist under Samastha led the roll-out of training across Karnataka and the training of trainers for district program managers of both HIV and TB programs, supporting the efforts of the state governments. Among the high-prevalence states, Karnataka was the first to complete the training of trainers for program officers. Because of the success of these training efforts, the National AIDS Control Organisation asked for support to conduct training for its district supervisors in five high-prevalence states: Andhra Pradesh, Tamil Nadu, Maharashtra, Nagaland, and Manipur. This activity was carried out successfully with the help of the National Institute for Mental Health and Neuro Sciences (NIMHANS) and district-level medical officers. By May 2009, KSAPS had reached 85 percent of those targeted to be trained (see Table 2).

<b>CATEGORY OF STAFF</b>	<b>NUMBER IN PLACE</b>	<b>PERCENTAGE TRAINED</b>
District TB officers	25 (5 vacant)	25 (100%)
District nodal officers/District program officers/District AIDS Prevention and Control Units	29	29 (100%)
Medical officer in charge of training	117 (8 vacant)	94 (80%)
Medical officer: ART center	67	48 (71%)
Medical officer: public health institutions	4,884	2,891 (60%)
District HIV supervisors	29	29 (100%)
Senior treatment supervisor	125	121 (97%)
Senior TB laboratory supervisor	124 (one vacant)	95 (78%)
Senior TB-HIV supervisor	129	111 (73%)
Integrated counseling and testing center counselors	704 (including ART counselors)	604 (85%)
Pharmacists	2,178	1,047 (48%)

In the long term, building capacity and strengthening service delivery systems for TB-HIV integration have led to an increase in uptake of services. An assessment showed that the training helped improve knowledge, skills, and practices among both TB and HIV health workers, supported by easy-to-use job aids. Enhanced indicators and monitoring capacity have further facilitated integration.

**Expanded access to TB-HIV services:**

The number and type of facilities that offer TB-HIV services increased considerably (see Table 3). Samastha helped KSAPS establish DOTS services in many community care centers. This was done to improve referrals between RNTCP services and integrated counseling and testing center services, and establish demonstration sites that integrate designated microscopy centers with DOTS services in the community care center setting. While KSAPS developed 40 such integrated community care centers with DOTS services, Samastha launched designated microscopy at four community care centers: Cardinal Gracious Hospital, Belgaum; Holy Cross, Chamarajanagar; Snehadaan, Bangalore; and Sargur, Mysore.

Co-location of TB-HIV services helped in the timely identification, referral, and treatment of patients. The program worked with KSAPS to ensure that DOTS and designated microscopy center services were made available at 12 community care centers. This made it more convenient for patients who were referred from the HIV program to the TB program and vice versa to access appropriate services. This eventually led to better treatment adherence.

**Increasing TB services for people living with HIV:**

Outreach staff of community care centers and drop-in centers verbally screened people living with HIV for TB symptoms and accompanied them to centres for sputum testing and X-ray tests, if needed. Additionally, field-level

<b>FACILITIES AVAILABLE</b>	<b>NUMBER</b>
<b>Integrated counseling and testing centers</b>	<b>565</b>
<b>Designated microscopy centers</b>	<b>643</b>
<b>Centers with designated microscopy centers and integrated counseling and testing centers co-located</b>	<b>418</b>
<b>ART centers</b>	<b>44</b>
<b>Link-ART centers (ART centers outside of major urban areas)</b>	<b>97</b>

workers promoted the use of TB diagnostic services as part of their routine work. They were trained to identify people with suspected TB infection, refer them to diagnostic and treatment services, follow up to ensure compliance to treatment and provide referrals for treatment evaluation at ART centers.

Tuberculosis case finding, diagnosis, and treatment for people living with HIV expanded as a result of integrating TB-HIV services at facilities. For example, Cardinal Gracious Hospital in Belgaum showed an increase of 64 percent in TB diagnosis and treatment of HIV-positive clients after services were integrated.

**Effective outreach and follow-up:** The integrated TB-HIV model has successfully created linkages between TB and HIV programming at the grassroots level. This has increased the number of diagnosed co-infected patients who are contacted and then referred to district hospitals for pre-ART registration and CD4 tests. Those eligible for treatment receive ART or anti-tuberculosis therapy, as required. Regular meetings of field-level staff from both programs and exchange of patient information ensure that services are complementary and that patients adhere to treatment. The involvement of PLHIV networks in RNTCP activities

as DOT providers and in information, education, and communication (IEC) and social mobilization was strengthened. Overall, the model has fostered an enabling environment for comprehensive care and support of people living with HIV and those infected with TB.

**Dedicated technical assistance at the state level:** Having a full-time technical expert to facilitate coordination between the HIV and TB programs made a very big difference. In this case, the TB-HIV specialist, who had worked in both the government and nongovernmental sectors, had a unique perspective on how both organizations worked, which facilitated the smooth roll-out of this aspect of the Samastha Project. The specialist helped the State AIDS Control Society implement the revised national framework for TB-HIV collaboration, helped the district-level TB officers develop district action plans on TB-HIV coordination, conducted training of trainers on the TB-HIV package for district-level TB officers, helped the state TB program and KSAPS support link workers, and provided feedback to the District AIDS Prevention and Control Units about the performance of TB-HIV activities.

**A more robust TB-HIV package:** The program added more components to the prevailing TB-HIV package to make it more effective:

- HIV testing services were offered to all persons presumed to have TB, in contrast to the previous practice of testing only patients diagnosed with TB.
- Decentralized provision of cotrimoxazole prophylactic therapy from the DOTS center was initiated for all TB-HIV patients, with a special emphasis on ART.

- Stronger linkages were created between the ART center and RNTCP services.

Reporting and documentation of patients under these two programs, with regular exchange of information, was regularly carried out for better follow-up.

**Integrating more services in the existing health system through whole site training:**

The whole site training approach was integrated with better infection prevention practices to support the integration of TB-HIV services within the existing health system. This approach seeks to meet the learning needs of all the staff at a service delivery site within the context of organizational development. Training needs are identified through self-assessments and are met through different levels of learning. Training takes place at the service site whenever possible and is supported by post-training facilitative supervision by trainers wherever possible.

**Co-location of services:** Samastha strongly advocated for co-location of TB-HIV services to increase access to health care for the community. There was a marked rise in the number of patients who accessed both HIV and TB services after they were co-located, since patients had to visit only one center, saving time and transportation money. Co-location also greatly reduced stigma, since a facility that is not seen as exclusively an HIV center is a more comfortable place to visit.

**Intensified case-finding activities:** The program focused on intensified case finding and a 10-point TB screening tool for counselors, as they are a crucial part of the TB-HIV intensified package. Both these documents have been translated into Kannada and Telegu, to facilitate better understanding for staff at various levels.

**Combined district-level visits:** District-level visits were conducted regularly by a combined team consisting of World Health Organization consultants, the district-level TB officers, a state-level TB-HIV consultant (Samastha/KSAPS), and local medical regional managers from Samastha to review TB-HIV services at the field level. These reviews helped ensure better coordination between different levels of services and the implementing nongovernmental organizations for the HIV program. Integrating these combined visits with the RNTCP state internal evaluation went a long way in coordinating and monitoring activities.

**Coordinating with other programs:**

Coordination with National Rural Health Mission-driven antenatal care services to test TB patients for HIV contributed to increased numbers of TB patients knowing their HIV status. In addition, the cotrimoxazole prophylactic therapy kits procured by KSAPS were distributed using the RNTCP drug distribution mechanism.

**Well-developed reporting formats:** Separate reporting formats for monitoring linkage of TB-HIV patients to cotrimoxazole prophylactic therapy and ART were developed and rolled out in the state. This helped streamline information specific to TB-HIV integration, identify and follow up with patients at the field level, and increase patient adherence and the overall quality of the program.

**Successful advocacy:** Samastha successfully advocated starting ART immediately—whatever the CD4 count—for people living with HIV diagnosed with TB. One of Samastha's key tools for this was a publication that used Karnataka ART data that Samastha staff helped collect.

## Challenges

The following are issues observed in implementing the integrated TB-HIV model.

**Late TB diagnosis:** Too few HIV-positive patients are diagnosed with TB in a timely way, especially those who are asymptomatic. This matter is further aggravated for patients with extrapulmonary TB (where the infection occurs outside of the lungs), for which diagnostic facilities are limited.

**Insufficient coverage and late start of ART:** Of HIV patients diagnosed with TB, preliminary estimates show that around 99 percent are on cotrimoxazole prophylactic therapy, but only 74 percent are on ART (March 2012). The challenges to increasing ART coverage include regulations about minimum CD4 counts and the limited availability of centres that can initiate ART, mostly available only at district hospitals in Karnataka. A huge number of co-infected patients do not reach the ART center until a very late stage of AIDS. Mechanisms to establish early linkages of patients to ART centers need to be developed, while logistical and procurement challenges to achieving complete coverage for HIV testing and counseling need to be overcome. With the convergence of TB and HIV services, nongovernmental organization partners could contribute by using their human resources to strengthen linkages from the community to ensure that those on cotrimoxazole prophylactic therapy are also initiated into ART services.

**Low levels of referrals:** A simulated patient survey among general practitioners across the state showed that few practitioners refer TB suspects or patients to RNTCP services because they prefer to treat them as their own private patients even though they know the program exists. Innovative methods to solve this important issue need to be found.

**The costs of travel:** Since many patients live far away from the ART centers, costs and time associated with travel to the centers continue to contribute to the rise of loss to follow-up cases.

**Nutrition issues:** Lack of appropriate nutrition for co-infected patients on treatment continues to be a major issue which needs to be addressed.

The following are issues involving nongovernmental organizations in RNTCP schemes to enhance private-public partnerships.

**Restrictive regulations:** According to the earlier TB-HIV scheme for non governmental organizations in RNTCP, a community care center should have at least 20 beds to be eligible for funding. Most community care centers under the TB-HIV scheme have 10 beds and were ineligible for benefits from this scheme. These guidelines have been recently amended to enable 10-bedded community care centers to also be part of this scheme. Uptake has been slow and remuneration erratic at best.

**Insufficient funds for public-private partnerships:** There is a shortage of funds allocated for nongovernmental organizations/public-private partnership activities. This makes it difficult for activities proposed to continue smoothly; on many occasions, the lack of funds results in activities being postponed or discontinued.

The following are issues and challenges in implementation of the TB-HIV intensified package.

**Location of testing sites:** Not all integrated counseling and testing centers and designated microscopy centers are co-located, which means patients often have to travel to other places to get tested for HIV. Therefore, HIV testing of TB patients is delayed and in some cases not done.

**Delay in information:** Information regarding the status of linkages of TB-HIV patients to cotrimoxazole prophylactic therapy and ART are recorded in the RNTCP Outcome Report, which often comes too late for corrective actions to be taken.

**Training issues:** Regular turnover among staff at all levels makes it challenging to ensure that all are trained. This limits the ability of these centers to provide required services in an efficient manner.

**Information, education, and communication tools:** There is a dearth of communication tools that focus on TB-HIV co-infection. This makes it difficult to sensitize and raise awareness among people on this important subject.

**Planning of TB-HIV activities:** There is a need to bring all stakeholders working in HIV and TB at the district level together at a common planning meeting so that initiatives can be planned collaboratively. This will ensure that all resources meant for activities related to HIV and TB are optimally utilized without duplication of resources. The district program officer in the District AIDS Prevention and Control Units can take the lead in facilitating such meetings and provide guidance as and when needed.

## Recommendations

**Provide high-quality technical assistance:** To successfully integrate TB-HIV services, strong technical assistance must be available from the start but should also continue for a few years until adequate integration systems are in place in the government. The person seconded by Samastha for this project was the cornerstone for most of these integrated activities during the initial phases of the project. Technical assistance of

this nature would need to continue for a few years until adequate integration systems are in place in the government.

**Build the technical capacity of implementing partners:** Samastha expended considerable effort to build technical capacity for its partners. This ensured a thorough understanding of what the program entailed and delivery of high-quality services.

**Use the whole team approach:** Building capacity and strengthening service delivery systems show promising results in increasing the uptake of TB and HIV services. This is especially true when capacity building initiatives such as training are conducted across a team of health workers and supervisors using the whole team approach.

**Build the capacity of outreach workers:** Outreach workers play a critical role in raising community awareness about TB-HIV co-infection. They are also crucial to intensified TB case finding and in providing DOTS for people living with HIV who have TB. Thus, their capacity building must be an important focus area.

**Improve the quality of co-treatment:** ART for TB patients should begin while they are while undergoing baseline evaluation, since four to six weeks are required for evaluation. Daily TB treatment for PLHIV is recommended, though it should be in line with current DOTS practices, international standards of TB care, and the soon-to-be-developed Indian Standards of TB Care. ART should be guaranteed for all co-infected TB patients irrespective of CD4 count.

**Co-locate TB and HIV services to help expand HIV testing:** Co-location decreases barriers to timely diagnosis of TB and any missed opportunities for HIV care and treatment. Providing

HIV testing in all DMCs and non-DMC peripheral health institutions will help in early diagnosis of cases.

**Locate services close to the communities served:** Since traveling to community care centers (which provide both TB and HIV services) requires both time and money, locating these centers closer to the community will help improve uptake.

**Strengthen TB infection control measures:** Ensure that administrative measures in all co-located DMCs/ICTC and ART facilities include TB infection control as a key supervision responsibility for state- and district-level ART officers.

**Implement INH Prophylaxis Therapy (IPT):** While awaiting the outcome of feasibility studies for nationwide scale-up, launch IPT within co-located DMCs/ICTC and ART centers in settings with high rates of HIV.

**Increase integration and coordination:** In India and other countries with a high burden of TB, increasing TB-HIV integration appears to increase the uptake of other HIV services, including HIV testing and counseling, care, and treatment. Enhanced TB-HIV coordination at the district and state levels strengthens implementation systems, which also benefits other health care services.

**Provide enabling tools to health workers:** Practical tools and reporting forms make it easier for health workers to proactively find TB cases and refer them to relevant services.

**Take the time to build strong systems:** Good monitoring and evaluation systems are important. However, it takes time to build the understanding and capacity of staff to effectively track and follow-up on TB-HIV referrals in the field.

Sufficient time and patience are required for all these factors to become efficiently operational.

**Provide timely feedback:** Conducting regular monthly review meetings and timely feedback to each district about the performance of the State AIDS Control Society enables them to address challenges promptly and also share best practices rapidly. This is key to making the program a success.

**Add diagnostic and treatment capabilities:** When nongovernmental organization-managed care and support centers have diagnostic and treatment facilities it helps considerably in integrating TB control activities with HIV care programming.

Targeted interventions have greater impact: Prevention programs for high-risk populations help tackle intensified TB case finding among people living with HIV more effectively. ■

## ACKNOWLEDGMENTS

The author would like to acknowledge the leaders, staff, and partners of the Samastha Project for their support in the development of this case study, especially Dr. Reynold Washington, Chief of Party, Dr. Vikas Inamdar and Dr Chethana Rangaraju (TB-HIV specialists), Dr Suresh Shastri (Regional Coordinator, ART) and Dr Gajanan Pise (Medical Consultant), the dedicated health care personnel working at the grassroots level, and the many field workers who gave their time to share their experiences.

Thanks are also due to the leaders of the Karnataka State AIDS Prevention Society and State Tuberculosis program for their willingness to share their views. Finally, thanks also to USAID/India, especially Dr. Sangeeta Kaul and Mr. Anand Rudra, for assistance, advice, and helpful feedback.

## RECOMMENDED CITATION

Tharakan, John Franco. 2012. *A Positive Partnership: Integrating HIV and Tuberculosis Services in Karnataka, India*. Case Study Series. Arlington, VA. USAID's AIDS Support and Technical Assistance Resources, AIDSTAR-One, Task Order 1.



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