Evaluation of sustainability of TB-HIV integration and PPM interventions one year after the project completion in Thai Binh Province, Vietnam (October 2009 – September 2010)
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The views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.
Acknowledgement

This report assesses the achievements and lessons learnt from the implementation of the USAID supported - Quality Assurance Project (April 2007 – September 2008) and its successor, USAID Health Care Improvement (HCI) Project (October 2008 – September 2009) until one year after its completion (October 2009 – September 2010). This report aims at assessing sustainability of the project models and interventions and effect of the project on case detection, treatment outcomes and health care system strengthening. This report mainly draws evaluation results from the independent evaluation reports one year after the HCI project completion by Dr. Truong Thanh Huyen, Dr. Nguyen Huu Tri and Dr. Roberta Pastore. This report also uses data from the Quality Assurance Project document and the internal mid-term evaluation report by Dr. Nguyen Nhat Linh and the independent end-term evaluation report.

We thank the National TB Program and Vietnam Administration of HIV/AIDS Control for their technical support and guidance during project implementation. We would like to express our special thanks to the Provincial Department of Health; Provincial Hospital of TB and Respiratory Diseases; the Provincial HIV/AIDS Control Center, and other health care facilities and organizations in Thai Binh for their direct participation and contribution to the project achievements.

The authors recognize that this report has not completely presented all project activities and achievements. We highly appreciate any contributions to improve the project implementation and expand successful practices on a larger scale in the coming years.

Recommended citation:
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List of Acronyms

AFB Acid-Fast Bacilli
AIDS Acquired immunodeficiency syndrome
ART Antiretroviral therapy
ARV Antiretroviral
CHS Commune Health Stations
DGH District General Hospitals
DHC District Health Centers
DOH Department of Health
DOTS Directly Observed Therapy Short-Course
HCI Health Care Improvement Project
HIV Human immunodeficiency virus
HIV C&T HIV Counseling and Testing
LIFE-GAP Leadership and Investment in Fighting an Epidemic – Global AIDS Program
M&E Monitoring and Evaluation
MOH Vietnam Ministry of Health
NTP National TB Program
PAC Provincial HIV/AIDS Control Centers
PGH Provincial General Hospital
PHTB & RD Provincial Hospitals of TB and Respiratory Diseases
PLWHA People Living with HIV/AIDS
PPM Public-Private Mix
PPMC Provincial Preventive Medicine Center
QAP Quality Assurance Project
SS Sputum Smear
TB Tuberculosis
URC University Research Co., LLC
USAID United States Agency for International Development
VAAC Vietnam Administration of HIV/AIDS Control
WHO World Health Organization

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Executive Summary

University Research Co., LLC (URC) in close collaboration with the National TB Program (NTP), the Thai Binh Provincial Department of Health and the Thai Binh PHTB & RD, worked to improve TB-HIV collaborative activities and involve private and other public sector facilities in the TB control program during April 2007 to September 2008. An end-term evaluation showed that the project gained notably desired achievements. At the national level, the project provided technical assistance to development of national guidelines, a framework and training modules for TB-HIV integration and Public-Private Mix (PPM), and supported early capacity building in TB-HIV collaboration for 22 provincial trainers from ten provinces in 2007. At the provincial level, the project successfully assisted in the establishment of TB-HIV collaboration and PPM models. As a result, TB patients had increased accessed to standard HIV C&T services and PLWHA to quality TB control services at the district level. All those contributed to significant increases in TB-HIV case finding and in referrals from private health facilities to TB units. Based on the evaluation results, URC continued supporting Thai Binh to strengthen the successfully established models and effective interventions and to implement the recommendations for one more year until September 2009.

A year following completion of the project, the second independent evaluation was conducted to assess sustainability of the project models and activities and the effect of the project on overall TB case detection, treatment outcomes and health care system strengthening. Through a review of TB and TB-HIV service indicators, interviews with key informants, and direct observations, the evaluation team assessed the effectiveness and sustainability of the project in terms of TB-HIV collaboration and collaborative activities between NTP and the private sector; outcomes of the project in term of overall TB case detection and treatment outcomes; and evaluated the effect of the project on health care system strengthening.

The evaluation found mixed results for maintenance of project outcomes one year after the intervention ended. The TB-HIV collaboration mechanism established and implemented with project support in the whole province in 2007 had been sustained. There was a slight declining trend in proportion of TB cases that received HIV counseling and little higher decline of those who received both HIV counseling and testing. Both active and passive screening of PLWHA declined, but active screening reduced more significantly. After the intervention, TB-HIV case detection declined, but still remained significantly higher than the baseline. In terms of PPM, the evaluation found that private health care facilities had maintained collaboration according to their commitment: they continued to successfully detect and refer TB suspects to public TB facilities and participated in review meetings with the PHTB & RD. The province continued to expand PPM to additional facilities. Although the number of referred TB suspects slightly decreased one year after the project ended, the proportion of TB cases diagnosed from among the referrals over the total TB cases in the whole province continued to grow.
Key recommendations include:

**Sustainability of resources and interventions**
- Strengthen social mobilization activities and development of long-term plans with the National TB and HIV Programs and the Provincial Department of Health to ensure financial and human resources for maintaining effective activities.
- Institutionalize the standard procedures established with the project interventions to ensure sustainability of quality services after the support ended.

**TB-HIV Collaboration**
- Increase coordination of available resources by the Provincial Department of Health, PHTB & RD, PAC and projects to strengthen TB-HIV integration activities.
- Combine effective and sustainable interventions to reduce social, economic and self barriers for TB, HIV and TB-HIV patients to access and use of diagnosis, care and treatment services and improve their quality of life.
- Continue to find sustainable resources from the national programs and health insurance payment to provide consistently HIV counseling and testing services for TB patients at district level.
- Increase accessibility and responsiveness of HIV confirmatory testing services to ensure reasonable waiting time and compliance with the post test counseling procedure.
- Refine an effective information exchange between the TB and HIV care and treatment facilities, recording and filing referral and feedback forms properly to ensure both TB and HIV management, care and treatment enrolment for TB-HIV patients according to the protocols.
- Officially assign TB and HIV specialists to participate in routine TB and ARV treatment review meetings for TB-HIV patients to improve treatment quality.

**Public-private mix in TB control**
- Actively propose solutions, such as issuance of legal regulations and guidelines, to the Provincial Department of Health to facilitate enabling factors while addressing barriers to PPM collaboration.
- Encourage direct involvement of directors from the Provincial Department of Health and district health offices to stimulate the PPM collaboration.

**Capacity building and Communications**
- Provide refresher training to build capacity, and strengthen communication to raise awareness among the health care workers and patients regarding TB, HIV and TB-HIV.

**Data management, analysis, use and report**
- Assign responsibilities to each department, individual staff in recording, providing feedback, services and reporting in order to evaluate and encourage each health care worker to improve quality and quality of TB and HIV services they are in charge of.
- Use simple and effective tools to facilitate routine and easy important indicator management, analysis, use and reporting.
Background

Thai Binh province is located in the Red river delta in the North of Vietnam and has seven districts and one city. The population of Thai Binh is around 1.8 million. A Directly Observed Therapy Short-Course (DOTS) program for tuberculosis (TB) has been implemented since 1992 and is reported to cover 100% population. The TB service network is well institutionalized from provincial to commune levels. Significant effort from National TB program on TB control services in Thai Binh have increased the cure rate of new sputum smear (+) TB cases up to 90 % and the TB notification rate fluctuated within the range of 86-90/100,000 between 2000 and 2006. Nevertheless, the TB burden has not declined, suggesting the need for program strengthening.

In 2006, Thai Binh province had limited HIV service availability and no established TB-HIV collaboration mechanisms. Since the first case of HIV/AIDS detected in 1996, the cumulative number of people living with HIV/AIDS (PLWHA) in Thai Binh had rapidly increased up to 2,188 people in September 2006, including 692 AIDS cases and 487 who died from HIV/AIDS. The proportion of HIV-infected TB patients also increased to 6% in 2005. The rapid increase of HIV/AIDS cases contrasted with limited HIV service availability. There was one voluntary counseling and testing (HIV C&T) clinic at the Provincial Preventive Medicine Center (PPMC) and one out-patient clinic for PLWHA at the Provincial General Hospital (PGH) established with support from the LIFE-GAP project in 2006. At that time, ARVs were available for only 30 PLWHAs per year in the province. Between 2004 and 2008 the LIFE-GAP project also supported an outpatient clinic at the Provincial Hospital of TB and Respiratory Diseases (PHTB & RD) that provided HIV counseling for TB suspects and patients and TB diagnosis and treatment for PLWHA. The LIFE-GAP project resumed that support at the PHTB & RD in 2010. In 2006, only 20% of TB patients were tested for HIV, mainly at the PHTB & RD. The Global Fund project supported co-trimoxazole for TB-HIV patients between 1/2006 and 6/2010 and TB screening for PLWHAs in 2007. TB screening for PLWHAs was virtually non-existent in 2006. In addition, it was hard to reach PLWHA who had not disclosed their HIV status or did not participate in peer clubs due to fear of stigma and discrimination. A World Bank project (2005-2011) supported care and support to PLWHA in the community via peer clubs. The only service site for HIV confirmatory tests is at the PPMC and the one site for CD4 counting service is at the PGH, serving the entire province and other neighboring provinces. Referrals, feedbacks and service linkages among those health care facilities were virtually non-existent in 2007.

National guidelines and protocols regarding TB-HIV integration were under development in 2007. Mechanism of TB-HIV integration had been piloted in four high HIV and TB prevalence provinces (Hanoi, Hai Phong, Quang Ninh and Ho Chi Minh city by donor projects). The long and well-established and standardized TB program and the newly established HIV program ran vertically with little collaboration and coordination at either policy or operational levels. The Vietnam Administration of HIV/AIDS Control (V AAC) was established in 2005, followed by establishment of Provincial HIV/AIDS Control Centers in 2005 and 2006. The HIV service was very limited and mostly located at provincial health care facilities, resulting in limited TB-HIV service integration in 2006. There were eight CD4 machines throughout the country and only 50 districts out of 631 had ART services available.

The proportion of TB patients who first sought care at private health care facilities was high. After being diagnosed with TB at the private facilities, the majority of TB patients did not come back for follow-up but self-monitored and treated. An assessment on private medical and pharmaceutical practices on TB detection and treatment in Thai Binh city from 12/2004 – 2/2005 reported that 37.4% of TB patients first sought care at private health care facilities. Above 80% of TB patients who were diagnosed and treated at the private health care facilities were self-monitored and treated. The majority of private health care providers had a limited knowledge of TB and almost none of the pharmacies in the city had all five TB antibiotic drugs. They also sold the drugs without prescriptions. Recognizing the importance of engagement of the private sector in TB control, Thai Binh was one of 15 provinces that participated in the NTP’s initiative on public-private mix activities in TB control since 2006. At that time, National guidelines and protocols regarding public-private mix in TB control had not been issued.

In addition, the re-organization of the district health system in observance of the Government Decrees 171 and 172, which took effect in 2005, had a great effect on dividing important roles and financial and human
resources among three different entities in charge of TB and HIV control and prevention at the district level. The Decrees 171 and 172 split the one district health entity into three separate entities including district general hospital (DGH), district health center (DHC) and district health office (DHO). The DGH and DHC were under administration of the Provincial Department of Health and the DHO was under the district people’s committee. As a result, different health structure modalities with district TB control team solely belonging to either DGH or DHC, or jointly by both those entities were developed and adapted in different provinces. This re-organization made pooling resources and implementation of directions in TB and HIV control among independent entities more difficult and skilled staff turn-over. Those changes contributed to the reduced national TB case notification rate in 2007.

URC, closely working with NTP, Thai Binh Provincial Department of Health and the Thai Binh PHTB & RD developed an 18-month action plan from April 2007 to September 2008 with support from the USAID-funded Quality Assurance Project (USAID/QAP). The objectives of the project were to improve TB-HIV collaborative activities and involve private and other public sector facilities in the TB control program. The external end-term evaluation in January 2009 assessed the effect of USAID/QAP-supported interventions. At the national level, the project provided technical assistance to development of national guidelines, a framework and training modules for TB-HIV integration and PPM, and supported early capacity building in TB-HIV collaboration for 22 provincial trainers from ten provinces in 2007. At the provincial level, the project successfully assisted in the establishment of TB-HIV collaboration and PPM models. As a result, TB patients had increased access to standard HIV C&T services and PLWHA to quality TB control services at the district level. All those contributed to significant increases in TB-HIV case finding from 33 cases in all of 2006 to 77 cases in first three quarters 2008. In addition, referrals from private health facilities to TB units accounted for 6.5% of confirmed TB cases. The project contributed to the overall increase in TB case detection in the province from 90/100,000 in 2006 to about 104/100,000 in 2008. This evaluation also identified a number of remaining gaps including quality improvement for TB-HIV integrated services, particularly in HIV C&T and TB screening for PLWHA at district and commune levels, the referral system and enrolment into TB and HIV care and treatment. Recommended improvement opportunities for PPM included piloting TB testing and treatment at private facilities, training for both public and private health care workers, strengthening M&E of the referrals and improving the recording and reporting system.

URC continued supporting Thai Binh to strengthen the successfully established models and effective interventions and to implement the recommendations for one more year until September 2009 through the USAID-funded Health Care Improvement Project (USAID/HCI).

A year following the completion of the HCI project, URC commissioned an independent evaluation to assess sustainability of the project models and activities and the effect of the project on overall TB case detection, treatment outcomes and health care system strengthening.
Evaluation Objectives

1. To assess effectiveness and sustainability of the project in terms of:
   - TB-HIV collaboration to reduce burden of HIV in TB patients and burden of TB among PLWHA
   - Collaborative activities between NTP and the private sector to increase TB case detection by referral of TB suspects from private sectors to TB units
2. To assess outcomes of the project in terms of overall TB case detection and treatment outcomes
3. To evaluate effect of the project on health care system strengthening through assessment of:
   - Health care staff capacity in project implementation
   - Quality of service
   - M&E system improved to measure and support project activities
   - Collaboration mechanism and information exchange between TB and HIV program
   - Collaboration mechanism and information sharing between NTP and private sector

Evaluation Methods

The main areas of TB-HIV collaboration and PPM activities in Thai Binh province, Vietnam implemented during the project cycle (4/2007 to 9/2009) and one year after the project completion (10/2009 to 9/2010) were assessed using following methods:

- Reviewed TB and TB-HIV service indicators during the above mentioned period by quarter (a reporting period unit). Details of selected evaluation indicators are in the Appendix.
- Interviewed key informants including representatives from the provincial TB-HIV collaborative taskforce, the Thai Binh Provincial Department of Health, City health office, PHTB & RD, Provincial HIV/AIDS Control Center, district health centers, district general hospitals and private hospitals/clinics participating in public-private mix in TB control.
- Conducted direct observation during field visits: a) routine work as PITC, VCT, TB suspect referral from private and non-TB public health facilities; b) use of tools developed or revised by the project including patient logbooks, monitoring forms, and referral and feedback forms between:
   - TB and HIV facilities.
   - Outpatient department of PHTB & RD and the private hospitals/clinics.
Results

**TB-HIV collaborative activities**

**Strengthened TB-HIV coordination**

The evaluation found that the TB-HIV collaboration mechanism established and implemented with project support in the whole province in 2007 had been sustained. The provincial TB-HIV task force reduced from 15 members in 2007 to 10 members in 2011 for more effective coordination. TB-HIV collaborative activities were improved among TB and HIV facilities at the provincial level and in all eight districts with significantly increased availability of ARV services in five districts in late 2010. All eight districts had health staff who were trained in TB, HIV and TB-HIV prevention, collaboration and continuum of care. TB, HIV and TB-HIV patients could access standard TB and HIV diagnosis, prophylaxis, treatment and care services.

The evaluation highlighted the need for directors of the Provincial Department of Health, PHTB & RD, Provincial HIV/AIDS Control Center (PACs) and projects to find alternative resources for continuously strengthening TB-HIV collaborative activities after project completion. For example, active TB screening among PLWHA and joint review meetings between TB and HIV programs were not maintained due to lack of funding. M&E for TB-HIV collaborative activities was less intensive due to limited funds, resulting in lower but still satisfactory performance.

The interview with TB specialists revealed that they had not been invited to consultation meetings for TB and ARV co-treatment for TB-HIV patients, resulting in limited case management and treatment outcomes.

**Increased service coverage, rate and quality of HIV counseling and testing for TB patients**

To assist the province to increase coverage, rate and quality of HIV counseling and testing services for TB patients at district level, the project supported building capacity through training, strengthening monitoring and evaluation and supplying HIV test kits. As a result, 100% of districts in Thai Binh province had at least one site providing HIV C&T services for TB patients with health care staff trained on standard HIV C&T. The province rapidly increased HIV counseling services from 47% of TB patients at the beginning of the project to over 90% of TB patients during the project time in 2008 and 2009 (Figure 1). The HIV testing rate for TB patients accordingly increased from 38% to over 80% during the same period.

The small discrepancy between TB cases counseled and tested suggested improvement opportunities for raising TB and HIV awareness among the health care workforce and the public to reduce disease-related stigma and to increase acceptability of the testing. The staff interview disclosed that HIV C&T were mostly provided to TB patients between 15 and 65 years old, possibly due to their relatively higher risk and limited financial and human resources at facilities.

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**Figure 1. Improved HIV counseling and testing services for TB patients in Thai Binh province, 2007-2010**
Disaggregating by level of health care, the HIV testing rate for TB patients at the district level rapidly increased from 42% in Q2/2007 to above 90% in Q2/2008 and was maintained at that high level until the end of the project in Q3/2009 (Figure 2). This result reflected the project’s success in capacity building for health care staff and provision of HIV C&T for TB patients. The HIV testing rate for TB patients at the provincial level also increased from 54% in Q2/2007 to 75% in Q2/2008 and fluctuated around 80% during the intervention. This lower rate, compared to the district level, reflected a challenge in providing HIV C&T for the majority of TB patients at the provincial level who came from many different districts and for most TB-HIV co-infected patients with previously known HIV positive status who didn’t need a test or patients who refused a test due to fear of stigma.

After the intervention ended, there was a slight declining trend in proportion of cases that received HIV counseling and little higher decline of those who received both HIV counseling and testing (Figure 1). The observed slight reduction in HIV testing rates at both levels suggest that the province succeeded in maintaining the satisfactory rates with the institutional capacity built during the project time and use of other available resources (Figure 2). Active leadership of the province in planning and using other resources played critical role in maintaining satisfactory HIV C&T after project completion. The findings suggest a need for use of sustainable resources such as the national programs and health insurance payment to maintain provision of consistently free HIV C&T services. An encouraging stronger supervision mechanism for TB and HIV care providers to improve their service quality and quantity and refresher training to strengthen HIV counseling skills were also important for sustainability of quality HIV C&T. Such investments would facilitate the province to achieve the recommended target of providing HIV counseling and testing services for 100% of TB patients.

**TB screening for PLWHA**

In 2008 and 2009, USAID/QAP and USAID/HCI supported active TB screening services for hundreds of PLWHAs at peer clubs and communities with high HIV prevalence, following the initial support from Global Fund in 2007 (Figure 3). Such successful campaigns were attributed to the strong collaboration and cohesively organized coordination among health facilities from provincial to commune levels, and direct and indirect communications on TB screening campaigns at peer clubs. The number of PLWHAs who were

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**Active leadership of the province in planning and using other resources played critical role in maintaining satisfactory HIV C&T after project completion**

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**Figure 2. Improved HIV testing rate for TB patients by provincial and district health care level, Thai Binh province, 2007-2010**

![Graph showing improved HIV testing rate for TB patients by provincial and district health care level, Thai Binh province, 2007-2010](image-url)
passively screened for TB also increased during the project implementation. No data for passive TB screening prior to quarter two of 2007 was available for this evaluation. The PLWHAs that received passive TB screening at the PHTB & RD were usually referred by provincial HIV service facilities, peer clubs or self sought health care due to TB symptoms as a result of TB communication at peer clubs or through public media.

After the project completion, there was hardly any active screening while a smaller number of PLWHAs receiving passive TB screening at TB units was maintained every quarter. The declined referrals of TB suspects from the provincial OPC to PHTB & RD might be due to the OPC’s improved practice on routine TB screening for PLWHAs on their visits.

Active TB screening contributed to early TB detection among a great number of PLWHAs during project implementation (Figure 4). Thirteen percent of PLWHAs receiving active screening were diagnosed with TB. A higher proportion of PLWHA (25%) were diagnosed with TB through passive screening because most of they sought care with TB symptoms.

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Figure 3. Active and passive TB case finding among PLWHA, Thai Binh province, 2007-2010

![Figure 3](image1)

Figure 4. Confirmed TB cases by active and passive case finding among PLWHA, Thai Binh province, 2007-2010

![Figure 4](image2)
**TB-HIV case detection and treatment**

Increased TB-HIV case detection

The TB-HIV integration activities remarkably improved TB-HIV case notification, from 33 cases in 2006 to 108 cases in 2009 (Figure 5). This increase in TB-HIV case notification was attributed to both increased HIV C&T for TB patients and active TB screening for PLWHAs in the whole province. After the intervention, case detection declined in the first three quarters of 2010, but still remained significantly higher than the baseline. The biggest drop was in active case finding.

An increasing number of TB patients who were found positive with a rapid HIV test and did not get confirmatory HIV tests in 2009 and 2010 also affected the TB-HIV case notification (Figure 6). There were several reasons from both health care provider and patient sides for not completing confirmatory HIV tests. Interviewed TB health care providers demonstrated their good knowledge of the procedure requiring blood specimen positive with HIV rapid test to be sent to Provincial Preventive Medicine Center (PPMC) for confirmatory test and to provide post test counseling with confirmatory test results. In practice, transportation of positive blood samples was not properly carried out by lab staff at the PHTB & RD after another donor support for transportation ended in 2008. Instead patients were referred to PPMC for the test. This finding suggested that directors of

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**Figure 5. TB-HIV case notification in Thai Binh province, 2006-2010**

**Figure 6. Number of TB patients who received rapid and confirmatory HIV tests, Thai Binh province, 2007-2010**
Institutionalization of the standard procedures established with the project interventions would ensure sustainability of quality services after the support ended.

TB treatment registration for diagnosed TB-HIV patients

The number of TB-HIV cases registered for TB treatment was lower than the number of cases diagnosed, particularly in quarters with active TB screening campaigns for PLWHAs such as quarters 3 and 4 of 2007, quarters 2 and 3 of 2008, and quarter 2 and 3 of 2009 (Figure 7). The percentage of diagnosed TB-HIV cases enrolled in TB treatment was 76% in 2007, increased to 79% in 2008, reduced to 67% in 2009 and to 47% in first three quarters of 2010. Challenges of TB treatment enrolment for PLWHAs include difficulty in following-up mobile and hidden populations and resistance to seeking treatment due to their disadvantaged social, economic and health conditions, fear of stigma, undisclosed or unaccepted TB and HIV diseases. This finding suggests a great opportunity for improving TB treatment enrolment for PLWHAs diagnosed with TB through active TB screening campaigns. The widening discrepancy between the number of diagnosed TB-HIV cases and those registered for TB treatment from Q1/2010 onwards also suggest a need for finding barriers to access to TB treatment and developing appropriate solutions.

TB treatment outcomes for TB-HIV patients

The province has achieved a high TB treatment success rate of 95% for HIV-negative patients since 2007, exceeding the WHO's recommended target of >=85% (Figure 8). In contrast, the treatment success rate for TB-HIV patients declined from 74% in 2007 to 69% in 2008 and increased back to 79% in 2009. The low treatment success rates for TB-HIV patients in Thai

Figure 7. TB treatment registration of TB-HIV cases diagnosed in Thai Binh province, 2007-2010

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2007 Q1 Q2 Q3 Q4 2008 Q1 Q2 Q3 Q4 2009 Q1 Q2 Q3 Q4 2010 Q1 Q2 Q3

All TB-HIV cases diagnosed
All TB-HIV cases registered for TB treatment
TB cases diagnosed through active CF among PLWHA
Binh is comparable to other provinces with similar conditions, such as Nam Dinh province with a treatment success rate of 52% in 2008 and 64% in 2009 for TB-HIV patients.7

The mortality rate among TB-HIV patients was greatly improved from 24% in 2007 to 15% in 2009, compared to 3% in patients diagnosed with TB only (Figure 9). The default rate was high at around 6-8%, compared to less than 2% in patients diagnosed with TB only. The high mortality and default rates reflect a great challenge for improving treatment outcomes when a proportion of PLWHAs diagnosed with TB seems to increase over year. TB treatment complexity and duration discourages TB-HIV patients to adhere to treatment. TB-HIV patients usually have disadvantaged social, economic and health conditions and combined with their fear of stigma, lower adherence. This finding suggests a need for addressing specific barriers to TB treatment completion for PLWHAs diagnosed with TB and more carefully crafted interventions. Unavailable treatment outcomes for a TB-HIV cohort enrolled in TB treatment in 2010 limited comparison after the project completion. Review of treatment outcomes for this cohort may supplement more information for developing improvement interventions.

Continuum of care for TB-HIV patients
Service linkages between TB and HIV care facilities played a critical role in improving treatment outcomes for TB-HIV patients. In addition to a number of identified subjective barriers to ARV service access mentioned in the previous section, a number of objective barriers were identified through

Figure 8. TB treatment success rates for TB-HIV and TB patients in Thai Binh province, 2007-2009

Figure 9. TB treatment outcome for TB-HIV cases registered for treatment in Thai Binh province, 2007-2009
interviews: long waiting times ranging from a whole morning to sometimes almost a whole day, short counseling and medical exam time with doctors, long and costly travel distances and lack of encouraging and caring attitudes from health care providers due to very high patient loads at the provincial site.

The evaluation found that a number of identified important barriers had been addressed well. Health care providers were equipped with knowledge of importance of continuum of care for TB-HIV patients, prevention and treatment of the co-infected diseases, and requirements for referral and feedback procedures. Referral and feedback forms were developed and available for use. Accessibility to and availability of HIV care and treatment services at the district level were greatly increased in the five district facility sites, including one site opened in 2009 and four in quarter 4 of 2010 by other donors. As a result, ARVs became available for all patients who were eligible for treatment, reported by a leader of the Provincial Department of Health, and patient load on the provincial HIV service site was significantly reduced, remarked by interviewed HIV staff.

However, the evaluation identified a number of improvement opportunities. Use of referral forms had not become a common practice and feedback was usually provided verbally during meetings due to shortage of manpower, staff with many duties and lack of working referral and feedback systems. A clear mechanism documenting referrals and feedback should be established. ART treatment data for TB-HIV patients in quarterly reports of National TB Program was not accurately filled in due to lack of an effective mechanism for information exchange between TB and HIV care facilities. Systematic use and documentation of referral and feedback forms would enhance collaboration between TB and HIV care facilities and improve TB and HIV treatment outcomes, and M&E data quality. This improvement would provide a more accurate performance evaluation of TB-HIV collaboration in compliance with the newest international guidelines on TB and ARV co-treatment for all TB-HIV patients, regardless of CD4 counts.

The evaluation found that comprehensive combination of effective interventions addressing social and economic barriers preventing TB-HIV patients from accessing treatment and care had not been deployed. Small projects increasing knowledge and sharpening skills, creating friendly hiring and working environments, and identifying employment and income-generating activities in collaboration with public and private organizations were scattered and difficult to be expanded. Peer educators, out-reach workers, treatment compliance assistants and grass-root health care providers had not fully mobilized to encourage and follow up patients to comply with treatment.

**Deployment of comprehensive interventions addressing social, economic and self barriers is critical for improving access to diagnosis, treatment and care services and quality of life for TB-HIV patients.**

**Improved Public-Private Mix in TB Control**

**Established successful and sustainable public-private mix models**

Establish and expand successful and sustainable public-private mix (PPM) models

With the project support from 2007 to 2009, Thai Binh province was one of 15 provinces pioneering the deployment of PPM models as recommended by NTP. The majority of private health care facilities participated in model 1 – Detect and refer TB suspects to TB facilities in the country. Based on the specific provincial context, Thai Binh province selected model 1 and focused on improving collaboration with big private health care facilities (more than 20 patients that visited the facilities per day). After implementing the PPM activities, the project shared lessons learnt in development and maintenance of the collaboration models widely. This model was assessed as successful and sustainable and expansion to other provinces was encouraged. The USAID/HCI project successfully adapted the collaboration model to two new provinces in 2009: Hai Duong and Nam Dinh.

**PPM models recommended by NTP**

- Model 1: Refer TB suspects to public TB facilities
- Model 2: Microscopy for direct sputum smear
- Model 3: Observed treatment
- Model 4: Microscopy and treatment

The evaluation found that private health care facilities had maintained collaboration according to their commitment: they continued to successfully detect and refer TB suspects to public TB facilities and participated in review meetings with the
PHTB & RD. The private facilities actively made photocopies and continued using patient logbooks and forms, and compiled data as introduced by the project interventions. Interviewed representatives from private facilities highly appreciated the effectiveness of activities such as review meetings, training, monitoring and supply of information and materials, which improved knowledge, changed behaviors, and improved responsibilities and activity performance. The trainees transferred training information and materials to other doctors at their private facilities, who did not attend the training. This result indicates the project’s success.

Sharing PPM knowledge and information from trainees to others stimulated their engagement in the PPM collaboration.

The PHTB & RD actively continued to develop collaboration models

After the intervention, based on achievements gained during the project implementation, PHTB & RD with technical assistance from NTP continued to expand model 1 and develop model 2 - Microscopy for direct sputum smear at private health care facilities meeting requirements. Three more private facilities in three districts including Thai Thuy, Dong Hung and Vu Thu participate in the model 1. In 2010, PHTB & RD assessed and provided technical assistance and training to a number of private health care facilities to assist them in meeting the requirements for model 2. The PHTB & RD provided free training for lab and imaging technicians on its facility. In early 2011, one private hospital opened a TB microscopy lab. Participation of private health care facilities in TB detection with microscopy will significantly contribute to early TB detection, reduced patient referrals, and associated travel cost and time. With limited public financial and human resources, engaging private health care facilities in TB microscopy should be conducted with a rigorous deployment plan and supervision in order to assure diagnosis quality and minimize risk of omitting TB patients with less patent clinical pictures.

PPM improved TB case detections

Establishing and improving PPM in TB control significantly contributed to the number of TB cases detected in Thai Binh province during the project implementation in 2008 and 2009 and after project completion in 2010. The number of referred TB suspects increased remarkably from 94 patients in 2007 to over 500 patients each in 2008 and 2009, but reduced to over 300 patients in the first quarters of 2010. The TB case detection rate (all forms) was about 20-30% among successfully referred TB suspects. The proportion of TB cases diagnosed from among the referrals over the total TB cases in the whole province increased from 1.6% in 2007 to 6.9% in 2008, 7.5% in 2009 and 9.1% in the first three quarters of 2010 (Figure 10). The national

Figure 10. PPM improved TB case detection in Thai Binh province, 2007-2010
The average proportion of TB cases referred from private providers among 15-17 provinces with PPM activities has been around 3-4% between 2008 and 2010. This achievement in the Thai Binh province was a result of strong commitment and support from key stakeholders, the application of an appropriate collaboration model, training and advocacy materials on PPM, strengthened collaboration with big private hospitals and clinics, and successful referrals of TB suspects to the PHTB & RD. In addition, big private hospitals and clinics were increasingly providing primary care to patients with health insurance and most of those facilities were located in the city.

Barriers and recommendations for PPM improvement in TB control

Policy, regulation, organization and plan

A number of improvement opportunities for addressing barriers and strengthening PPM activities as well as health activities in general were mentioned during evaluation interviews. Lack of a PPM task force might limit resource mobilization and deployment of PPM plans in the future. PHTB & RD should propose the Provincial Department of Health to issue regulations and reward-punishment mechanisms in writing for PPM activities. This would encourage private health care providers to refer TB suspects and submit reports according to the requirements and stimulate PHTB & RD to increase feedback to private referring facilities. The province also needs studies on removing limited referrals of patients with health insurance induced by the new health insurance policy that allocates a ceiling fund for each facility. Limited patient referrals may lengthen diagnostic time, make early and correct diagnosis and treatment difficult for a number of TB patients with less patent clinical pictures, and increase infectious sources and drug resistance.

Execution and supervision of work plan

Limited financial resources for PPM activities after project completion affected the number of review meetings, monitoring visits and training. NTP, the province and projects should find alternative resources to maintain effective activities after the project completion. An interviewed staff in charge of private medical practice management made a recommendation on integrating TB monitoring visits in PPM to private clinics and hospitals into comprehensive health monitoring visits of the province. The number of monitoring visits would be reduced accordingly, reducing human resource shortages and achieving a high level of engagement between administrative organizations and private facilities in TB control. Routine and systematic information exchange between referring and receiving facilities, between direct service facilities and supervising organizations would enhance mutual understanding, resolve barriers in a timely fashion and improve collaboration in TB control.

Managing patient referral, recording and feedbacks, PPM indicator analysis, use and report

The province promoted from big private health care facilities to single practiced providers, and public district health care facilities to participate in PPM activities. However, only contribution in PPM collaboration of big private health care facilities to PHTB & RD were recorded and evaluated, limiting mobilization of the other sources. The finding suggests a need for strengthening a system from province to districts recording all successful referrals of TB suspects and effectively writing and sending feedbacks to private facilities, building on the established practice of recording and reporting TB suspects referred from big private health care facilities in patient logbooks at the PHTB & RD. The interview revealed that lack of a mechanism for collaboration and responsibilities assigned to each department of PHTB & RD, individual staff in recording, providing feedback and reporting discouraged staff to collaborate with each other in PPM activities. The evaluation found a need for a refresher training plan for staff in departments involving in PPM activities to ensure detection and referral of TB suspects, particularly due to turn-over of the public and private health care staff. Staff at the out-patient department of PHTB & RD, which directly received TB suspects, did not complete feedbacks to private facilities because they were not trained in PPM, not specifically assigned duties and because writing feedback for each patients would consume a lots of time.

There was a need for tools to facilitate PPM indicator monitoring, analyzing, using and reporting routinely and easily because currently hand counting patients on logbooks consumed a lot of time and was inaccurate. The private health care facilities reported that they would like to receive feedback on receipt and diagnosis for each TB suspect referred in order to learn lessons, and improve patient management quality and reputation of their facilities.
The number of TB cases detected (all forms) showed a declining trend in the year following the end of the project (Q4/2009-Q3/2010) (Figure 11). The annual case notification rate in 2010 decreased by 16%. The majority of the decline was attributed to the reduction in cases detected at the provincial level. The new policy on health insurance which took effect in 2010 resulted in limiting the number of patients referred between hospitals and PHTB & RD. It was noticeable that the declining trend was driven by both sputum smear positive and negative cases, although sputum smear positive cases decreased more abruptly. The National TB control program and PHTB & RD might need to assess causes of this declined TB case notification and find appropriate solutions.

Figure 11. TB case notification in Thai Binh province, 2007-2010
Lessons Learnt and Recommendations

Leadership and implementation commitment

The commitment of all key stakeholders throughout project implementation is critical for project success. The key stakeholders increase their execution of commitment when they directly participate in development of work plans, coordination, implementation and adjustment of interventions in order to make them effective with the available health system and resources.

Leadership, ownership and institutional capacity of the PHTB & RD and PAC are improved through training, implementing and institutionalizing effective and sustainable interventions. Social mobilization activities and development of long-term plans with the National TB and HIV Programs and the Provincial Department of Health should be strengthened to ensure financial and human resources for maintaining effective activities. Directors of health care facilities and the projects should apply approaches to ensure staff continuously follows the established standard procedure after the project completion, for example, the HIV confirmatory testing and the post test counseling procedures.

Directors of health care facilities should assign staff to be responsible and allocate their time for TB and HIV activities to ensure continuity and quality of services.

TB-HIV collaboration

Resources and collaboration mechanism

Directors of the Provincial Department of Health, PHTB & RD, PAC and projects should coordinate available resources and develop plans to find alternative resources to continue strengthening TB-HIV integration activities after the project completion.

TB and HIV collaboration mechanism effective and appropriate to the district health system and the specific local context is the critical factor for effective and sustainable collaboration results. There is a need for responsibilities assigned to each department, individual staff in recording, providing feedback, services and reporting in order to evaluate and encourage each health care worker to improve quantity and quality of TB and HIV services they are in charge of. Direct involvement of the directors of the Provincial Department of Health, PHTB & RD and PAC stimulated TB-HIV collaboration between TB and HIV facilities. TB-HIV collaboration gained great achievements when HIV diagnosis, care and treatment were expanded to the district level.

It is recommended to combine effective and sustainable interventions to reduce social, economic and self barriers for TB, HIV and TB-HIV patients to access and use of diagnosis, care and treatment services.

HIV counseling and testing

Increased coverage and quality of HIV C&T services for TB patients at district level increased the service rates. The province should continue to actively find sustainable resources and maintain those services for TB patients from the national programs and health insurance payment. It is recommended to increase accessibility and responsiveness of HIV confirmatory testing services to ensure reasonable waiting time and compliance with the post test counseling procedure.

Active TB screening on PLWHAs

Active TB screening among PLWHAs yielded a high rate of TB case detection. The success of the campaigns was attributed to the strong collaboration and cohesively organized coordination among health facilities from provincial to commune levels with direct and indirect communication to PLWA through peer clubs.

Care and treatment enrolment for TB-HIV patients

It is recommended to refine an effective information exchange between the TB and HIV care and treatment facilities, recording and filing referral and feedback forms properly to ensure both TB and HIV management, care and treatment enrolment for TB-HIV patients according to the protocols. Reporting TB-HIV indicators should be accurate, timely and consistent between the two programs from district to provincial levels. TB and HIV specialists should be officially assigned to participate in routine TB and ARV treatment review meetings for TB-HIV patients to improve treatment quality. It is recommended to develop a plan to follow up and support PLWHAs who are diagnosed with TB to ensure their TB and HIV treatment enrolment and compliance.
**Public-private mix in TB control**

**Selection of appropriate models**
Selecting and gradually expanding and developing PPM collaboration models appropriate to the district health system and resources in a locality is a critical factor for effective and sustainable collaboration results.

**Effect of policy, regulation on PPM**
The PHTB & RD should actively identify barriers to engaging the private sector and propose solutions to Provincial Department of Health to address those barriers induced from policies and issue legal regulations and to provide guidelines to encourage PPM collaboration. Increased participation of private health care facilities in providing primary health care services for a great number of patients with health insurance contributed to the increased number of TB suspects successfully referred to the PHTB & RD during the project. In contrast, the new health insurance policy with a ceiling fund allocated to each health care facility, which took effect in 2010, has limited referrals of patients with health insurance between hospitals. As a result, the number of TB suspects referred from public and private health care facilities to the PHTB & RD for TB diagnosis has declined. TB monitoring visits in PPM to private clinics and hospitals should be integrated into comprehensive health monitoring visits of the province and gradually become one of criteria for evaluating private health care facilities in order to make PPM collaboration sustainable and achieve higher engagement of the health administrative organizations.

**Collaboration mechanism**
The direct involvement of directors from the Provincial Department of Health and district health offices stimulates the PPM collaboration. Active provision of technical assistance, refresher training, review meetings, monitoring visits and feedback on receipt and diagnosis of TB suspects from public TB facilities to private health care facilities improves PPM collaboration. It is critical to have the important contribution and role of non-TB public and private health care facilities in TB control recognized by the provincial authorities, their partners and by the non-TB providers themselves. The province needs to complete a system from province to district that records all TB suspects successfully referred with a mechanism for collaboration and responsibility assignment to each department, individual staff in recording, providing feedbacks and reporting.

**Improving capacity and awareness**
Maintain refresher training to build capacity, and strengthen communication to raise awareness among the health care workers and patients regarding TB, HIV and TB-HIV.

**Data management, analysis, use and report**
There is a need to support the province to use simple and effective tools to facilitate routine and easy important indicator management, analysis, use and reporting. Reporting separate numbers of TB patients who are newly confirmed with HIV positive and PLWHAs who are diagnosed with TB in the NTP quarterly report on patient enrolment in TB treatment would provide a more accurate evaluation of results and develop more appropriate interventions.
References


5. Thai Binh Hospital of TB and Respiratory Diseases. National TB Program Quarterly Reports.


7. Nam Dinh Hospital of TB and Respiratory Diseases. National TB Program Quarterly Reports.


## Appendix

### Selected indicators in Thai Binh province, 2006-2010

### TB-HIV collaboration

|-----------|--------------------------------------|-----------------------------------------------|

#### HIV counseling and testing service coverage

- Number of districts that have at least one site providing HIV CT services for TB patients (%): 8 (100%), 8 (100%), 8 (100%), 8 (100%)
- Number of service delivery sites that have at least one staff who received training on HIV CT for TB patients (%): 8 (100%), 8 (100%), 8 (100%), 8 (100%)

#### HIV counseling and testing for TB patients

- Number of TB patients that received HIV counseling:
  - At provincial sites: 913, 1018, 1067, 606
  - At district sites: 393, 596, 541, 396
- Number of TB patients that received HIV testing:
  - At provincial sites: 639, 929, 891, 532
  - At district sites: 312, 572, 532, 342
- Percentage of TB patients that received HIV testing by site:
  - At provincial sites: 58%, 79%, 76%, 80%
  - At district sites: 47%, 92%, 92%, 76%
- Number of TB patients that were positive with HIV rapid test: 54, 59, 59, 64
- Both HIV rapid and confirmatory tests: 53, 50, 41, 39

#### TB screening for PLWHAs

- Number of PLWHAs that received:
  - Passive TB screening: 265, 303, 442, 60
  - Active TB screening: 167, 172, 360, 16
- Number of those PLWHAs that diagnosed with TB in:
  - Passive TB screening: 46, 52, 67, 14
  - Active TB screening: 30, 37, 10, 10

#### TB-HIV case detection and treatment registration

- Number of TB-HIV cases diagnosed: 66, 95, 108, 53
- Number of TB-HIV cases registered for treatment: 50, 75, 72, 25
- Percentage of TB-HIV cases registered for treatment: 76%, 79%, 67%, 47%
### TB treatment outcomes for patient cohorts by HIV status

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<tr>
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<tbody>
<tr>
<td>TB treatment success rate for all (%)</td>
<td>93.8%</td>
<td>93.7%</td>
<td>94.4%</td>
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<td><strong>TB</strong> only</td>
<td>94.4%</td>
<td>94.7%</td>
<td>95.1%</td>
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<td><strong>TB-HIV</strong></td>
<td>74.0%</td>
<td>69.3%</td>
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<td>Death rate</td>
<td>3.8%</td>
<td>3.7%</td>
<td>3.2%</td>
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<tr>
<td><strong>TB</strong> only</td>
<td>3.2%</td>
<td>2.9%</td>
<td>2.7%</td>
</tr>
<tr>
<td><strong>TB-HIV</strong></td>
<td>24.0%</td>
<td>21.3%</td>
<td>15.3%</td>
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<tr>
<td>Default rate</td>
<td>1.8%</td>
<td>2.0%</td>
<td>1.6%</td>
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<tr>
<td><strong>TB</strong> only</td>
<td>1.8%</td>
<td>1.8%</td>
<td>1.4%</td>
</tr>
<tr>
<td><strong>TB-HIV</strong></td>
<td>2.0%</td>
<td>8.0%</td>
<td>5.6%</td>
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<td>Transfer out rate for all (%)</td>
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<td>0.4%</td>
<td>0.5%</td>
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<tr>
<td><strong>TB</strong> only</td>
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<td>0.4%</td>
<td>0.5%</td>
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<tr>
<td><strong>TB-HIV</strong></td>
<td>0%</td>
<td>1.3%</td>
<td>0%</td>
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### Public-Private Mix in TB Control

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<tr>
<td>Number of patients that were successfully referred from private health care facilities to the PHTB &amp; RD</td>
<td>94</td>
<td>570</td>
</tr>
<tr>
<td>Number of patients that were diagnosed with TB among the referred suspects</td>
<td>14</td>
<td>125</td>
</tr>
<tr>
<td>Number of patients that were diagnosed with pulmonary TB AFB(+) among the referred suspects</td>
<td>1</td>
<td>12</td>
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<tr>
<td>Percentage of TB cases diagnosed among the referrals (%)</td>
<td>14.9%</td>
<td>21.9%</td>
</tr>
<tr>
<td>Percentage of TB SS(+) cases diagnosed among the referrals (%)</td>
<td>1.1%</td>
<td>2.1%</td>
</tr>
<tr>
<td>Percentage of TB cases diagnosed among the referrals over the number of TB cases in the entire province (%)</td>
<td>1.6%</td>
<td>6.9%</td>
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### TB case notification

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<tr>
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<tbody>
<tr>
<td>Total number of TB cases (all forms)</td>
<td>N 1660</td>
<td>Beginning year (2007) 1774</td>
<td>Middle year (2008) 1805</td>
</tr>
<tr>
<td></td>
<td>% 59%</td>
<td>Beginning year (2007) 50%</td>
<td>Middle year (2008) 46% 44%</td>
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<tr>
<td>Retreatment sputum smear (+)</td>
<td>n 67</td>
<td>Beginning year (2007) 89</td>
<td>Middle year (2008) 75 102</td>
</tr>
<tr>
<td></td>
<td>% 4%</td>
<td>Beginning year (2007) 5%</td>
<td>Middle year (2008) 4% 6%</td>
</tr>
<tr>
<td></td>
<td>% 37%</td>
<td>Beginning year (2007) 45%</td>
<td>Middle year (2008) 49% 50%</td>
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