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TB CARE I

TB CARE I - Vietnam

Year 3

Annual Report

October 1, 2012 – September 30, 2013

October 30, 2013

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List of Abbreviations

ACSM	Advocacy, Communication and Social Mobilization
APA	Annual Plan of Activity
CA	Cooperative Agreement
DTU	District TB Unit
HCMC	Ho Chi Minh City
IEC	Information, education and communication
MDR	Multi-drug resistance
M&E	Monitoring and Evaluation
MOH	Ministry of Health
MOPS	Ministry of Public Security
MSH	Management Sciences for Health
NTP	National Tuberculosis Control Program
OR	Operational Research
SA	Sub-Agreement
SOP	Standard Operating Procedures
TB	Tuberculosis
TBIC	TB Infection Control
VAAC	Vietnam Administration AIDS Control
WHO	World Health Organization

Executive Summary

TB CARE I Vietnam in APA3 has been implemented by 3 partners of KNCV, WHO and MSH, of whom KNCV is the lead partner. With total buy in of USD 1,800,000, in APA3, the Project added one more technical area of drug supply and management, raising the number of technical areas covered by TB CARE I Vietnam in APA3 to be eight (8) technical areas. These are: early and universal access, laboratory system strengthening, TB infection control, Programmatic Management of Drug Resistant-TB (PMDT); TB/HIV; Health system strengthening, TB surveillance and operational research; and drug supply management.

In APA3, one more province was added in the Project sites, raising the number of provinces to be 15, with 193 districts, 3,232 communes of the whole country; and the number of population benefited from the Project is 31.3 million, accounting for about 35% of the whole population Vietnam. Additionally, the Project also supported the WHO-approved rapid diagnostics for all 35 provinces within the framework of the PMDT of National Tuberculosis Control Program.

Here below is some summary of key results of TB CARE I Year 3 in Vietnam.

First, the new strategy on TB management in children has been piloted successfully in 4 piloted provinces with a total of 35 districts and 611 communes. 1,480 health care staff in the health system of the four pilot provinces were trained on implementation of the new strategy. In the period of 3 quarters (from Q4 2012 to Q2 2013), 2,808 children having close contact with sputum smear-positive cases were screened and registered; 213 (8%) pediatric patients with TB were detected. With the success of this new strategy, NTP has decided to use funds from the Global Fund to expand this strategy to 21 provinces for the period 2013-2014 (3 provinces in 2013 and 18 provinces in 2014)

Secondly, the introduction of Xpert MTB/RIF has been successfully made in Vietnam under the support of TB CARE I. 17 GeneXpert systems have been running, with total number of test done being 5,857, of which 3,737 (66.4%) are MTB(+) and 910 (24.4%) is Rifampicin resistant for the period from July 2012 to July 2013. 713 MDR-TB patients have been registered and treated in 2012 compared to 578 MDR-TB patients in 2011.

Thirdly, TB specimen referral system has been running in Vietnam. 222 lab staff from 35 PMDT provinces had been trained on triple packaging. 2,566 specimens have been referred to Hanoi and Hochiminh city under APA3. The preparation of the detailed contract between NTP and the Post Office is in process. Once it is signed, NTP will use the money from GF to cover the cost of specimen transportation.

Fourthly, a database on TB among healthcare workers at provincial level has been available in Vietnam, under TB CARE I supports. This database covers 4 priority TBIC indicators of Vietnam, including the situation of TB among healthcare workers from 67 TB provincial control and prevention units.

Fifthly, the e-TB manager has covered 12 treatment sites and around 40 District Units. During APA3, it has focused on improving the data entry in e-TB manager with the first step being to enter the data for all on-going cases from 2012 and 2013. In 2012 and 2013, data for around 95% of on-going cases have been entered e-TB manager. Gradually, there has been an increase in e-TB manager use. After completing this step the following priority was to complete the suspect's data into the platform.

Sixthly, During the the 4th Asia Pacific Region Conference of the IUATLD, Hanoi, Vietnam, from 10-13 April, TB CARE I Vietnam organized a International Symposium on TB CARE I Innovation and a TB CARE I Exhibition Booth to disseminate good practices of the Project achieved so far in Vietnam, Cambodia and Indonesia (Xpert MTB\RIF). The Symposium was the first event of the conference, prior to the opening ceremony and drew an estimated audience of over 150 participants from all over East Asia, and the Western Pacific. The audience was mixed, consisting of TB program managers, TB program staff, clinicians, technical agencies, research institutes and donor organizations. The Symposium had strong presentations on the technical areas supported by the TB CARE I project, implemented through KNCV, MSH, WHO, FHI, JATA, including the role of the Xpert MTB/RIF test in support of scale-up of PMDT from Vietnam, Indonesia and Cambodia, the new management of childhood TB in Vietnam, the introduction of e-TB manager in support of scale-up of PMDT in

Vietnam, the rapid scale-up of PMDT over the past 3 years, and its PMDT scale-up planning in Vietnam, among others. The innovative character of TB CARE I was very well demonstrated.

Introduction

The TB CARE I project in Vietnam aims to reduce the number of deaths due to TB by increasing access to timely and quality assured diagnosis and treatment of TB and MDR TB, with special attention to vulnerable groups (PLWHA, children, prisoners). KNCV is takes lead in this project implementation.

In APA3, three Partners involving in the implementation of TB CARE I Project include KNCV Tuberculosis Foundation, World Health Organization (WHO) and Management Sciences for Health (MSH). And KNCV is the lead partner. The total available budget for APA3 is USD 1,800,000.

Partners participating in the implementation of TB CARE I Project at Central level include: National Tuberculosis Control Program, the Vietnam Administration of HIV/AIDS Control, Ministry of Public Security, National Assembly's Committee for Social Affairs, and General Department of Post and the Vietnam Post Office.

The third year of TB CARE I Project in Vietnam has been continuing to focus on 7 technical areas which were implemented in the first and second years including: early and universal access, laboratory system strengthening, TB infection control, Programmatic Management of Drug Resistant-TB (PMDT); TB/HIV; Health system strengthening, TB surveillance & operational research; meanwhile adding the eighth technical area of drug supply and management. The technical areas implemented in the TB CARE I Project are suitable to the National Strategic Plan for Tuberculosis Control in 2011-2015 period, targeting gaps which the Vietnam National Tuberculosis Program faces difficulties in providing services on TB prevention and control. The activities implemented by the KNCV covers 7/8 technical areas. The activities carried out by the WHO focuses on the technical area of health system strengthening including advocacy and social mobilization activities. The activities responsible by the MSH focused on the activities for specimen referral system, e-TB manager implementation and drug supply and management.

Activities of TB CARE I Project have been implemented in 9 MDR-TB treatment Centers including Hanoi, Vinh phuc (K74), Thanh Hoa, Da Nang, Binh Dinh, Binh Thuan, Ho Chi Minh City, Can Tho, Tien Giang, 02 provinces as the PMDT satellite provinces including Thai Binh and Tay Ninh and 4 provinces with high prevalence of HIV-infection including Hai Phong, Quang Ninh, Dien Bien, An Giang, ect. Thus, in the third Year, the Project has been implemented in 15 provinces, 193 districts, 3,232 communes/wards of the whole country, with the number of population benefited from the Project represented 31.3 million, accounted for about 35% of the whole population of the country. Additionally, the Project also supported the WHO-approved rapid diagnostics for all 35 provinces within the framework of the PMDT of National Tuberculosis Control Program.

During the 4th Asia Pacific Region Conference of the IUATLD, Hanoi, Vietnam, from 10-13 April, TB CARE I Vietnam organized a International Symposium on TB CARE I Innovation and a TB CARE I Exhibition Booth to disseminate good practices of the Project achieved so far in Vietnam, Cambodia and Indonesia (Xpert MTB\RIF). The Symposium was the first event of the conference, prior to the opening ceremony and drew an estimated audience of over 150 participants from all over East Asia, and the Western Pacific. The audience was mixed, consisting of TB program managers, TB program staff, clinicians, technical agencies, research institutes and donor organizations. The Symposium had strong presentations on the technical areas supported by the TB CARE I project, implemented through KNCV, MSH, WHO, FHI, JATA, ... including the role of the Xpert MTB/RIF test in support of scale-up of PMDT from Vietnam, Indonesia and Cambodia, the new management of childhood TB in Vietnam, the introduction of e-TB manager in support of scale-up of PMDT in Vietnam, the rapid scale-up of PMDT over the past 3 years, and its PMDT scale-up planning in Vietnam, among others. The innovative character of TB CARE I was very well demonstrated.

Core Indicators

TB CARE I has seven core indicators that the program as a whole is working to improve across all countries. Table 1 summarizes the core indicator results across the life of the project for TB CARE I-Vietnam. Results for 2013 will be reported on next year.

Table 1: TB CARE I core indicator results for Vietnam

Indicators	2010 (Baseline)	2011 (Year 1)	2012 (Year 2)
C1. Number of cases notified (all forms)	99,035	100,518	103,906
C2. Number of cases notified (new confirmed)	90,627	91,879	94,853
C3. Case Detection Rate (all forms)	54%	74%	
C4. Number (and percent) of TB cases among HCWs	NA	NA	NA
C5. Treatment Success Rate of confirmed cases	92.4%	92,9	
C6. Number of MDR cases diagnosed	202	601	769
C7. Number of MDR cases put on treatment	97	578	713

Summary of Project Indicators and Results

Table 2: TB CARE I- Vietnam Year 3 indicators and results

Expected Outcomes	Outcome Indicators	Indicator Definition	Baseline or Y2 (timeframe)	Target Y3	Result Y3	Comments	
Universal Access							
#	1.2 Increased quality of TB services delivered among all care providers (Supply)	1.2.11 Prisons with TB\HIV\MDR TB diagnosis and treatment/care services and linkage between prison and civilian service provision (KNCV)	Availability of TB/HIV/MDR TB diagnostic, treatment and care services and linkage between prison and civilian service provision Indicator Value: Proportion Means of Verification: Field visit report available for review Numerator: Number of prisons Denominator: Number of project sites	0/8	2/8	0/8	The updated guidelines of TB/HIV/MDR TB diagnosis, treatment and care and linkage between prison and civilian are available, but not yet put into the pilot in two prisons as planned due to the delay in the implementation of this activity.
		1.2.12. The coverage of provinces with new strategy for TB control in children implemented (KNCV)	Indicator Value: Proportion Means of Verification: Field visit report available for review Numerator: Number of provinces implementing new strategy for TB control in children Denominator: Total number of project provinces	3/8	4/8	4/8	
Laboratories							

	2.1 Ensured capacity, availability and quality of laboratory testing to support the diagnosis and monitoring of TB patients	2.1.4 Number of laboratories supporting MDR TB treatment that have safe working practices (KNCV) Description: Trainings on laboratory management and bio-safety are conducted for laboratory staff in the designated MDRTB treatment centers and PMDT satellite sites (culture labs) supporting PMDT roll-out	Indicator Value: Number Means of Verification: Training reports available for review Numerator: Number of provincial laboratories receiving training on laboratory management and bio-safety Denominator: Number of MDRTB treatment centers	6/9	9/9	9/9	
		2.1.5 [Strengthening of Specimen referral system] Description: Rollout of specimen referral system at district, provincial and central site levels (MSH)	Indicator Value: Number and Percentage Level: Central, provincial and District Source: Site reports Means of Verification: Provincial and central data Numerator: Number of provincial and district TB facilities implementing specimen referral system Denominator: Total Number of TB facilities	7/696	47/696	47/696	Under APA4, MSH has a plan to roll out the TB specimen referral system to all 35 PMDT provinces and their districts, which will bring the total number of sites to 350.

			in province				
	2.2 Ensured the availability and quality of technical assistance and services	2.2.3 Annually laboratory maintenance work conducted in MDRTB designated laboratories	<p>Description: Maintenance work for laboratory and laboratory equipment conducted. Laboratory maintenance reports should be provided by lab maintenance agency</p> <p>Indicator Value: number of laboratories</p> <p>Means of Verification: Laboratory maintenance reports available for review</p> <p>Numerator: Number of MDRTB designated laboratories</p> <p>Denominator: Number of MDRTB treatment centers</p>	6/9	9/9	9/9	Maintenance work for laboratory and laboratory equipment has been conducted by other funding sources (GF9) in quarter 4 2013.
	2.3 Ensured optimal use of new approaches for laboratory confirmation of TB and incorporation of these approaches in national strategic laboratory plans	2.3.1 Diagnostic sites offering advanced technologies for TB or drug-resistant TB		17/17	17/17	17/17	17 GeneXpert sites are providing WHO-approved rapid diagnostics for PMDT.
Infection Control							
	3.2 Scaled-up implementation of TB-IC strategies	3.2.2 Facilities implementing TB IC measures with TB CARE support		45/55	55/55	60/60	

	3.3 Strengthened TB IC Monitoring & Measurement	3.3.2 NTP reports number of HCWs (any full-time, part-time or non-paid worker) engaged in provincial TB hospitals and district TB Units who acquired TB disease (all forms) in the reporting period as part of the existing RR system (KNCV)	Description: Annual reporting on TB disease (all forms) among HCWs in provincial Tb hospitals and district TB Units available as part of the national RR system Indicator Value: Number of provincial TB hospitals reported/Number of DTUs reported	63	63	63	
Programmatic Management of Drug-Resistant TB (PMDT)							
	4.1 Improved treatment success of MDR TB	4.1.1 TB patients, suspected of MDR, dying between request for lab examination and start of MDR treatment (MSH)		N/A	TBD	NA	This indicator is not available in NTP surveillance system.
		4.1.2 MDR TB patients who are still on treatment and have a sputum culture conversion 6 months after starting MDR-TB treatment (KNCV - MSH)		83.6% (PNTH 84/100 patients and K74 18/22 pts)	>75%	34% (259/791)	Cases that started treatment (from Oct/12 till Sept/13): 791 Negative after 6 months (smear and culture negative): 259 Positive (smear and/or culture): 512
		4.1.3 MDR TB patients who have completed the full course of MDR TB treatment regimen and have a		N/A	TBD	73% - 78%	Success rate for: - Cohort 2009 : 73% - Cohort 2010 : 78%

		negative sputum culture (MSH)					
		4.1.5 The number of MDRTB treatment centers registering and follow-up all diagnosed MDR patients regardless of the site of diagnosis and the source of the drugs used (MSH)	Indicator Value: Proportion Means of Verification: Field visit report available for review Numerator: Number of MDRTB treatment centers implementing PPMD in supporting MDRTB treatment	N/A	9	12	
TB/HIV							
	5.1 Strengthened prevention of TB/HIV co-infection	5.1.2 National guidelines on implementation of collaboration TB-HIV activities (KNCV) Description: Development of the national guidelines on implementation of collaboration TB-HIV activities for MOH decision on TB-HIV collaborative framework Indicator Value: Yes/No Level: National		No	Yes	Yes	
		5.1.3 Training materials based on the new national guidelines		No	Yes	No	This activity is not completed yet and has been postponed to Year 4 because of limited HR from NTP and

		on implementation of collaborative TB-HIV activities developed (KNCV) Description: Development of the training materials based on the new national guidelines on implementation of collaborative TB-HIV activities Indicator Value: Yes/No					delay of the activity #5.1.2
Health System Strengthening							
6 · 1	TB control is embedded as a priority within the national health strategies and plans, with matching domestic financing and supported by the engagement of partners	6.1.4 Number of provinces allocating more funding for TB control (WHO)	6.1.4 As a result of advocacy meetings with members of parliament and provincial people committee leaders TB funding is expected to increase Indicator Value: percentage Level: nationwide Numerator: number of provinces allocate more funding for TB control Denominator: number of provinces organized advocacy meetings	0	50 %	2/4 (50%)	2 provincial meetings in high burden provinces were organized 1 national meeting planned in October 2013
		6.1.5. Number of provinces develop and implement ACSM action plan (WHO)	As a result of ACSM training for journalists and TB staff, ACSM action plan will be developed and implemented by provincial NTP in collaboration with	0	100%	2/4 (50%)	4/4 advocacy trainings including drafting of provincial advocacy plans completed. Implementation of provincial advocacy plans not yet implemented due to

			<p>provincial communication center and provincial journalists</p> <p>Indicator Value: percentage Level: provincial</p> <p>Numerator: number of provinces develop and implement ACSM action plan Denominator: number of provinces attended training on ACSM</p>				insufficient NTP follow-up
		6.1.6 Viet Nam Stop TB partnership (VSTP) develops business plan and proposal for fund raising (WHO)	<p>As a result of TA support and outsourcing full time staff working for VSTP (for one year), a business plan and proposal for fund raising will be developed</p> <p>Indicator Value: number Level: national Source: business plan</p>	0	1	0.5 (in process)	Late start of support (May 2013) Deliverable expected Dec 2013
6 · 2	6.2 TB control components (drug supply and management, laboratories, community care, HRD and M&E) form an integral part of national plans, strategies and service	6.2.4 Align national good manufacturing practice (GMP) with the international GMP (WHO)	<p>Description: As a result of TA support, an aligned national GMP will be developed and implemented</p> <p>Indicator Value: number Level: national Source: assessment report and dissemination report</p>	0	1	1	The assessment of the GMP certification scheme is now incorporated into the more comprehensive GMP Strengthening Programme The approved by the Drug Administration of Viet Nam. However, the initial assessment on the GMP protocols will proceed as planned

	delivery						
Monitoring, Evaluation & Surveillance							
	7.1 Strengthened TB surveillance	7.1.2 Technical assistance visit by a surveillance consultant conducted (KNCV)	<p>Description: TB surveillance consultant conducts TA visit to NTP. TA visit report should be provided by surveillance consultant. Suggestions/recommendations made by surveillance consultant should be successfully implemented</p> <p>Indicator Value: number of visits</p> <p>Level: National</p> <p>Source: NTP</p> <p>Means of Verification: Mission reports available for review</p>	0	2	2	
	7.3 Improved capacity of NTPs to perform operations research	7.3.3 Technical assistance visits by a research consultant conducted (KNCV)	<p>Description: Research consultant conducts TA visit to NTP. TA visit report should be provided by research consultant. Suggestions/recommendations made by research consultant should be successfully implemented</p> <p>Indicator Value: number of visits</p> <p>Level: National</p> <p>Source: NTP</p> <p>Means of Verification: Mission reports available for review</p>	2	1	1	

		7.3.4. OR on obstacles to access to care for women and children to MDR-TB (WHO)	Report	0	1	0.5	OR ongoing, report expected in Nov 2013
		7.3.5. OR on obstacles to access health insurance when patients referred from private sectors/commune health center to DTU (WHO)	Report	0	1	0.5	OR ongoing, report expected in Nov 2013
Drug Supply & Management							
	Ensured nationwide systems for a sustainable supply of drugs	8.1.1 National forecast for the next calendar year is available (MSH)		0	1	1	
		8.1.2 Updated SOPs for selection, quantification, procurement, and management of TB medicines available (MSH)		0	28	3	Base on NTP requirement, the SOPs book had just issued in 2012, don't need to update all SOPs right in 2013, only need to update only 3 SOPs on Monitoring and supervising supply activity of central/province/district level.
		8.1.3 [Capacity Building on supply chain management] (MSH)	Description: staff trained on procurement and logistic manuals from central and provincial level Indicator Value: Number Level: Central & Provincial Source: Training Data Means of Verification:	0	120	127 (63/63 provinces)	2 key staffs/1 province

			Training reports Numerator: Provinces with trained staff Denominator: Total number of provinces				
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1. Universal Access

In this technical area, the Project has been focusing on the control of TB for two vulnerable groups that currently have limited access to diagnostic services and treatment of tuberculosis of NTP: people in congregate settings (prisoners, etc. ...) and children.

Key Results

1.1 TB/HIV/MDR TB control in congregate settings

Following coordination and supportive activities with NTP in the second year of the Project, such as the plan to control tuberculosis/HIV/MDR-TB in prisons, in the 3rd year, TB CARE I Project continues supporting NTP to strengthen the services of diagnosis, treatment, care and linkage between prison and civilian service. To this end, a number of different activities have been conducted starting from the support to update/develop national guideline on the management of TB/HIV/MDR-TB in congregate settings, and to develop a transitional care and treatment model of TB/HIV/MDR-TB when inmates are released. Two workshops were organized with the participation of representatives from NTP, VAAC, the Ministry of Public Security (Department of Health and the General Logistics Department (in charge of the prison), the Ministry of Labor, War Invalids and Social Affairs, a number of Tuberculosis & Lung disease Hospitals from provinces, a number of prisons, and social organizations (Women's Union, Farmers' Association, Red Cross, the Youth Union): one held in Hanoi (on April 14-15, 2013) to discuss and get agreed on the contents of the National Guidelines and training materials on the management of TB/HIV/MDR-TB in congregate settings; and one held in Thanh Hoa to discuss the transition model of care and treatment of TB/HIV/MDR-TB for inmates after being released. After the orientation workshops, a writing committee for the National guideline has been established with the participation of from NTP, VAAC, Ministry of Public Security (Department of Health and the General Logistics Department), Ministry of Labor, War Invalids and Social Affairs. Moreover, a workshop to discuss and complete the first draft of the National Guideline on the management of TB/HIV/MDR-TB in congregate settings will be held by the end of September 2013. The document shall be further finalized in the first quarter of the 4th year of the Project implementation and is expected to be approved by the Ministry of Health before printing and distributing to relevant units across the country.

Challenges

The National Guideline and training material on the management of TB/HIV/MDR-TB in congregate settings are not finalized yet due to insufficient human resource from NTP to follow up.

Next steps:

Finalize, print and distribute the guidelines and training materials on the management of TB/HIV/MDR-TB and training materials on management of TB/HIV MDR-TB in special settings.

1.2 TB Management in children

The new strategy of management of tuberculosis in children includes two key elements of management of child contact with sputum smear-positive cases including the Isoniazid preventative therapy (IPT) and management of TB disease in children. Four provinces of Hanoi, Thai Binh, Ho Chi Minh City and Can Tho have been selected to pilot the new strategy.

In the years of 2011 and 2012 (APA1 and APA2), preparatory work for the pilot including the development of guidance document, training materials on the management of childhood TB, forms and a register. The recording and reporting systems and training of trainers (TOT) were completed

with the participation of experts from NTP, Pediatrics Department, VAAC, X-ray Department and external technical assistance.

Trainings on the implementation of TB management in children for doctors from NTP, General Hospitals, Pediatricians at provincial and district levels, and for commune health care workers were organized in 4 pilot provinces (in Aug and Sep 2012 in Hanoi, HCMC, and Can Tho, and in Feb and March 2013 in Thai Binh). Four (4) trainings for 100 NTP staff at provincial and district level, 7 trainings for 140 general practitioners, pediatricians at provincial and district level, and 40 trainings for 1,240 health care workers at commune / ward level. Total number of health care staff in the health system of the four pilot provinces were trained on TB management in children is 1,480 people.

All necessary forms and registers (3 registers and 3 forms) for recording and reporting indicators for the TB management in children strategy and 508,500 tablets (50 mg) of INH were distributed to all levels (provincial, district and commune) in 4 provinces participating in the pilot.

The new strategy of TB management in children has been implemented in three provinces of Hanoi, Ho Chi Minh City and Can Tho since September 2012 (APA2) and in Thai Binh since April 2013 (APA3) with a total of 35 districts and 611 communes participating in the implementation.

Indicator	Age group		Total
	0 -4 years	5 -14 years	
Children having contacts registered	1.351	1.457	2.808
Children have symptoms suggestive of TB sent for examination	21	24	45
No. of children registered for IPT	974	51	1.025
No. of children agreed to be on IPT	669	33	702
No. of children completed IPT	Incomplete data		
No. of children having symptoms of yellow skins/ eyes	No case reported		

Table 3: Screening and management of children in contact with infectious source

The above table shows data on screening and management of contacted children for 3 quarters from quarter 4 of 2012 to quarter 2 of 2013. 2,808 children having close contact with patients who are AFB (+) were screened and registered for the management. Of these children, 1,025 children are eligible for Isoniazid prophylaxis (IPT), and 45 children (0.02%) have signs of TB who were suspected and moved to a higher level for TB diagnosis. Among children eligible for IPT, only 702 children (68.5%) are agreed by their families to participate in the prevention therapy.

Forms	Age group		Total
	0 -4 years	5 - 14 years	
AFB (+)	1	25	26 (12,2%)
AFB(-)	73	31	104 (48,8%)
EPT	20	63	83 (39%)
TB of all forms	94 (44%)	119 (56%)	213

Table 4. Data on case detection of TB in children in 4 pilot province from quarter 4 of 2012- to quarter 2 of 2013

After three quarters of implementation (from quarter 2 of 2013 to quarter 4 of 2012), 213 pediatric patients with TB were detected. The pulmonary tuberculosis cases detected accounts for 61%. This percentage is higher than those notified in 2010, 2011 and 2012: 33.4%, 37.8% and 39.3 % respectively. The change in the percentage of TB forms detected in children can be attributed to the application of new diagnostic approaches.

Monitoring and supervision with technical support and on-site guidance for staff participating in the pilot implementation at the provincial, district and commune level received due attention. Prof. Steve Graham and central NTP staff (TB management in children Group) have been conducting monitoring missions to the provincial, district and commune levels in all four pilot provinces. Operational issues and techniques in the implementation were discussed and recommended such as the current INH tablets are difficult to intake for small children, communication skills of health workers on IPT, among others.

A review meeting to review the progress, share experiences on the management of childhood TB was held in quarter 1 of 2013 (March 19, 2013). Initial results of piloting the new strategy on TB management in children are promising. The issues related to the operations and technical ones (procedures, forms and register for recording and reporting, appropriate type of Isoniazid, counseling skills, communication and education materials, and lessons learned), were exchanged among piloting units.

In addition, to support commune level in implementing the new strategy of managing TB in children, as well as providing relevant information to people in the community, 02 information, communication and education materials have been developed. 554,400 posters and 12,750 leaflets were printed and widely available to provincial and district levels of 25 provinces implementing the new strategy on TB management in children in 2012-2014 period.

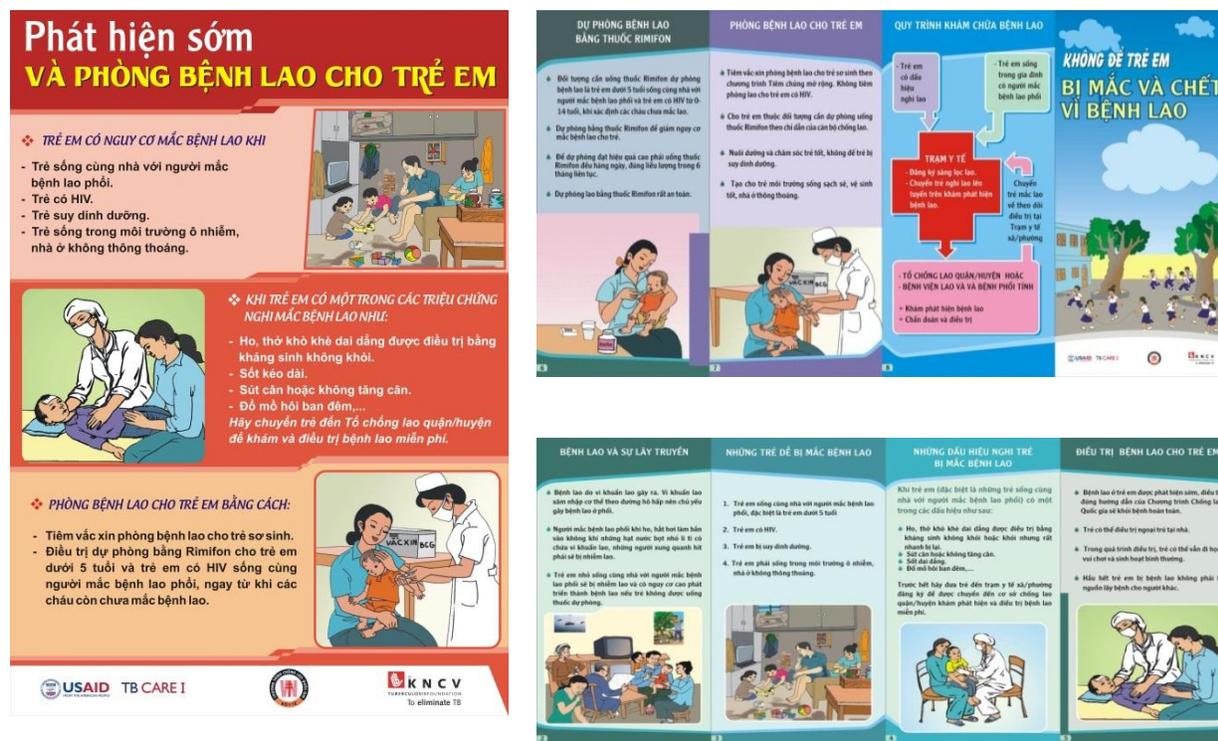


Figure 1: Poster (left) and leaflet (right) on TB management in children



Figure 2. Monitoring mission visit of the management TB in children by of Prof. Steve Graham in Bach mai Commune Health Center, Hai Ba Trung District, Hanoi (left) and in the Pediatrics Department of Thai binh provincial Hospital TB and Lung Disease (right), in August 2013

Recently, with positive initial results of the piloting new strategy in TB management in children of TB CARE I project, NTP has decided to use funds from the Global Fund to expand this strategy to 21 provinces for the period 2013-2014 (3 provinces in 2013 and 18 provinces in 2014).

Next steps

- Continue the implementation of TB management in children in 35 districts and 611 communes in 4 provinces of Hanoi, Thai Binh Ho Chi Minh City and Can Tho;
- Provide technical advice and assistance to NTP in roll-out of the new strategy to 21 provinces for the period 2013-2014.

2. Laboratories

In laboratory strengthening technical area, TB CARE I focuses on two main areas: i) ensuring capacity, availability and quality of lab testing for diagnosis and monitoring treatment of MDR-TB and ii) ensuring optimal use of new diagnostic techniques (LED FM, GeneXpert).

Key Results

2.1 Ensuring capacity, availability and quality of lab testing for diagnosis and monitoring treatment of MDR-TB

To achieve this expected outcome, the TB CARE I project focuses on three main components: i) improving laboratory facility infrastructure to ensure minimum requirements for biosafety; ii) providing adequate equipment and maintenance for diagnostic testing and iii) improving work practices for laboratory staff in lab management and bio-safety. By the end of year 3 of the TB CARE I project, the comprehensive upgrading of the TB laboratory infrastructure at nine provincial MDR TB centers has been successfully completed (Fig. 3).

Guidelines on the SOP for TB lab services have been updated in 2011-2012, which were been printed and distributed widely for using in all TB laboratories nationwide. This is the first time NTP updated all TB lab services documents, including procedures for specimen packaging and referral to smear examination, culture, identification, and DST and molecular techniques.

With technical assistance from the Department of Biological Safety & Quality Management, National Institute of Hygiene and Epidemiology, a 5-day training program consisting theory, practice, and training materials on TB laboratory management and biosafety has been developed.

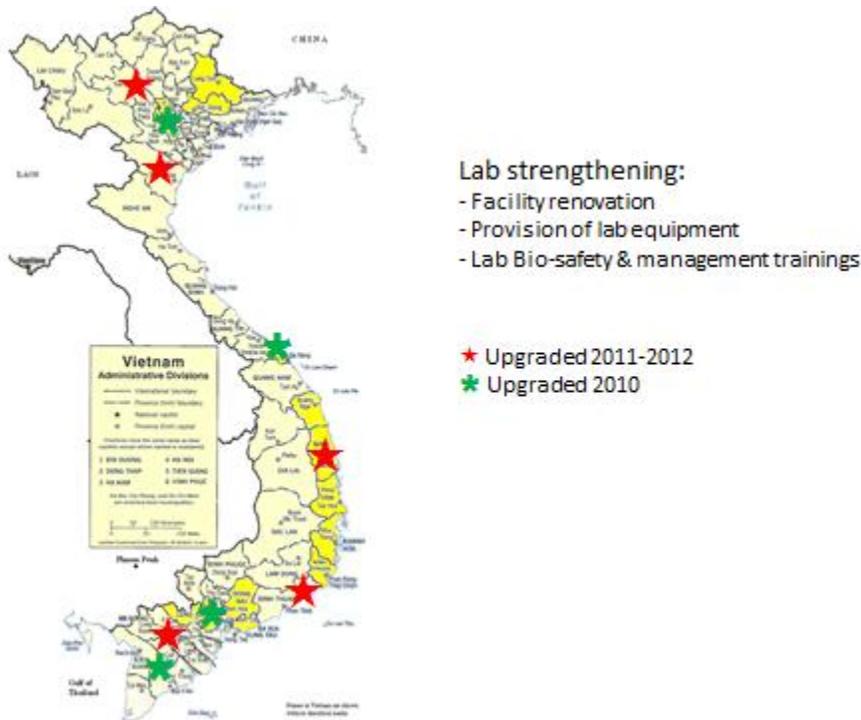


Figure 3: Map of MDR-TB labs upgraded

In the APA1 and APA2, 6 training courses on biosafety and laboratory management were held for lab technicians in 6 provinces where MDR TB treatment center are located. In the 3rd year, the project continued the organization of 3 training courses for the 3 remaining MDR TB centers. The total number of staff trained was 156 people. The target of supporting 9 MDR TB treatment centers to improve safe working practices has been achieved.



Figure 4: Training on bio-safety practice and lab management in TB and Lung Disease Hospitals of Binh Thuan and Tien Giang in July 2013

To increase access to TB and drug-resistant TB diagnosis, a national policy and guidelines as well as the methodology for a specimen referral system has been developed.

- In partnership with NTP and NRL staff, 7 pilot sites are fully functional for the TB specimen referral system (availability of SOPs and guidelines, packing materials, on-site training for staff, a private courier system for samples transportation). Another 40 sites have trained staff, packing materials but they use their own way of specimen transportation.
- In order to meet with the expansion of PMDT sites and GeneXpert implementation, in total 222 lab staff from 35 provinces and their districts have been trained on PMDT implementation and specimen referral system. The sites are ready to implement this system now.
- Together with the NTP, TB CARE I\MSH also provided trainings and packing materials for 99 sites (at provincial and district levels). Now, using the Global Fund (GF) supports, the NTP is expanding to 35 provinces and their districts.
- TB CARE I\MSH is assisting the NTP on the formal agreement with the Post Office for specimen transportation from all NTP sites, because the Post Office was unable to accept infectious materials for transportation.
- The final contract between the NTP and the Post Office is pending signature. Once the contract is signed, all 63 provinces and their districts will be able use the Post Office for specimen transportation. This development will help the NTP reduce the cost of transportation compared to a private courier service.

2.2 Ensuring optimal use of new diagnostic techniques (LED FM, GeneXpert).

The TB CARE I project supported the NTP in the implementation of two new diagnostic techniques, i.e. fluorescence microscopy using LED light technique and Xpert MTB\RIF.

LED FM was first implemented in 10 pilot sites at district level in HCMC to learn from experiences with the aim to gradually replace the normal fluorescence microscopy for this level in the future. In TB CARE I year 2, a total of 14 LED FM units and consumables have been provided to 10 districts in HCMC and 2 MDR-Tb treatment centers and training courses on LED FM have been organized for 29 staff from all facilities in year 3. Once trained facilities meet the EQA requirements, those will be allowed to implement routine LED FM to replace for the normal ZN. The LED FM routine implementation is scheduled from the fourth quarter of 2013 in 10 districts.

In APA1 and APA2, TB CARE I supported NTP to introduce Xpert MTB\RIF diagnostic test by developing GeneXpert national strategic plan (included in the NTP NSP 2011-2015), Xpert MTB\RIF Implementation guidelines and SOPs, diagnostic algorithms, reporting and recording forms and templates, cartridge supply- and management systems and conducting trainings. Technical support, on/site-supervision and machine calibration was conducted in year 3. Further, a technical assistance team for troubleshooting, maintenance and calibration was established within the NTP. An advanced training on operation and troubleshooting for GeneXpert machines in Vietnam was conducted by Cepheid trainers for the selected lab technicians in September 2013

By the end of 2012, all planned 17 GeneXpert systems have been successfully implemented at 17 laboratories in 8 MDR-TB treatment centers (8 province, 3 districts), 4 provinces with high HIV prevalence and 2 pediatric hospitals.

Between June 2012 to July 2013, 5,857 Xpert MTB\RIF tests have been carried out. In total, 1,894 tests (33.6%) found no Mycobacterium tuberculosis, 3,737 (66.4%) tested positive for TB. Of the 3,737 positive TB tests, 910 (24.4%) results show resistance to rifampicin.

Of the 5,857 persons who were tested with Xpert MTB\RIF, 4,432 (75.7%) were presumptive MDR-TB cases, 1,108 (18.9%) were HIV (+) presumptive TB cases and 268 (4,6%) of children with presumptive TB. Thus, at this stage, the access of the two groups of HIV (+) and children to Xpert MTB\RIF testing remains low.

Group	Number of test	Xpert MTB\RIF Test Results				Error
		MTB(-)	MTB(+)		Error	
			Total	MTB(+)/R(-)		
MDR suspects	4432 (75,7%)	639 (16,6%)	3205 (83,4%)	2384 (74.4%)	821 (25,6%)	155 (3,9%)
HIV (+)	1108 (18,9%)	891 (83,7%)	173 (16,3%)	155 (89.6%)	18 (10,4%)	44 (4,0%)
Children	268 (4,6%)	236 (91,8%)	21 (8,2%)	19 (90.5%)	2 (9,5%)	11 (4,1%)
Others	49	55	26	26	0	0
Total	5857	1894 (33,6%)	3737 (66,4%)	2827	910 (24,4%)	226 (3,9%)

Table 5. Results of Xpert MTB\RIF test, from 6/2012 to 7/2013

In the 3rd year, a meeting was held to review the initial results of the pilot implementation, share experiences between project sites, exchange lessons learned, difficulties and challenges in the implementation of GeneXpert as well as evaluate the linkage between diagnosis and treatment in the PMDT.

The implementation of GeneXpert has achieved positive results in the early detection of TB and MDR-TB. According to NTP, turn-around time decreased from 7 days or months to one day or less than a week. However, a number of implementation issues were detected and corrected such as: improper application of diagnostic algorithms under NTP's guidance, some additional administrative regulations from some GeneXpert sites (directors approved tests, etc.) as well as additional technical provisions (smear examination, X-rays, etc.) have been put into the initial algorithms on Xpert testing to limit the number of patients into three targeted groups of Xpert MTB/RIF.

It was noted that on average each GeneXpert system performs about 35 tests/month/machine compared with the maximum capacity for the four module machine of from 264 - 352 tests/month. The improvement of GeneXpert test uptake is an urgent problem for the hospitals and satellite sites (PMDT) where GeneXpert system was provided in order to increase early and quality detection of TB and MDR-TB for 3 prioritized groups of the project.

To further increase access to Xpert MTB/RIF for the HIV (+) group and consequently increase the uptake of Xpert MTB/RIF, additional trainings were conducted for HIV outpatient clinics (OPC) in Ho Chi Minh City, Can Tho and Hanoi. Overall, by the end of 3 quarter of 2013, a total of 922 health care staff nationwide have been trained on implementation of Xpert MTB/RIF.



Figure 5: GeneXpert monitoring at District No. 5 in HCM city

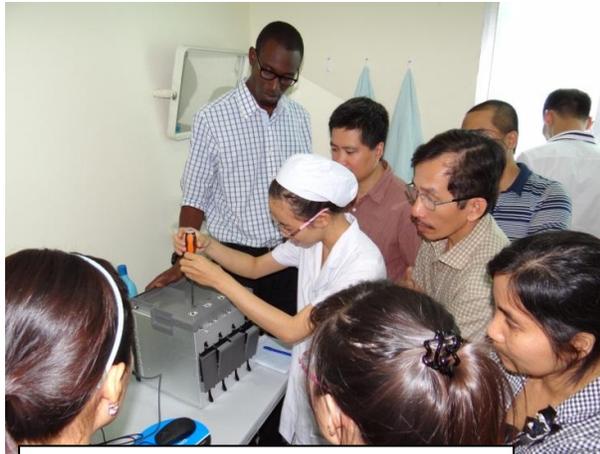


Figure 6. Advanced training on GeneXpert System for NTP staff, 18-20 September 2013

3. Infection Control

TB infection control (TBIC) is one of important technical area that is focused by TB CARE I project in support of the expansion of PMDT at provincial and district levels

Key Results

Following the supports of implementing TBIC measures at departments at the provincial level for the treatment of MDR-TB treatment centers in 5 MDR TB treatment center (Central 74 Hospital, Tuberculosis and Lung Disease Hospitals of Binh Dinh, Binh Thuan, Tien Giang and Thanh Hoa), and at 50 DTUs in 4 MDR TB treatment centres of Hanoi, Da Nang, Ho Chi Minh City and Can Tho in the first and second years of TB CARE I. In the 3rd year, the Project has been supporting a number of DTUs in Ho Chi Minh City, sputum collection areas in Hanoi Lung Hospital, Tay Ninh TB and Lung Disease Hospital, raising the number of sites implementing TBIC measures supported by TB CARE I to 60, which meets the set-out target for APA3.

In APA1 and APA2, TBIC indicators have been put in discussions and NTP selected 4 indicators for collecting and monitoring of TBIC activities. These four indicators are:

- Annual reporting on TB disease (all forms) among HCWs
- The availability of an TBIC plan of each unit
- The availability of a focal point person for TBIC activities in each unit
- Personal protection Equipment

These indicators have been collected from 66 units of TB control at central and provincial levels in 2012 and will be collected yearly

Year	Total number of healthcare worker(*)	Total no. of staff having TB of all forms	/100.000
2009	6134	32	522
2010	6514	31	476
2011	6989	19	272

(*)Total number of staff paid in a hospital/center for social disease prevention and control/medical preventive center (permanent staffing, short-term and long-term contract staff, etc.)

Table 6. Preliminary data on annual reporting on TB disease (all forms) among HCWs in 66 TB units at central and provincial levels in 2009 – 2011 period





Figure 7: Sputum collection area renovated in Hanoi Lung Hospital (upper photos) and Da nang TB and Lung Disease Hospital (lower photos)

In APA3, 2 IEC materials on TBIC for health care staff and community have been developed. 28,350 posters and 1,301,200 leaflets have been printed and distributed widely to TB control units at provincial, district and communal level across the nation.



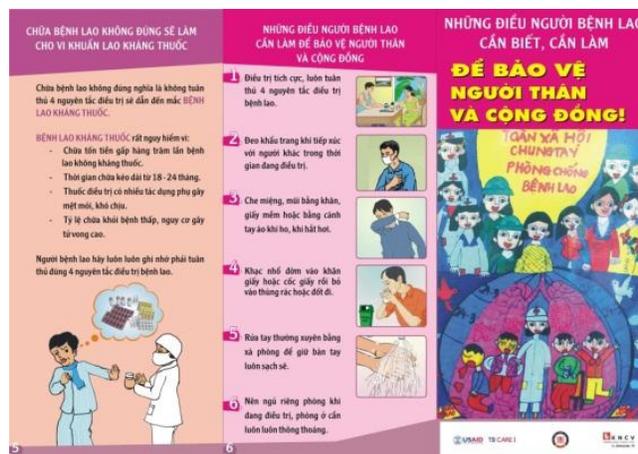


Figure 8: IEC materials on TBIC for health care staff and community

Challenges:

The collection of these four indicators is not yet conducted for district level since there is no NTP focal staff for TBIC to follow up. The TBIC focal staff was retired and the new staff hasn't been appointed yet.

Next steps:

- Continue supporting the collection of indicators to monitor the situation of TBIC in 67 TB central and provincial TB units and over 700 DTUs.
- Support the increased knowledge and skills on TB infection control measures for NTP staff and HIV programs staff (OPC) at district level in 5 PMDT provinces (Central 74 Hospital, Thanh Hoa, Binh Dinh, Binh Thuan and Tien Giang) and 4 provinces with high HIV prevalence (Dien Bien, Hai Phong, Quang Ninh and An Giang);

4. Programmatic Management of Drug Resistant TB (PMDT)

Key Results

4.1 Technical advice and assistance

In the 3rd year, the project continues to provide in-depth technical advice for the implementation and expansion of PMDT activities through in-country and external technical assistance. Issues of management, coordination and technical issues have been discussed. Recommendations were also provided for NTP at central and local provinces on such related issues as the commitment of leaders at all levels, program and laboratory management system (the status and capacity), policies of detection and management of cases of drug-resistant TB (regimen, support, monitoring of adverse drug reactions), drug management, human resource management, data management (recording-reporting, management via e-TB manager software); TBIC and special targeted groups.



Figure 9: Monitoring of PMDT in Thanh Hoa (upper photos), Visiting Thanh Lam prison (upper, right), monitoring of PMDT in Quang Nam: checking second line drugs and guiding the use of e-TB manager (center, right), training on PMDT (lower, left) and monitoring of PMDT in Da Nang (lower, right) during TA missions of Dr. BS. Agnes Gebhard in 2013

The plan for introduction of new TB drug (Bedaquiline) and the new TB treatment regimen (Remox 4 months) are also discussed and prepared.

4.2. eTB manager

The e-TB Manager is a web-based tool for managing all PMDT-related information needed by the National TB Control Program. It integrates data across all aspects of TB control, including information on suspects, patients, medicines, laboratory testing, diagnosis, treatment, and outcome. Below are some statistics on the e-TB Manager:

- 88 users
- 1 admin of NTP, 1 site admin of Southern area
- 1 IT staff
- 12/15 sites, 31 DTUs using e-TBM. 20 other DTUs created and will be using e-TB in the close future
- Stock on hand updated for 12 sites on routine basis, NTP progressively using e-TBM for SLDs management

The e-TB manager has covered 12 treatment sites and around 40 District Units. During APA3, we've focused on improving the data entry in e-TB manager with the first step being to enter the data for all on-going cases from 2012 and 2013. Gradually, there has been an increase in e-TB manager use. After completing this step the following priority was to complete the suspect's data into the platform.

During APA3 we've achieved around 90% of all on-going cases for 2012 and 2013 within the 12 treatment sites plus district units using e-TB manager. While the numbers for on-going cases has been completed, we still have a few gaps of information linked to the follow-up information, such as monthly exams, consultation, treatment changes, and adverse reaction to medicines and contacts evaluation. For the remaining units not yet using e-TB manager, the system has been recently incorporated into the PMDT expansion with the goal of training them in e-TB Manager before the end of 2013. One of the actions taken during APA3 was to conduct monitoring visits to the sites. To date we have done around 20 visits out of 20 planned visits and the outputs were very positive, not only for addressing the problems above, but also to get valuable inputs from the staff at the field level.

The field level staffs are particularly important because they are the ones that are actually using the e-TB manager and incorporating it into their daily routines. Outputs from our last supervision visits demonstrated a high usage and a very good understanding and usage of e-TB Manager system. We've succeed in the PNT Hospital in Ho Chi Minh City and the MDR-TB department has been very positive about the availability of e-TB manager for managing all cases from Ho Chi Minh province. Another great outcome was the experience in Can Tho Hospital. This hospital is managing all of the cases and medicinal information of the nine districts below it through e-TB manager. Both experiences have been used as reference for all other sites using e-TB manager. We've succeed in two complex treatment units as mentioned above, meaning that we can cover the entire country with the replication of the model.

One of the major concerns to be addressed for the successful implementation of the e-TB manager is the medicine management. The regular update of the dispensing and the receiving of transfers through e-TBM by the treatment sites/district units isn't going according to plan and is not yet fully operational. During the STTA conducted in September, we have addressed the issues for a better flow of medicine data through the e-TB manager. Hopefully all issues will be solved until the end of 2014, following NTP's recommendations.

Expectations for APA 4 are very high since we've been working hard on the successful implementation of the e-TB manager. Not only will there be improvements to the PMDT for case management, but also to the medicine management in Vietnam for SLDs, turning the e-TB manager into a reliable source for better decision-making.

Next steps:

- Continue technical advice and support of international expert from KNCV Head Office in the Netherlands.
- Strengthen the coordination, management, and communication of the Project of PMDT between different levels: PMDT at central level to the MDR TB treatment center (provincial level) and the satellite provinces (PMDT satellite point).
- Updated the guideline on the implementation of PMDT and developing training modules for PMDT implementation
- Introduce new TB drugs (Bedaquiline): preparation activities
- Strengthen the management of MDR TB non-GLC: Pilot
- Implement and expand e-TB manager

5. TB/HIV**Key Results**

Following the Project support for a research on Tuberculosis Screening and Referral services for People Living With HIV/AIDS at Out-patient Clinics in Vietnam, in the 3rd year of the Project implementation, on the basis of suggestion of Vietnam Administration of HIV/AIDS Control on the support to develop the Guidance document on the implementation of collaborative activities between the national targeted program of HIV/AIDS and Tuberculosis Control Project, and Technical Guidance on the implementation of collaborative TB/HIV activities. A Drafting Committee has been established comprising representatives from the Vietnam Administration of HIV/AIDS Control, Care and Treatment Administration - Department of Health, National TB Program and Pham Ngoc Thach Hospital. The Committee developed the first draft of the documents by the end of September 2013.

Next steps:

The documents will be further finalized in the first quarter of APA4 and expectedly, the documents will be approved by Ministry of Health, printed and distributed to relevant units across the country.

6. Health System Strengthening (HSS)

WHO is the main partner in this technical area with activities focusing on advocacy for sustained and increased TB funding and promotion of Good Manufacturing Practices (GMP) among the local pharmaceutical industry.

Key Results

In continuation of APA 2, capacity building for national and provincial TB staff in high TB burden provinces was maintained to develop and implement advocacy plans for sustained and increased TB funding with full support of key national NTP staff. Two/four high burden TB provinces developed action plans to advocate for more TB funding.

A looming crisis – stock-out of first line TB drugs – became apparent in January 2013, when Ministry of Health informed the NTP on a decreasing allocation for TB work including TB drugs resulting in potential stock-outs early in 2014. While maintaining high-level advocacy with the Government of

Vietnam, WHO facilitated access to a grant by the Global Drug Facility (GDF) covering one year of need and a 50% buffer with procurement starting in early 2014.

TB CARE I/WHO is using this incident as entry point to further sensitize the Social Affairs Committee of the National Assembly, MoH, Ministry of Finance on the urgent need for sustainable TB funding both from central sources and provincial allocations.

The Quality Circle program was launched with the Vietnam National Pharmaceutical Companies Association (VNPCA) and Drug Administration of Viet Nam (DAV) in June 2013 with the participation of 80 local pharmaceutical companies. This has resulted into a renewed interest and commitment by the industry to implement quality assurance programs in the production and supply of essential medicines. The quality circle sessions and on-line training on quality assurance using WHO modules are now being set up.

The Drug Administration of Viet Nam has the GMP Strengthening Program roadmap. The GMP certification assessments are now included in this more comprehensive GMP Program. One of the key results that was targeted was the initial assessment of the GMP certification protocol and inspection of selected manufacturing plants. However, this specific assessment has been delayed due the difficulties in arranging the availability of experts during the period that could be acceptable with DAV.

The key challenge was to enlist experts who could stay in Viet Nam for a period of 15-20 days to undertake the assessments. The initial experts identified were not available on the period identified by DAV. The assistance of WHO Headquarters and Regional Office has been sought to help in the recruitment of experts.

Next steps:

- Prepare for introducing new TB treatment regimens (ReMox 4 months)
- Continued advocacy and resource mobilization to secure the funds for regular TB drugs (first line drugs)
- Policy advice on inclusion of TB package under the health insurance and use of TB drugs, new anti-TB drugs.
- Support Drug Administration, Ministry of Health to strengthen GMP inspections, other issues related to the quality of the drug (GDP, GSP, GPP)

7. Monitoring & Evaluation, Surveillance and OR

Key Results

7.1 TB surveillance system (VITIMES)

In APA3, there are 02 missions of experts on surveillance systems (TB surveillance) in March and September 2013. In the first mission of support, along with an expert from WHO, a comprehensive assessment of TB surveillance system of NTP was made. Among the 13 tuberculosis surveillance standards, 3 standards have been achieved, 2 standards achieved partial criteria, 6 standards are not achieved, and 2 standards need to be further evaluated. Also during this mission, together with the expert from the WHO, Ministry of Health and NTP, a roadmap to 2015 for the various components to improve VITIMES systems and data exchange between VITIMES and e-TB manager has been formed.

7.2. Operational research

TB CARE I project supports NTP in operational research capacity building through the development of operational research protocol and conducting ORs to evaluate the Project's intervention.

Currently six ORs have been underway with the support of TB CARE I. Completed ORs include: research on Tuberculosis Screening and Referral services for People Living With HIV/AIDS at Out-patient Clinics in Vietnam; multidrug-resistant tuberculosis prescription behavior (GLC and non-GLC), and the availability and pricing of tuberculosis drug (first line and second line drugs). On-going ORs include: operational research in support of introducing Xpert MTB/RIF in Vietnam, barriers for women and children to access to MDR-TB care, and barriers to health insurance for occupational diseases (for the poor and the vulnerable). Some operational researches implemented by NTP in collaboration with TB Care partners contributes to build evidence for public health action and policy advice. These include: a gender analysis of TB notification data will clarify potential access issues for males or females, contributing to “knowing your epidemic” and knowledge about key affected populations. The analysis on structural barriers to accessing benefits through the health insurance scheme and the rate of coverage among TB patients will inform on how the insurance scheme must be adapted so that (poor) TB patients can benefit.

Topic	Status
Tuberculosis Screening and Referral services for People Living With HIV/AIDS at Out-patient Clinics in Vietnam	Complete
Multidrug-resistant tuberculosis prescription behavior (GLC and non-GLC)	Complete
Availability and pricing of first and second line drugs	Complete
Introducing Xpert MTB/RIF in Vietnam	Ongoing
A gender analysis of TB notification data	Ongoing
Barriers to health insurance for TB (for the poor and the vulnerable).	Ongoing

Next steps:

- Provide technical assistance and advice from international experts (KNCV Head Office in the Netherlands) on VITIMES deployment and expansion and connectivity with other software such as e-TB manager, TB-elog, etc.
- Provide technical assistance and advice from international experts (KNCV Head Office in the Netherlands) to conduct epidemiological studies and ORs of TB CARE I project and of the NTP
- Deploy some operational research studies to support the implementation of Project activities

8. Drug supply and management

Key Results

1. Support was provided to the NTP to develop an assessment proposal and supply chain management system tool for TB related pharmaceuticals and supplies.

- The National TB control program (NTP) of Vietnam would like to improve its PSM operation to achieve compliance with the World Health Organization (WHO) good procurement practice (GPP), good storage practice (GSP), and good distribution practice (GDP) guidelines. Therefore, MSH - TB CARE I has provided assistance to the Vietnam NTP to develop a procurement supply management (PSM) assessment tool to measure and track its compliance. This tool can be used regularly (for example on a yearly basis) to assess the current status of TB pharmaceutical supply chain management activity in Vietnam.
- TB CARE I experts also helped the Vietnam NTP write a concept note to the Global Fund to advocate for financial support for conducting these regular assessments.

2. Support was provided to the NTP to design and conduct 3 TOTs on TB procurement and supply SOPs:

- Participants from all 63 provinces in Vietnam and two staffs/ province attended. They were key staff in all Vietnam provinces. After participating in the TOTs, they could review and practice better than before and could conduct the training and support TAs on PSCM themselves for related staffs in their provinces (especially for district and community level).

This activity helps to ensure the availability of policies, procedures and operational documents at all levels of NTP. These are required to define the roles, responsibilities and time lines for different supply chain activities & linkages between different levels. These will also help to formalize the supply chain operation and bring efficiency in the system

3. Support was given to the NTP to provide TA at the provincial, district, and site level to improve the performance of the supply chain management activities in 5/63 provinces (Ha Noi, Dien Bien, Da Nang, Ho Chi Minh, Quang Ninh).

4. Provided technical assistance to develop national standard guideline (procedure and detail checklist) for monitoring and TA on DSCM from central level to provincial level and from provincial level to the district level.

Next steps:

- Develop action plan for drug supply chain management
- Support NTP to conduct TB pharmaceutical supply chain systems and performance assessment by using NTP approved assessment tools
- TA to support NTP in review and update of currently available TB drug supply chain management forms
- Training on the use of updated TB drug supply chain management forms in 15 priority provinces