

Nepal TB REACH Project

“Intensified case finding through contact tracing and initial default tracing to reach the targets of Nepal National TB Programme, National Strategic Plan 2010-2015” in nine districts



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ABBREVIATIONS

ARI	Annual Risk of Infection
BCC/IEC	Behaviour Change Communication/ Information, Education, and Communication
BNMT	Britain Nepal Medical Trust
CDR	Central Development Region
CHV	Community Health Volunteer
DHO	District Health Officer
DPHO	District Public Health Officer
DR	Drug Resistant
DOTS	Directly Observed Treatment, Short-course, the basic package that underpins the Stop TB Strategy
DTLO	District Tuberculosis Leprosy Officer
EDR	Eastern Development Region
FCHV	Female Community Health Volunteer
MDG	Millennium Development Goal
MDR	Multi Drug Resistant
NNS	Number needed to screen
NSP	National Strategic Plan
NTC	Nepal Tuberculosis Center
NTP	National Tuberculosis Programme
SS + ve	Sputum Smear Positive
TB	Tuberculosis

EXECUTIVE SUMMARY

Tuberculosis (TB) is a major challenge in terms of public health, especially for developing countries like Nepal. Globally, the rate of new TB cases per year has been declining in the last decade, but the incidence rate in Nepal has remained constant for more than two decades now. Although, short course regimens of first line drugs can cure around 90% of the cases and have been available for a long time in Nepal, a large percentage (27%) of TB cases are still going undiagnosed illustrating a major gap in terms of case finding. Without a more defined approach to detect these missing cases, TB control in the country will not be easy.

Britain Nepal Medical Trust (BNMT) has been implementing the TB REACH Project under World Health Organization (WHO), Stop TB Partnership Wave 2 funding with the prime objective of detecting new smear positive TB cases in various districts of Nepal with high case load and low case finding. The project was implemented under Year 1 funding from 15 November, 2011 to 30 December, 2012 in nine districts of Nepal. As a continuation to the successful Year 1 project, it was continued for Year 2 from 1 January, 2013 to 30 December, 2013 in fifteen districts. Target population for the project has been the symptomatic contacts of index TB cases, people living in hard to reach areas and the initial defaulters of the National Tuberculosis Programme (NTP). This report presents evaluation of BNMT TB REACH Year 1 project.

Approach

The approach involved active case finding thorough contact tracing by the systematic mobilization of Female Community Health Volunteers (FCHVs) and community volunteers to detect additional new smear positive TB cases, thereby enhancing and supporting the National Strategic Plan (NSP) to reach its targets.

Methods

The method of case detection included microscopic examination of the sputum smear from symptomatic contacts of index cases identified through contact tracing and sputum collection from door to door visit for active case finding, mobile chest/microscopy camps and tracing of defaulters. The analyzed data represents information of nine Terai project implementation districts from Eastern and Central Development Regions.

Findings and Conclusion

BNMT was able to detect 1,486 new sputum smear positive (SS+) cases and 39 initial defaulters through this project. The case finding rates in the project districts improved from the year 2010/11 to 2011/12,

increasing from 62.4% to 63.5% and thus reversing the downward trend in the case finding rate seen in the previous year. The project has played an integral part in reducing the gap in case finding through the contact tracing approach. This in turn has helped reduce the delay in diagnosis and thus reducing disease severity and further transmission to extended contacts. Overall, this has largely contributed to attainment of the targets set by the National Strategic Plan and the Millennium Development Goals (MDGs).

INTRODUCTION

Tuberculosis (TB) affects millions of people each year and ranks as the second leading cause of death from an infectious disease worldwide, thereby remaining a major global health problem (WHO, Global Tuberculosis Report 2013). The WHO most recent estimate suggests that there were 8.6 million new TB cases in 2012 with 1.3 million deaths attributed to this disease. This mortality is unacceptable as most cases are preventable with access to health care for diagnosis and provision of correct treatment. Estimates suggest that the number of ‘missing’ cases, defined as those who have sputum positive TB but go undiagnosed is about 3 million, most of whom are likely to reside in a developing country such as Nepal.

Short course regimens of first line drugs can cure around 90% of the cases and have been available for decades. However, TB control requires early detection and management of cases that helps to reduce the severity of disease and transmission rate of the infection.

Within Nepal, TB still remains to be the most widespread infection and poses a serious threat to the developmental health of the local population. With an incidence rate of 163 per 100,000 and 5,500 deaths every year, Nepal still bears a large burden of this disease. The incidence rate of TB has been declining in the South Asian region, but in Nepal it has remained constant for more than two decades now, which is not in line to meet the MDG targets (Annual report, NTP, 2012). The mortality rate due to TB has declined more than 50% in the last 20 years and the introduction of Directly Observed Treatment, Short – course (DOTS) has played a major role. About 30% of cases are still missing even though the post- DOTs era has seen a tremendous increase in case detection (Annual Report, NTP 2012). The Case finding rate has been around 70% in the last 7 years and this is an ominous sign for the progress towards TB elimination by 2050 (Stop TB Partnership Target). In fact, between the years 2010 and 2011, the case finding rate had reduced from 76% to 73%. Effective case finding poses a major challenge to the control of TB in Nepal. Without an effective approach to detect these missing cases we will not be able to move towards TB elimination.

TB cases are missing mainly due to patients’ not seeking help at proper healthcare facilities for various reasons. TB REACH has taken a major step to detect these missing cases through

innovative and effective strategies. The TB REACH project funded by the STOP TB Partnership has formed a platform for various institutions to increase their capacity and ability to fight against this disease. In order to reach the targets set by National Strategic Plan, Nepal, MDGs and The Stop TB Partnership, it is essential to find as many missed cases as possible so as to ensure timely and successful treatment.

In concordance with these targets, the National Strategic Plan, Nepal (2010-15) utilizes the ideas of the Stop TB Partnership to increase case finding in Nepal, to reduce the mortality, morbidity and transmission until it is no longer a public health problem.

BNMT has played a significant role in establishing the NTP and has been actively supporting the Nepal Tuberculosis Center (NTC) in achieving the NTP goal and objectives since its inception. BNMT always played a crucial role in assisting NTP with development of the DOTS strategy, guidelines, training material and resources.

BNMT has been implementing the TB REACH Project under World Health Organisation (WHO), Stop TB Partnership Wave 2 funding with the prime objective of detecting new smear positive TB cases in districts with high case load and low case finding in the Eastern and Central regions of Nepal. The BNMT TB REACH Project for Year 1 was implemented from 15 November, 2011 to 30 December, 2012 in nine Terai districts of Nepal, namely Dhanusha, Mahottari, Bara, Parsa, Sarlahi, Siraha, Saptari, Sunsari and Udaypur. The target population comprised of symptomatic contacts of index TB cases, people living in hard to reach areas and the initial defaulters of the NTP. The approach systematically involved Female Community Health Volunteers (FCHVs) and Community Health Volunteers (CHVs) to detect additional new smear positive TB cases thereby enhancing and supporting the NSP to reach its targets. The methods of active case detection primarily included active contact tracing through door to door visits of the identified index cases, their contacts and defaulters. The contacts of TB patients are at a high risk of infection. Systematic and active tracing of these close contacts has been strongly recommended by the WHO in high burden settings. This contributes to early identification of active TB which consequentially leads to a decrease in the severity of disease and transmission rate. Contact investigation has been commonly carried out in high-income countries with low prevalence but it should be a mandatory procedure in low resource settings with high burden of disease as per the recommendations of WHO.

The possible reason for the constant TB incidence rate of this country could be the high number of missing cases which could have caused further transmission in the community. Although the case detection in Nepal is around 70%, which is quite higher than the regional number of 65%, this should not be a cause for reducing our efforts but instead invigorating it. Various studies carried out have pointed out the effectiveness and practicality of this approach (AE Shapiro et al 2012 South Africa, Cavalcante et al 2010 Brazil). Studies have also pointed out some decrease in the prevalence over a few years owing to door to door active case finding approach (Corbett et al 2010 Zimbabwe, Zamstar survey 2013, Zambia and South Africa).

With the help of TB REACH and the consolidating efforts of BNMT in the nine districts, active case finding was made possible with an aim of increasing the case finding rates and reaching those who live in poverty-stricken areas and hard to reach areas with very limited or non-existent access to TB microscopy facilities. Thus, in the long term helping the NSP in achieving its target of increasing the case finding rate to 82% and maintaining a treatment success rate of 90% with the ultimate goal to eliminate TB from Nepal by the year 2050.

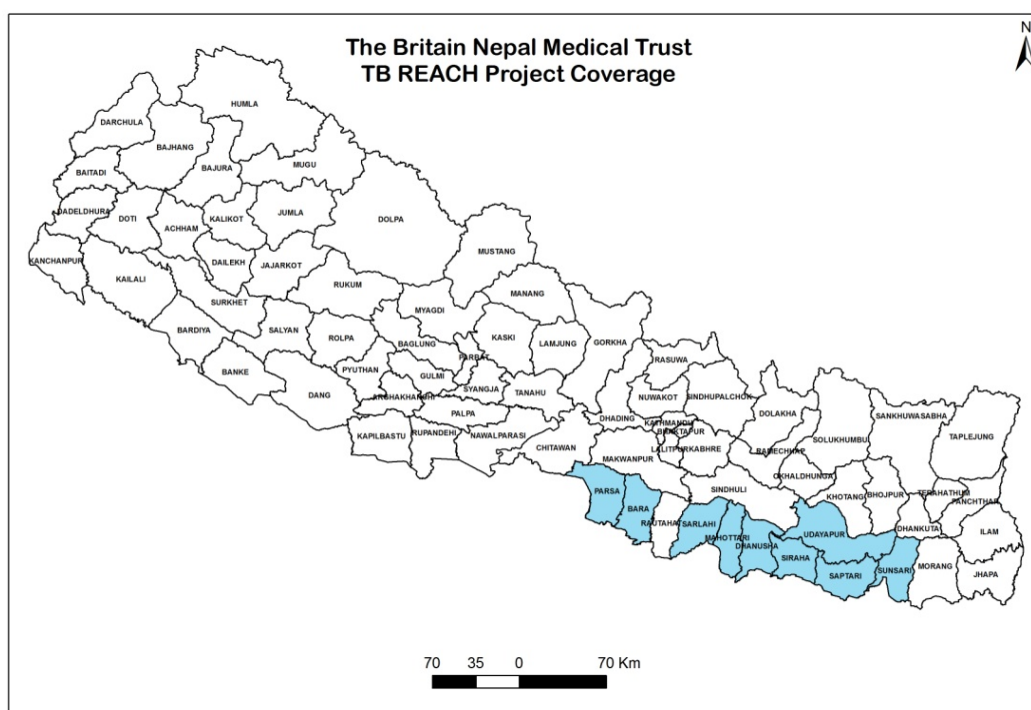
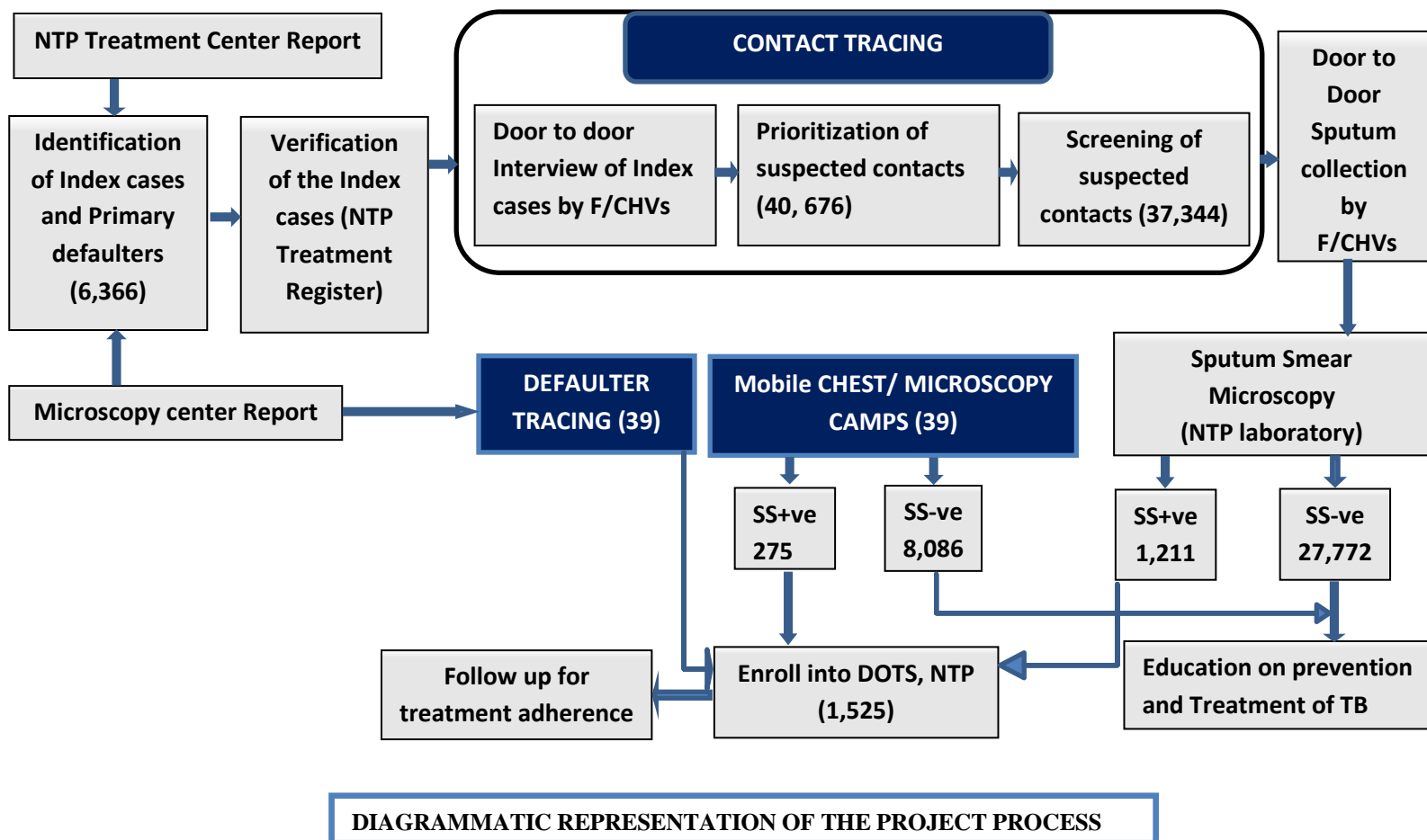


FIGURE 1: MAP OF NEPAL HIGHLIGHTING NINE BNMT TB REACH WORKING DISTRICTS

OBJECTIVES

The primary objective of the project was to increase new smear positive TB cases in low case finding districts and among vulnerable/populations at risk through systematically involving the Female Community Health Volunteers (FCHVs) and Community Health Volunteers (CHVs) in detecting additional TB cases and initial defaulters to reach the Nepal NTP National Strategic Plan 2010-2015 targets of 82% TB case detection rate.

INTERVENTIONS AND ACTIVITIES



Interventions

- Contact tracing
- Initial Defaulter tracing
- Mobile Chest / microscopy camps

Activities

- **District level inception workshop for identification and verification of SS+ve TB cases and initial defaulters:** Two days district level inception workshop with District Health Officer/ Public Health Officer (DHO/PHO), District Tuberculosis and Leprosy officer (DTLO), treatment center and microscopy center were conducted in each proposed district. In the workshops, a list of index cases were obtained from laboratory registers as well as the TB register in order to help in identifying number of initial defaulters and index cases of the nine districts.
- **Workshop with FCHVs and volunteers to trace the infectious TB cases and operational mapping for TB suspects (to identify the clusters with TB suspects):** Two days TB orientation was given to 510 FCHVs and volunteers. They were taught to identify and verify the contacts and defaulters for the project.
- **Interview and prioritization of family members and social networks of index TB cases for TB screening:** The index cases were located and interviewed. In order to make the activity efficient, contacts of index cases were prioritized for TB screening. During prioritization of contacts household contacts, contacts with immune suppression, and contacts of congregate setting were focused. Based on these types of contacts, at least five contacts for each index case were prioritized for screening.
- **Door to Door sputum collection:** Door to door sputum collection was performed by FCHVs and Volunteers for all identified contacts. Sputum sample was collected according to the NTP

guideline. The collected samples were examined in the nearest microscopy centers and the results were shared with the contacts and in case of positive result, they were enrolled in the nearest DOTS center for treatment management.

- **Mobile chest/microscopy camp:** Mobile camps were conducted in each district to reach the disadvantaged and most at risk groups of the population who do not have easy access to microscopy centers. The TB cases diagnosed through the microscopy camps were enrolled in the nearest DOTS center to complete the treatment course. These camps provided sputum sample examination for the TB suspects referred by the FCHVs and volunteers from the rural areas of the project districts.
- **Refresher Training of Microscopy Center Staff members:** Five days refresher training to sixty laboratory staff of microscopy centers was provided according to the NTP guidelines to build their capacity and maintain quality of TB microscopy. These trained staff maintained record of newly identified TB REACH cases in the laboratory register by marking in the “Remarks Column.”
- **Orientation to the patients:** Awareness and information on TB was provided to 2,049 TB patients at various DOTS center. The information regarding the importance of DOTS and their role in TB control was provided.
- **Orientation on TB REACH project and coordination with treatment centers:** One day orientation was provided to the health care providers of the treatment/DOTS centers. This intervention was intended to enable the referral and management of newly identified TB cases to the nearest treatment center for treatment according to provisions set by the NTP.
- **Development of TB awareness messages:** Appropriate awareness messages and Behaviour Change Communication/ Information, Education, and Communication (BCC/IEC) materials were developed and distributed at the community level to raise awareness of TB and to create an enabling environment with concerned stakeholders for the detection and contact tracing of new SS+ve cases.

- **Networking:** Networking meeting and technical support sessions were held at regular intervals with the National Tuberculosis Centre (NTC), Regional Health Directorate, and District and Local Health bodies to facilitate the process and ensure the sustainability of the intervention.
- **Monitoring and evaluation of the project activities:** Regular monitoring and supervision of the project activities were done through field visits, meetings, workshops and seminars at various levels to ensure the quality of the project activities and their improvement.
- **Screening vulnerable population:** A total of 150 nursing students in Birgunj campus were screened for TB. Three new SS+ TB cases, i.e. 2% were found to have TB, thus making early intervention possible in these cases.

RESULTS

The BNMT TB REACH Project Year 1 spanned from 15 November 2011 till 30 December 2012, during the period an intensified case finding was conducted in the nine working districts of Eastern and Central Region with its active contact investigation, mobile chest/microscopy camps and defaulter tracing activities.

The estimation of the new SS+ cases for districts in Nepal is based upon the NTP estimates based on the Annual Risk of TB infection (ARI). The ARI for the Terai districts being 2.1 and the hill districts was 1.1 for the year 2011/12 and adjusted yearly according to the national estimates.

Total Estimated cases of all forms= $(ARI * 100)/100000 * \text{Total population}$

Total Estimated new SS+ cases= $(ARI * 50)/100000 * \text{Total population}$

TABLE 1: BNMT TB REACH PROJECT ACHIEVEMENTS

Project Achievements				
S.N.	Working Districts	Index Cases Identified	Suspects Screened	SS+ Cases Identified and Enrolled for Treatment
1	Parsa	654	4177	196
2	Bara	727	3378	204
3	Sarlahi	837	4681	321
4	Mahottari	748	4216	140
5	Dhanusa	979	6245	218
6	Siraha	600	4162	110
7	Udaypur	350	1083	60
8	Saptari	735	4783	94
9	Sunsari	736	4619	182
Total		6366	37344	1525

The estimated number of index cases was 6,490, of which 6,366 (98%) were identified and verified from the NTP treatment and microscopy registers. Following this, the index cases were interviewed and at least 5 contacts per index case were involved in the contact tracing. Although the estimated contacts to be screened were 32,450, the actual numbers screened was 40,676 as there were more symptomatic cases identified by the F/CHVs in the community in various districts than had been estimated beforehand. Among these prioritized contacts, 3,332 were excluded as they did not provide their complete sputum sample for examination. Altogether 1,486 new SS+ TB cases were detected through microscopic examination of the three sputum samples provided by 37,344 contacts of index cases which were 91.56% of the estimated target (1,623 new SS+ cases). The positivity yield of SS+ cases identified through active case finding was 3.98%.

Out of the 1,486 Sputum smear positive (SS+ve) cases, four (4) were diagnosed with Drug Resistant TB (CAT II failure) after being referred for culture and drug susceptibility testing (DST). Thus, the proportion of DR-TB among the diagnosed cases was 0.27%.

TABLE 2: THE DIRECT YIELD OF THE BNMT TB REACH PROJECT

Direct Yield of the Project				
S.N.	Working Districts	Initial Defaulters Traced	SS+ cases detected through Contact Tracing	SS+ cases detected through Mobile Chest/ Microscopy Camps
1	Parsa	9	123	64
2	Bara	2	147	55
3	Sarlahi	25	292	4
4	Mahottari	1	126	13
5	Dhanusa	1	133	84
6	Siraha	1	87	22
7	Udaypur	0	57	3
8	Saptari	0	74	20
9	Sunsari	0	172	10
TOTAL		39	1211	275

Summing up all the SS+ cases detected through the listed interventions, the direct yield of the BNMT TB REACH Project Year 1 was 1,525 SS+ cases.

Among these, 1,211 new SS+ cases were the direct yield by active contact tracing of 28,983 contacts that were prioritized and screened appropriately. Therefore, 4.18% detection rate was seen from the contact tracing approach. Number Needed to Screen (NNS) to find one TB patient through this approach was 23.93. On comparing this to the global data for medium incidence

countries like Nepal, it is lower and therefore better than the mean NNS to detect active TB from contact tracing in households (Shapiro et al. 2013).

The cases detected through mobile chest/microscopy camps for hard to reach population in areas without or limited access to microscopy centers showed a positivity yield of 3.28%. Through organization of 39 mobile chest/ microscopy and examination of 8,361 suspects, 275 SS+ve cases were identified.

Also, 39 initial defaulters were traced in the nine project districts. They were enrolled in the NTP and followed up throughout the treatment period. Among these, 37 (94.87%) completed treatment, 1 died and 1 defaulted. The high completion rate in this group points toward the increased adherence of these patients to the program when actively followed through by the F/CHVs.

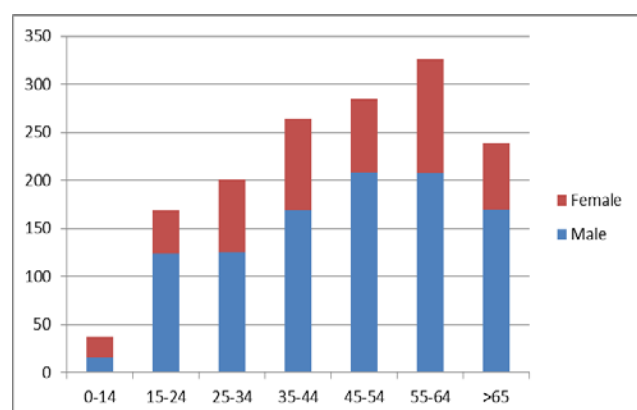


FIGURE 2: AGE AND SEX WISE DISAGGREGATION OF THE SS+ TB CASES

TABLE 3: AGE AND SEX WISE DISAGGREGATION OF THE SS+ TB CASES

Disaggregation of the SS+ TB Cases								
Age Group in Years	0-14	15-24	25-34	35-44	45-54	55-64	>65	Total
Male	16	124	125	171	208	207	170	1021
Female	21	45	76	96	78	119	69	504
Total	37	169	201	264	285	326	239	1525

The Male: Female ratio of the 1,525 SS+ve cases of the project was 2.02 in concordance to the global data (WHO) with 1,021(66.95%) males. The average age for male was 46.25 years and for female it was slightly less, i.e. 43.69 years.

The age-disaggregated data (Figure 2, Table 3) clearly showed that the TB burden fell on those who were in their most productive age i.e. 25-54 years. They constituted 60.26% of the SS+ve cases. Further disaggregation of the data showed that, the largest age groups who are SS+ve are those falling in the age bracket of 55-64. It is also quite noteworthy that 15.71% of the SS+ cases were ≥ 65 years of age. The reason for the older population presenting more in the contact tracing could be social, financial or other health related issues compounding their ability to access healthcare services.

There were TB cases of children of or under the age of ten in eight out of the nine project districts. A total of 37 cases, i.e. 2.43% of childhood TB were found through this approach. Children constitute a special needs group as they are more vulnerable to TB infections and TB is harder to detect in children as they have difficulty in producing sputum on demand. It is noteworthy that in most age groups females were lesser represented than males but in case of children under 14, the female SS+ve was found to be higher i.e. 16 males and 21 females. This could signify that girl children are more vulnerable and susceptible to TB infections within the community and household settings. Also, noteworthy is that the case finding of SS+ve female was quite low in comparison to men.

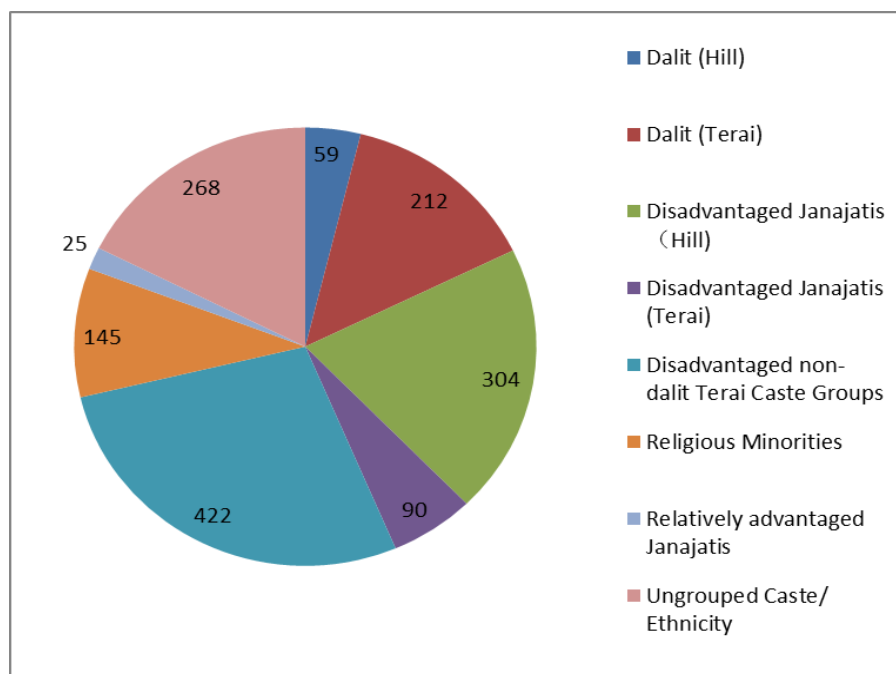


FIGURE 3: DISTRIBUTION OF ETHNICITIES AMONG THE SS +VE CASES

On dividing the SS+ve cases according to ethnicity (Figure 3), the Disadvantaged non- dalit Terai Caste Groups represented the major portion of the TB patients followed by the Disadvantaged Janajatis (hills).

After the results of the sputum smear microscopy, the SS+ve patients were enrolled in the NTP. Among them, 1,456 were enrolled in Category I and 69 in Category II. These patients were followed up till the completion of their treatments and the outcomes were noted.

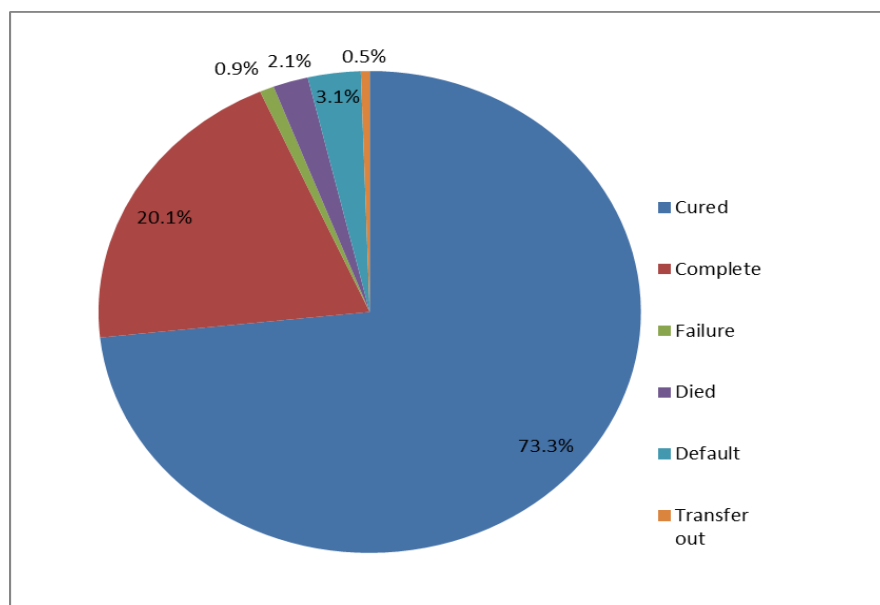


FIGURE 4: TREATMENT OUTCOMES OF PATIENTS IDENTIFIED BY BNMT TB REACH PROJECT

Among the patients who were enrolled by BNMT and followed up by the FCHVs and other volunteers 1,118(73.31%) were reported cured, 306(20.07%) completed the treatment, 13(0.85%) were failures, 32(2.1%) died, 48(3.15%) defaulted and 8(0.52%) transferred out to other centers. This (Figure 4) shows that a major portion of these patients apart from the 3.15% defaulters adhered to the regimen and active follow up by the community volunteers could have been a major factor in their adherence to treatment.

The table below (Table 4) represents the annual estimated SS+ve cases and the actual number of new SS+ve cases found in the nine districts that BNMT operated its TB Reach Y1 project.

TABLE 4: ESTIMATED VS. ACTUAL CASES IN NINE TB REACH WORKING DISTRICTS

Year	2009/10	2010/11	2011/12
Estimated cases	6056	6224	6277
Actual cases	3889	3407	3497
Difference in case finding	2167	2817	2780
Difference %	35.78 %	45.26 %	44.29 %

The difference between the estimated cases and the actual cases that were identified can also be seen. Between the estimated and actual case findings we see a steep increase in the gap from the year 2009/10 to 2010/11 from 2,167 (35.78%) to 2,817 (45.26%). BNMT TB REACH Project was not active in the nine districts during this time period. BNMT TB REACH started activities from November 15th 2011. One can see a slight change in trend from the year 2010/11 to 2011/12. The gap between the estimated cases and the actual cases has reduced and in fact decreased by a percent. A clearer picture will appear as we have the data for the second year of the TB REACH Project.

A more detailed look at the data specific to the development regions (Figure 5) that BNMT TB REACH is currently working in will also help us to see the impact that BNMT's project has had on improving and contributing to the national case finding rates.

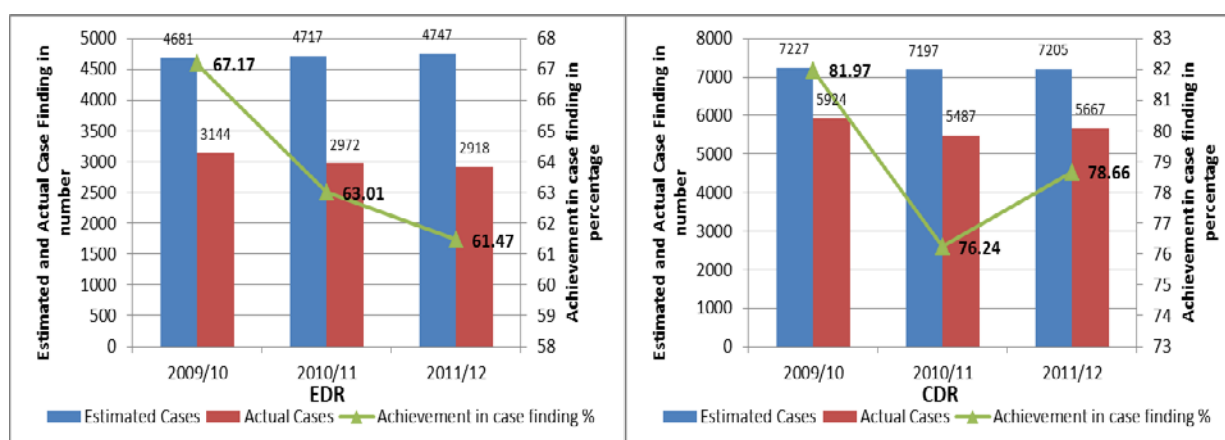


FIGURE 5: ACHIEVEMENT IN SS+ CASE FINDING ON THE BASIS OF ESTIMATED POPULATION IN THE EASTERN DEVELOPMENT REGION(EDR) AND CENTRAL DEVELOPMENT REGION(CDR)

The bar charts above (Figure 5) are representation of the estimated and actual cases for the years 2009/10 to 2011/12 and the percentage of achievement in case finding in the Eastern Development Region (EDR) and the Central Development Region (CDR) where the nine districts under the BNMT's TB REACH project are situated. There was a decreasing trend in achievement of case finding from 2009/10 to 2010/11. The trend in the EDR showed a drop of 4% from 2009/10 to 2010/11 with a case finding of 63%. Data from the CDR also shows a

similar picture. The case finding rate showed a decrease from 81.9% to 76.2%. There was a leap in case finding from 2010/11 to 2011/12 in CDR from 76.2% to 78.6% although in EDR the decrease has just slowed down. We can see from these charts that there is an improvement in the case finding trend in these districts from that of the previous year.

This improvement in case detection trend could be attributed to BNMT TB REACH as it is active in 4 districts of the EDR and 5 districts of the CDR. Judging by the trends we have seen we can assume that were it not for the TB REACH program introduced by the Government of Nepal, the achievement in case finding might still be on a continuing downward trend. Although it may be argued that BNMT's TB REACH Project has helped to identify many cases that would have eventually turned up as passive cases, it is still evident that the project has been integral to reducing the gap in case finding as well as change the decreasing trend to an increase in case finding. Not only does active case finding increase the case detection rates but also reducing the delay in diagnosis decreases the severity of disease and also further transmission.

The discussion above represents the EDR and CDR on the whole along with BNMT TB REACH Project contributions.

Represented below (Figure 6) is a detailed graph presenting the data of SS+ve case finding in the BNMT TB REACH working districts. The data shows that there was initially a decrease in case finding trend from 2009/10 to 2010/11 with a decrease of 9.5% in case finding in the nine districts i.e. 64.22% to 54.74%. The graph shows that case finding rates improved from the year 2010/11 to 2011/12, increasing from 54.74% to 55.71%. The data suggests that BNMT's work in Dhanusha, Mahottari, Bara, Parsa, Sarlahi, Siraha, Saptari, Sunsari and Udaypur districts have contributed to the increased case finding of TB cases through active case finding via contact tracing and is in a road to changing the downward trend.

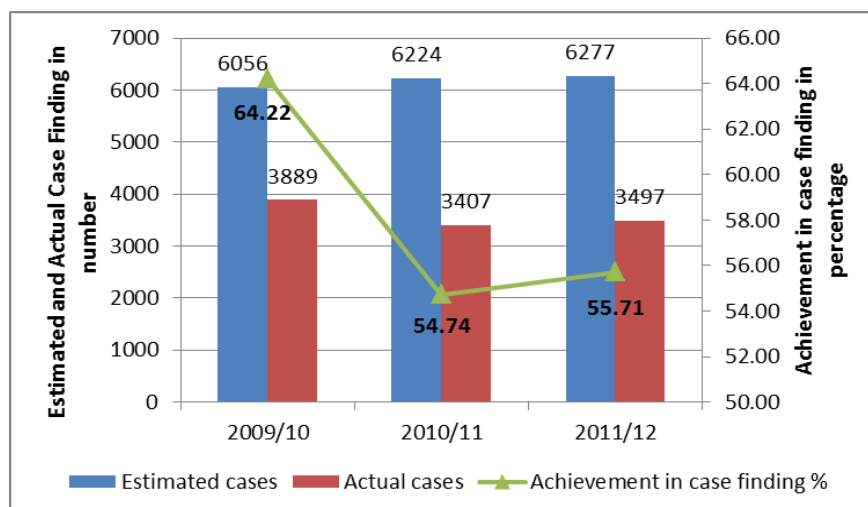


FIGURE 6: ACHIEVEMENT IN SS+ CASE FINDING IN NINE TB REACH WORKING DISTRICTS

Within the nine districts, there were different performance levels and variations. Sarlahi and Udaypur have shown good performances in comparison to others. These would be two good districts to learn from so that BNMT's project can improve case finding in other districts as well. The trend shown in the graph (Figure 7) for these districts is encouragingly similar to the trend observed in EDR, CDR and also in the nine districts of the project.

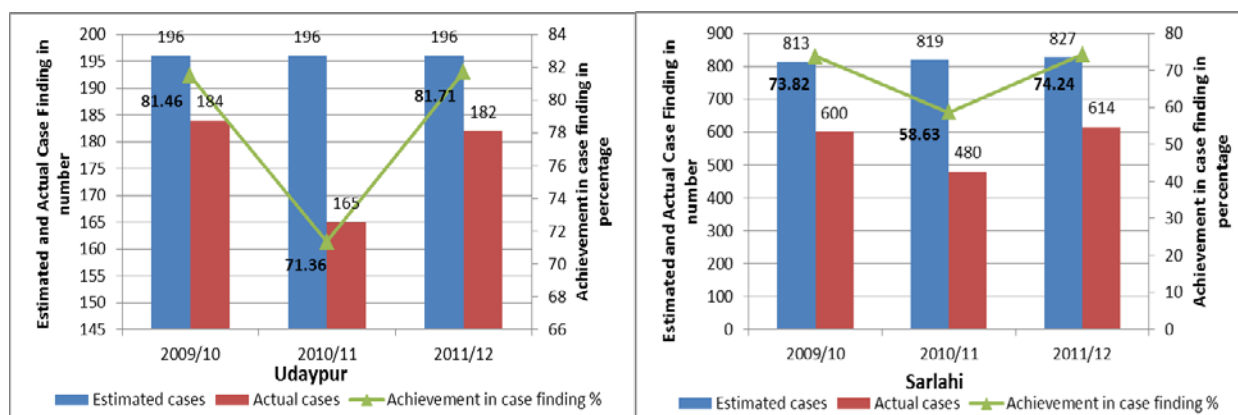


FIGURE 7: ACHIEVEMENT IN SS+ CASE FINDING IN SARLAHI AND UDAYAPUR DISTRICTS

CHALLENGES

- Lower identification of index patients than that given by the estimated target.
- The index patients were difficult to trace as many of them had not given the correct address or they moved and did not inform the Health Center about their new locations.
- Some records in the registration were incomplete and thus, could not be investigated.
- Some were patients from India, who had been diagnosed and treated in Nepal under false address.
- Among the 40,676 suspects prioritized for screening, 3,332 individuals (8.10%) did not provide their complete sputum sample for examination.
- Tracing the initial defaulters proved to be more difficult than expected and only 17.33% of the estimated defaulters were found and enrolled into treatment. Some could have migrated for work across border as many of these districts share border with India. Many might have also transferred out without notifying the treatment centers.

LESSONS LEARNT

- Hidden cases of active TB can be diagnosed at an earlier stage through active contact tracing and conducting mobile chest/microscopy camps.
- Contact tracing within social networks help in the early diagnosis of TB cases and thus early treatment.

Special Issues discovered from interviews with Case Studies

- Alcohol consumption and lack of adherence to DOTS maybe an issue that will need to be addressed in the future.
- Additional support for transportation of samples to the health centers and nutritional supplements can also be issues that will have to be addressed in order to ensure that patients comply with the DOTS regimen.

- There is need for thorough counseling and health education regarding TB signs, symptoms and treatment to the general public and the families of TB patients to increase social support to them. Compliance to DOTS and healthy lifestyle habits are also areas in which health education should be focused.
- The FCHV's and the volunteers are very motivated and involving them in the project is a must in terms of its success.

RECOMMENDATIONS

- Active case finding through contact tracing of index cases has been found to be an effective approach to reduce the gap of the unmet national target of case finding set by the NSP 2010-15. This approach should be adopted on a nationwide scale.
- NTP should adopt Mobile Microscopy camps in the national policy especially to target hard to reach and resource poor areas of the country thus having a stronger program to target the vulnerable, poor and underserved populations of the country.
- Strengthen (human resources and logistics) and expand the existing Microscopy network.

LIMITATIONS OF REPORT

This report summarizes the achievements of BNMT TB REACH Project implemented in nine districts of the Eastern and Central Development Regions of Nepal from 15 November, 2011 to 15 December, 2012. BNMT developed and used various forms and formats for project data collection during the period. This report is based on the data generated using a variety of forms at the different health facility levels and households utilizing both healthcare workers on site and volunteers who were mobilized for this purpose. The analyzed data was collected from nine Terai project implementation districts, for which it can represent the other Terai districts of the Eastern and Central Development Region. However, it cannot be generalized to the districts of the Hilly and Himalayan regions of Nepal.

CONCLUSION

It is a fact that globally more than one-third of the new TB cases fail to gain access to accurate diagnosis or effective treatment and are suffering and dying needlessly from this curable disease. Many of these people live in poverty-stricken areas and have very limited or non-existent access to health services. Additionally, the failure to detect so many infectious TB cases is thwarting our efforts to reduce the spread of TB and eliminate it. This is a common scenario in most of the low-income countries and this problem cannot be solved by any single organization or country.

The main objective of the TB REACH initiative is finding new ways to bring TB care to these unreached millions. TB REACH funds innovative and ground-breaking projects targeting poor and vulnerable communities that result in early and increased detection of TB cases and to ensure their timely and successful treatment. In line with this, BNMT conducted the intensified case finding and default tracing in the nine districts with high case load and lower case detection rates. BNMT was able to find 1,525 new cases and primary defaulters through this project.

These identified cases would have otherwise presented late or stayed hidden due to inadequacy of healthcare facilities or lack of knowledge in this population. This would consequentially result in more severe disease and also increased transmission of TB to their contacts. This first year of the project has shown that active case finding approaches can detect the cases earlier and also make an impact in the case detection rates of the respective districts. The 4% detection among the contact by contact investigation is a notable rate globally and if the approach is combined with better diagnostic facilities, the rate could even go higher.

The project has shown that if adopted at the national level it could prove invaluable in detecting those cases which would have been eluding the national programme. Also, increasing the case detection rate would help in reaching the targets set by the National Strategic Plan and the MDGs.

The major factors responsible for the success of this project were the commitment and motivation of the volunteers at the community level, support from the donors, the organized and widespread national tuberculosis program and of course the experience and existing set up of BNMT.

SUCCESS STORY

A 60 year old male, Mr. Thapa Magar, had a 4-month history of persistent cough with blood in sputum, fever, night sweats and weight loss. A farmer by profession, Mr. Thapa Magar had been living in the same community, Gaurishankar VDC, Shree Nagar Tole- 6 in Sarlahi district, for more than 20 years. Due to poverty and lack of knowledge and awareness of accessing healthcare facilities, Mr. Thapa Magar had not visited any health facility. Tuberculosis diagnostic facilities were available in his community, but they were too far for him to access. In order to reach the nearest facility, he would have needed to walk for half an hour to catch a bus and then travel in the bus for an hour to reach the government microscopic center (Lalbandi Primary Health Care Center) where proper diagnosis and treatment of TB is available. As his family could not afford the cost, the patient was kept at home without any medical consultation. The patient and family members had no knowledge of TB and did not know the treatment was available free of cost at government health institutions.

In this particular district, BNMT, in coordination with the NTP, provided training to FCHVs on identifying index patients and on using the referral mechanism for contact tracing at the community level on January 16 and 17, 2012. Videos that demonstrated sputum collection techniques were showed to FCHVs as part of their training. Each of them took part in role plays to practice their skills on contact tracing approach.

In parallel to the training activity, local volunteers from the partner organization took interview and got verbal consent from index cases at the DOTS Centers and Sub-centers, prepared a list of index patient contacts and prioritized them for contact tracing. These volunteers then supported FCHVs who had just completed training in tracing the houses of index cases and to record the details of the sputum sample.

For this particular case, one of the FCHVs visited the house of Mr. Lama, one of the identified index cases. Fifty year old Mr. Lama had been diagnosed with TB and was on DOTS medication for past four months. Examining the family medical history through interview revealed Mr. Lama's mother had died of TB the previous year. The case identified, Mr. Thapa Magar, was close

neighbour of the index case. Interviews showed that Mr. Thapa Magar had been seriously ill for about four months. Because door-to-door sputum collection was part of the protocol for contact tracing, the FCHV after interviewing Mr. Thapa Magar, collected sputum sample from him on the spot.

Verification:

The FCHV, who was trained to follow the NTP guideline, provided three containers to collect sputum sample from the TB suspect and label them properly. After giving a container to the patient to collect the morning sample, she delivered the first sample to the Microscopic Center at Lalbandi PHC on the same day. On the second day, the FCHV again collected the second and third samples and delivered them to the same microscopic center on the same day.

After slide preparation and fixation, the lab technician Mr. Prasad examined three samples and found all samples positive (2+, 3+ and 3+) with TB. The report was sent to the nearest treatment center (Bhaktapur DOTS Sub- Center) on the next day and the FCHV also reported back to the local partner organization. The next day, she helped the patient to enroll in the facility to take DOTS medicine daily. As the patient himself was unable to visit the facility for DOTS medicine, the FCHV Mrs. Banjan is at present supervising his dose regularly.

On January 23, 2012, a team from BNMT personnel visited the PHC to verify the diagnosis. The team reviewed the lab record and verified this with the lab technician. They also visited the patient at his home where the patient and his family were oriented on TB and the importance of regularly taking DOTS medicine. The patient lives with his wife, a son and a daughter, all of whom are asymptomatic.

A CASE OF MDR - TB IN THE COMMUNITY

Mr. Mahato, 65 years old resident of Umaprempur VDC, ward no. 8 of Dhanusha district lives with his children and grandchildren. For the last 3 years he was facing some health related problems. He suffered from continuous coughing, night sweating, and weight loss for about 2 months. Initially, he was treated in the pharmacy of the village, but to no avail.

Then, he went to Umaprempur Sub-Health Post (SHP) for treatment. The SHP in-charge referred him to Dhanushadham PHCC for sputum check-up where he was diagnosed with smear positive Tuberculosis. He started TB Category I treatment in Umaprempur DOTS sub center. He completed his 6 month course of treatment but after a few months he again started suffering from the same signs and symptoms. The SHP in-charge suggested him for sputum examination at Dhanushadham PHCC, where he was again diagnosed positive. He was then treated with category II drugs for TB treatment and also completed the regimen.

Even after completing the treatment, he was still suffering from random cough and loss of appetite. In the meantime, BNMT TB REACH Project launched its microscopy camp in the area for early detection of TB cases. FCHVs were mobilized to find suspects and help them examine their sputum. FCHV found Mr. Mahato coughing and brought him in the camp for sputum examination and he was diagnosed positive for the third time. After taking a complete history he was suspected for drug resistant TB and referred for further diagnosis. In the camp 22 cases including Mr. Mahato was diagnosed positive.

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GLIMPSES OF THE PROJECT



Orientation to F/CHVs for contact tracing



Interaction with TB patients for increasing treatment compliance



Microscopy examination of collected sputum samples during mobile microscopy camps



On the spot sputum sample collection in hard to reach areas



Local women line up to provide sputum samples



Interaction among FCHVs for contact tracing